Søren Brandt - DTU Orbit (02/11/2017)

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Organisations

Senior Scientist, National Space Institute
11/01/2007 → present
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VIP

Astrophysics and Atmospheric Physics
22/07/2016 → present
VIP

Astrophysics
25/02/2012 → 22/07/2016 Former
VIP

Publications:

GCN CIRCULAR 21672, LIGO/Virgo G298048: INTEGRAL pointed follow-up observations
INTEGRAL is an observatory with multiple instruments: a gamma-ray spectrometer (20 keV - 8 MeV, SPI), an imager (15 keV - 2 MeV, IBIS), an X-ray monitor (3 - 25 keV, JEM-X), and an optical monitor (V band, OMC). Our group requested and obtained follow-up observations of the LIGO/Virgo candidate NS merger G298048 (GCN 21505, 21506).

General information
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Organisations: National Space Institute, Astrophysics and Atmospheric Physics, University of Geneva, CEA Saclay, IRAP, National Institute for Astrophysics, Institute for Space Research, European Space Agency, Max-Planck-Institut fur extraterrestrische Physik, University College Dublin, Russian Academy of Sciences
Authors: Savchenko, V. (Ekstern), Ferrigno, C. (Ekstern), Kuulkers, E. (Ekstern), Bozzo, E. (Ekstern), Mereghetti, S. (Ekstern), Courvoisier, T. J. (Ekstern), Chenevez, J. (Intern), Brandt, S. (Intern), Diehl, R. (Ekstern), Hanlon, L. (Ekstern), Laurent, P. (Ekstern), Gotz, D. (Ekstern), Roques, J. (Ekstern), Jourdain, E. (Ekstern), Ubertini, P. (Ekstern), Bazzano, A. (Ekstern), Rodi, J. (Ekstern), Lutovinov, A. (Ekstern), Sunyaev, R. (Ekstern)
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https://gcn.gsfc.nasa.gov/gcn3/21672.gcn3
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Publication: Research › Internet publication – Annual report year: 2017

INTEGRAL Detection of the First Prompt Gamma-Ray Signal Coincident with the Gravitational-wave Event GW170817
We report the INTeRNational Gamma-ray Astrophysics Laboratory (INTEGRAL) detection of the short gamma-ray burst GRB 170817A (discovered by Fermi-GBM) with a signal-to-noise ratio of 4.6, and, for the first time, its association with the gravitational waves (GWs) from binary neutron star (BNS) merging event GW170817 detected by the LIGO and Virgo observatories. The significance of association between the gamma-ray burst observed by INTEGRAL and GW170817 is 3.2σ, while the association between the Fermi-GBM and INTEGRAL detections is 4.2σ. GRB 170817A was detected by the SPI-ACS instrument about 2 s after the end of the GW event. We measure a fluence of \((1.4 \pm 0.4 \pm 0.2) \times 10^{-7} \text{ erg cm}^{-2}\) (75–2000 keV), where, respectively, the statistical error is given at the 1σ confidence level, and the systematic error corresponds to the uncertainty in the spectral model and instrument response. We also report on the pointed follow-up observations carried out by INTEGRAL, starting 19.5 hr after the event, and lasting for 5.4 days. We provide a stringent upper limit on any electromagnetic signal in a very broad energy range, from 3 keV to 8 MeV, constraining the soft gamma-ray afterglow flux to \(< 7.1 \times 10^{-11} \text{ erg cm}^{-2} \text{s}^{-1}\) (80–300 keV). Exploiting the unique capabilities of INTEGRAL, we constrained the gamma-ray line emission from radioactive decays that are expected to be the principal source of the energy behind a kilonova event following a BNS coalescence. Finally, we put a stringent upper limit on any delayed bursting activity, for example, from a newly formed magnetar.
INTEGRAL IBIS, SPI, and JEM-X observations of LVT151012

During the first observing run of LIGO, two gravitational wave events and one lower-significance trigger (LVT151012) were reported by the LIGO/Virgo collaboration. At the time of LVT151012, the INTErnational Gamma-Ray Astrophysics Laboratory (INTEGRAL) was pointing at a region of the sky coincident with the high localization probability area of the event and thus permitted us to search for its electromagnetic counterpart (both prompt and afterglow emission). The imaging instruments on-board INTEGRAL (IBIS/ISGRI, IBIS/PICsIT, SPI, and the two JEM-X modules) have been exploited to attempt the detection of any electromagnetic emission associated with LVT151012 over 3 decades in energy (from 3 keV to 8 MeV). The omni-directional instruments on-board the satellite, i.e. the SPI-ACSand the IBIS/Veto, complemented the capabilities of the IBIS/ISGRI and IBIS/PICsIT for detections outside their imaging field of view in order to provide an efficient monitoring of the entire LVT151012 localization region at energies above 75 keV. We did not find any significant transient source that was spatially and/or temporally coincident with LVT151012, obtaining tight upper limits on the associated hard X-ray and γ-ray radiation. For typical spectral models, the upper limits on the fluence of the emission from any 1 s long-lasting counterpart of LVT151012 ranges from $F_\gamma = 3.5 \times 10^{-8}$ erg cm$^{-2}$ (20 – 200 keV), within the field of view of the imaging instruments, to $F_\gamma = 7.1 \times 10^{-7}$ erg cm$^{-2}$ (75 – 2000 keV), considering the least favorable location of the counterpart for a detection by the omni-directional instruments. These results can be interpreted as a tight constrain on the ratio of the isotropic equivalent energy released in the electromagnetic emission to the total energy of the gravitational waves: $E_{75-2000\text{ keV}} / E_{GW} < 4.4 \times 10^{-5}$. Finally, we provide an exhaustive summary of the capabilities of all instruments on-board INTEGRAL to hunt for γ-ray counterparts of gravitational wave events, exploiting both serendipitous and pointed follow-up observations. This will serve as a reference for all future searches.

General information
State: Published
Organisations: National Space Institute, Astrophysics and Atmospheric Physics, University Paris Diderot - Paris 7, National Institute for Astrophysics, University of Geneva, Max-Planck-Institut fur extraterrestrische Physik, University College Dublin, Max-Planck-Institut für Extraterrestrische Physik, European Space Research and Technology Center, CEA Saclay, Russian Academy of Sciences, Université de Toulouse
Authors: Savchenko, V. (Ekstern), Bazzano, A. (Ekstern), Bozzo, E. (Ekstern), Brandt, S. (Intern), Chenevez, J. (Intern), Courvoisier, T. J. L. (Ekstern), Diehl, R. (Ekstern), Ferrigno, C. (Ekstern), Hanlon, L. (Ekstern), von Kienlin, A. (Ekstern), Kuulkers, E. (Ekstern), Laurent, P. (Ekstern), Lebrun, F. (Ekstern), Lutovinov, A. A. (Ekstern), Martin-Carrillo, A. (Ekstern), Merrigetti, S. (Ekstern), Natalucci, L. (Ekstern), Roques, J. P. (Ekstern), Siegert, T. (Ekstern), Sunyaev, R. (Ekstern), Ubertini, P. (Ekstern)
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Main Research Area: Technical/natural sciences

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Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 2.543 SNIP 1.189 CiteScore 3.5
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
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Web of Science (2014): Indexed yes
BFI (2013): BFI-level 2
Scopus rating (2013): SJR 2.544 SNIP 1.058 CiteScore 2.01
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 2
Scopus rating (2012): SJR 2.585 SNIP 1.295 CiteScore 3.14
ISI indexed (2012): ISI indexed yes
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INTEGRAL Observations of GW170104

We used data from the International Gamma-Ray Astrophysics Laboratory (INTEGRAL) to set upper limits on the γ-ray and hard X-ray prompt emission associated with the gravitational-wave event GW170104, discovered by the Laser Interferometer Gravitational-wave Observatory (LIGO)/Virgo collaboration. The unique omnidirectional viewing capability of the instruments on board INTEGRAL allowed us to examine the full 90% confidence level localization region of the LIGO trigger. Depending on the particular spectral model assumed and the specific position within this region, the upper limits inferred from the INTEGRAL observations range from $F_\gamma = 1.9 \times 10^{-7}$ erg cm$^{-2}$ to $F_\gamma = 10^{-6}$ erg cm$^{-2}$ (75 keV–2 MeV energy range). This translates into a ratio between the prompt energy released in γ-rays along the direction to the observer and the gravitational-wave energy of $E_\gamma / E_{GW} < 2.6 \times 10^{-5}$. Using the INTEGRAL results, we cannot confirm the γ-ray proposed counterpart to GW170104 by the Astro—Rivelatore Gamma a Immagini Leggero (AGILE) team with the mini-Calorimeter (MCAL) instrument. The reported flux of the AGILE/MCAL event, $E_2$, is not compatible with the INTEGRAL upper limits within most of the 90% LIGO localization region. There is only a relatively limited portion of the sky where the sensitivity of the INTEGRAL instruments was not optimal and the lowest-allowed fluence estimated for $E_2$ would still be compatible with the INTEGRAL results. This region was also observed independently by Fermi/Gamma-ray Burst.
Monitor and AstroSAT, from which, as far as we are aware, there are no reports of any significant detection of a prompt high-energy event.

**General information**

State: Published  
Organisations: National Space Institute, Astrophysics and Atmospheric Physics, Université de Toulouse, University of Geneva, National Institute for Astrophysics, Max-Planck Institut für Extraterrestrische Physik, University College Dublin, European Space Research and Technology Center, IRFU, Russian Academy of Sciences, Max Planck Institute for Astrophysics, Technical University of Denmark  
Authors: Savchenko, V. (Ekstern), Ferrigno, C. (Ekstern), Bozzo, E. (Ekstern), Bazzano, A. (Ekstern), Brandt, S. (Intern), Chenevez, J. (Intern), Courvoisier, T. J. (Ekstern), Diehl, R. (Ekstern), Hanlon, L. (Ekstern), von Kienlin, A. (Ekstern), Kuulkers, E. (Ekstern), Laurent, P. (Ekstern), Lebrun, F. (Ekstern), Lutovinov, A. A. (Ekstern), Martin-Carillo, A. (Ekstern), Mereghetti, S. (Ekstern), Roques, J. (Ekstern), Sunyaev, R. (Ekstern), Ubertini, P. (Ekstern)

Number of pages: 6  
Publication date: 2017  
Main Research Area: Technical/natural sciences

**Publication information**

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Scopus rating (2016): CiteScore 4.45  
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Scopus rating (2015): CiteScore 4.33  
Web of Science (2015): Indexed yes  
Scopus rating (2014): CiteScore 4.34  
Web of Science (2014): Indexed yes  
Scopus rating (2013): CiteScore 4.18  
ISI indexed (2013): ISI indexed yes  
Web of Science (2013): Indexed yes  
Scopus rating (2012): CiteScore 3.93  
ISI indexed (2012): ISI indexed yes  
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ISI indexed (2011): ISI indexed no  
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**Relations**

Projects:  
INTEGRAL Observations of GW170104

Source: FindIt  
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**STROBE-X: X-Ray Timing and Spectroscopy on Dynamical Timescales from Microseconds to Years**

The Spectroscopic Time-Resolving Observatory for Broadband Energy X-rays (STROBE-X) probes strong gravity for stellar mass to supermassive black holes and ultradense matter with unprecedented effective area, high time-resolution, and good spectral resolution, while providing a powerful time-domain X-ray observatory.

**General information**

State: Accepted/In press  
Organisations: National Space Institute, Astrophysics and Atmospheric Physics, Naval Research Laboratory, NASA Goddard Space Flight Center, Massachusetts Institute of Technology, National Institute for Astrophysics, Institute of
INTEGRAL Upper Limits on Gamma-Ray Emission Associated with the Gravitational Wave Event GW150914

Using observations of the INTERnational Gamma-Ray Astrophysics Laboratory (INTEGRAL), we place upper limits on the gamma-ray and hard X-ray prompt emission associated with the gravitational wave event GW150914, which was discovered by the LIGO/Virgo Collaboration. The omnidirectional view of the INTEGRAL/SPI-ACS has allowed us to constrain the fraction of energy emitted in the hard X-ray electromagnetic component for the full high-probability sky region of LIGO triggers. Our upper limits on the hard X-ray fluence at the time of the event range from $F_x = 2 \times 10^{-8}$ erg cm$^{-2}$ to $F_x = 10^{-6}$ erg cm$^{-2}$ in the 75 keV–2 MeV energy range for typical spectral models. Our results constrain the ratio of the energy promptly released in gamma-rays in the direction of the observer to the gravitational wave energy $E_\gamma/E_{GW} < 10^{-6}$.

We discuss the implication of gamma-ray limits for the characteristics of the gravitational wave source, based on the available predictions for prompt electromagnetic emission.

General information
State: Published
Organisations: National Space Institute, Astrophysics, National Institute for Astrophysics, University Paris Diderot - Paris 7, Max-Planck Institut für Extraterrestrische Physik, University College Dublin, European Space Astronomy Centre, Université de Toulouse, University of Geneva
Authors: Savchenko, V. (Ekstern), Ferrigno, C. (Ekstern), Mereghetti, S. (Ekstern), Natalucci, L. (Ekstern), Bazzano, A. (Ekstern), Bozzo, E. (Ekstern), Brandt, S. (Intern), Courvoisier, T. J. -. (Ekstern), Diehl, R. (Ekstern), Hanlon, L. (Ekstern), von Kienlin, A. (Ekstern), Kuulkers, E. (Ekstern), Laurent, P. (Ekstern), Lebrun, F. (Ekstern), Roques, J. P. (Ekstern), Ubertini, P. (Ekstern), Weidenspointner, G. (Ekstern)
Number of pages: 5
Publication date: 2016
Main Research Area: Technical/natural sciences

Publication information
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ISSN (Print): 2041-8205
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Web of Science (2017): Indexed Yes
Scopus rating (2016): CiteScore 4.45
Web of Science (2016): Indexed yes
Scopus rating (2015): CiteScore 4.33
Web of Science (2015): Indexed yes
Scopus rating (2014): CiteScore 4.34
Web of Science (2014): Indexed yes
Scopus rating (2013): CiteScore 4.18
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
Scopus rating (2012): CiteScore 3.93
ISI indexed (2012): ISI indexed yes
Scopus rating (2011): CiteScore 5.85
ISI indexed (2011): ISI indexed no
Original language: English
Gamma-ray burst: general, Gravitational waves
Electronic versions:
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DOIs:
10.3847/2041-8205/820/2/L36

Relations
INTEGRAL Upper Limits on Gamma-Ray Emission Associated with the Gravitational Wave Event GW150914

Using observations of the INTErnational Gamma-Ray Astrophysics Laboratory (INTEGRAL), we place upper limits on the gamma-ray and hard X-ray prompt emission associated with the gravitational wave event GW150914, discovered by the LIGO/Virgo Collaboration. The omnidirectional view of the INTEGRAL/SPI-ACS has allowed us to constrain the fraction of energy emitted in the hard X-ray electromagnetic component for the full high-probability sky region of LIGO triggers. Our upper limits on the hard X-ray fluence at the time of the event range from $F_{\gamma} = 2 \times 10^{-8}$ erg cm$^{-2}$ to $F_{\gamma} = 10^{-6}$ erg cm$^{-2}$ in the 75 keV-2 MeV energy range for typical spectral models. Our results constrain the ratio of the energy promptly released in gamma-rays in the direction of the observer to the gravitational wave energy $E_{\gamma}/E_{GW} < 10^{-6}$. We discuss the implication of gamma-ray limits for the characteristics of the gravitational wave source, based on the available predictions for prompt electromagnetic emission.

General information
State: Published
Organisations: National Space Institute, Astrophysics and Atmospheric Physics, National Institute for Astrophysics, University Paris Diderot - Paris 7, University College Dublin, European Space Astronomy Centre, Université de Toulouse, University of Geneva
Authors: Savchenko, V. (Ekstern), Ferrigno, C. (Ekstern), Natalucci, L. (Ekstern), Bazzano, A. (Ekstern), Bozzo, E. (Ekstern), Courvoisier, T. J. -. (Ekstern), Brandt, S. (Intern), Hanlon, L. (Ekstern), Kuulkers, E. (Ekstern), Laurent, P. (Ekstern), Lebrun, F. (Ekstern), Roques, J. P. (Ekstern), Ubertini, P. (Ekstern)
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Main Research Area: Technical/natural sciences
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Relations
Projects: INTEGRAL Upper Limits on Gamma-Ray Emission Associated with the Gravitational Wave Event GW150914
Publication: Research - peer-review › Conference abstract for conference – Annual report year: 2016

Large Observatory for x-ray Timing (LOFT-P): a Probe-class mission concept study

General information
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Organisations: National Space Institute, Astrophysics and Atmospheric Physics, National Institute for Astrophysics, NASA Marshall Space Flight Center, Naval Research Laboratory, Massachusetts Institute of Technology, Institute of Space Sciences, ISDC Data Centre for Astrophysics, University of Alabama, University of Helsinki, Texas Tech University, Space Research Centre, Département de physique nucléaire et corpusculaire, Universität Tübingen, IRFU, University of Amsterdam, University College London
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Publication date: 2016

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Title of host publication: Proceedings of Space Telescopes and Instrumentation 2016: Ultraviolet to Gamma Ray
Volume: 9905
Publisher: SPIE - International Society for Optical Engineering
Editors: den Herder, J. A., Takahashi, T., Bautz, M.
Localization and Broadband Follow-Up of the Gravitational-Wave Transient GW150914

A gravitational-wave (GW) transient was identified in data recorded by the Advanced Laser Interferometer Gravitational-wave Observatory (LIGO) detectors on 2015 September 14. The event, initially designated G184098 and later given the name GW150914, is described in detail elsewhere. By prior arrangement, preliminary estimates of the time, significance, and sky location of the event were shared with 63 teams of observers covering radio, optical, near-infrared, X-ray, and gamma-ray wavelengths with ground- and space-based facilities. In this letter we describe the low-latency analysis of the GW data and present the sky localization of the first observed compact binary merger. We summarize the follow-up observations reported by 25 teams via private Gamma-ray Coordinates Network circulars, giving an overview of the participating facilities, the GW sky localization coverage, the timeline, and depth of the observations. As this event turned out to be a binary black hole merger, there is little expectation of a detectable electromagnetic (EM) signature. Nevertheless, this first broadband campaign to search for a counterpart of an Advanced LIGO source represents a milestone and highlights the broad capabilities of the transient astronomy community and the observing strategies that have been developed to pursue neutron star binary merger events. Detailed investigations of the EM data and results of the EM follow-up campaign are being disseminated in papers by the individual teams.

General information
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Organisations: National Space Institute, Astrophysics and Atmospheric Physics, California Institute of Technology, Louisiana State University, Universita di Salerno, University of Florida, LIGO Livingston Observatory, Universite de Savoie, University of Copenhagen
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Web of Science (2015): Indexed yes
Scopus rating (2014): CiteScore 4.34
Web of Science (2014): Indexed yes
Scopus rating (2013): CiteScore 4.18
ISI indexed (2013): ISI indexed yes
This Supplement provides supporting material for Abbott et al. (2016a). We briefly summarize past electromagnetic (EM) follow-up efforts as well as the organization and policy of the current EM follow-up program. We compare the four probability sky maps produced for the gravitational-wave transient GW150914, and provide additional details of the EM follow-up observations that were performed in the different bands.
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BFI (2013): BFI-level 1
Scopus rating (2013): CiteScore 9.83
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): CiteScore 14.26
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): CiteScore 11.32
ISI indexed (2011): ISI indexed yes
BFI (2010): BFI-level 1
Web of Science (2010): Indexed yes
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Web of Science (2009): Indexed yes
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Web of Science (2008): Indexed yes
Web of Science (2007): Indexed yes
Web of Science (2006): Indexed yes
Web of Science (2005): Indexed yes
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Web of Science (2001): Indexed yes
Web of Science (2000): Indexed yes
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apjs_225_1_8_1.pdf. Embargo ended: 21/07/2017
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Bibliographical note
For full list of authors, see the publication

Relations
Projects:
Press / Media items:
Sensationel tyngdebølgemåling åbner nyt kapitel i udforskningen af rummet
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The LOFT mission concept: a status update

General information
State: Published
Organisations: National Space Institute, Astrophysics and Atmospheric Physics, Geomagnetism
High-energy radiation from thunderstorms and lightning with LOFT. White Paper in Support of the Mission Concept of the Large Observatory for X-ray Timing.

The Large Observatory for X-ray Timing, LOFT, is designed to perform fast X-ray timing and spectroscopy with uniquely large throughput (Feroci et al., 2014). LOFT focuses on two fundamental questions of ESA’s Cosmic Vision Theme “Matter under extreme conditions”: what is the equation of state of ultradense matter in neutron stars? Does matter orbiting close to the event horizon follow the predictions of general relativity? These goals are elaborated in the mission Yellow Book (http://sci.esa.int/loft/) describing the LOFT mission as proposed in M3, which closely resembles the LOFT mission now being proposed for M4. The extensive assessment study of LOFT as ESA’s M3 mission candidate demonstrates the high level of maturity and the technical feasibility of the mission, as well as the scientific importance of its unique core science goals. For this reason, the LOFT development has been continued, aiming at the new M4 launch opportunity, for which the M3 science goals have been confirmed. The unprecedentedly large effective area, large grasp, and spectroscopic capabilities of LOFT’s instruments make the mission capable of state-of-the-art science not only for its core science case, but also for many other open questions in astrophysics. LOFT’s primary instrument is the Large Area Detector (LAD), a 8.5m² instrument operating in the 2–30 keV energy range, which will revolutionise studies of Galactic and extragalactic X-ray sources down to their fundamental time scales. The mission also features a Wide Field Monitor (WFM), which in the 2–50 keV range simultaneously observes more than a third of the sky at any time, detecting objects down to mCrab fluxes and providing data with excellent timing and spectral resolution. Additionally, the mission is equipped with an on-board alert system for the detection and rapid broadcasting to the ground of celestial bright and fast outbursts of X-rays (particularly, Gamma-ray Bursts). This paper is one of twelve White Papers that illustrate the unique potential of LOFT as an X-ray observatory in a variety of astrophysical fields in addition to the core science.

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Organisations: National Space Institute, Astrophysics, National Institute for Astrophysics, University of California, Santa Cruz, University of Alabama, Carthage College, University of Orleans, Duke University, University of New Hampshire, Durham, University of Bath, University of Bologna, NASA Marshall Space Flight Center, University of Bergen
Number of pages: 10
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Main Research Area: Technical/natural sciences
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Relations
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LOFT mission concept Science Study Team (External organisation)

Projects:
High-energy radiation from thunderstorms and lightning with LOFT. White Paper in Support of the Mission Concept of the Large Observatory for X-ray Timing.

Source: FindIt
Source-ID: 234899559
Publication: Research - peer-review › Article in proceedings – Annual report year: 2016

Inverted-conical light guide for crosstalk reduction in tightly-packed scintillator matrix and MAPMT assembly

In this paper we present the Inverted-Conical light guide designed for optical crosstalk reduction in the scintillator-MAPMT assemblies. The research was motivated by the 30% crosstalk observed in UFFO X-ray telescope, UBAT, during the preliminary calibration with MAPMTs of 64 2.88 × 2.88 mm² pixels and identically gridded YSO crystal matrices. We
began the study with the energy and crosstalk calibrations of the detector, then we constructed a GEANT4 simulation with the customized metallic film model as the MAPMT photocathode. The simulation reproduced more than 70% of the crosstalk and explained it as a consequence of the total reflection produced by the photocathode. The result indicated that the crosstalk mechanism could be a common case in most of the contact-assembled scintillation detectors. The concept of the Inverted-Conical light guide was to suppress the total reflection by contracting the incident angle of the scintillation. We optimized the design in the simulation and fabricated a test sample. The test sample reduced 52% crosstalk with a loss of 6% signal yield. The idea of the Inverted-Conical light guide can be adapted by scintillation detectors multi-pixel, imaging-purpose scintillation detectors such as the ultra-fast GRB observatory UFFO-UBAT, whose performances are sensitive to responding time, image resolution, and geometrical modifications.

**General information**

**State:** Published

**Organisations:** National Space Institute, Astrophysics

**Authors:** Chang, Y. (Ekstern), Chen, P. (Ekstern), Huang, J. (Ekstern), Nam, J. (Ekstern), Wang, M. (Ekstern), Huang, M. (Ekstern), Liu, T. (Ekstern), Chen, C. (Ekstern), Bogomolov, V. (Ekstern), Panasyuk, M. (Ekstern), Petrov, V. (Ekstern), Svertilov, S. (Ekstern), Yashin, I. (Ekstern), Brandt, S. (Intern), Budtz-Jørgensen, C. (Intern), Castro-Tirado, A. (Ekstern), Jeong, S. (Ekstern), Choi, H. (Ekstern), Connell, P. (Ekstern), Eyles, C. (Ekstern), Reglero, V. (Ekstern), Rodrigo, J. (Ekstern), Kim, J. (Ekstern), Kim, M. (Ekstern), Lee, J. (Ekstern), Lim, H. (Ekstern), Park, I. (Ekstern), Kim, S. (Ekstern), Min, K. (Ekstern), Řípa, J. (Ekstern)

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**Pages:** 55-65

**Publication date:** 2015

**Main Research Area:** Technical/natural sciences
Probing the emission physics and weak/soft population of Gamma-Ray Bursts with LOFT. White Paper in Support of the Mission Concept of the Large Observatory for X-ray Timing

The Large Observatory for X-ray Timing, LOFT, is designed to perform fast X-ray timing and spectroscopy with uniquely large throughput (Feroci et al., 2014a). LOFT focuses on two fundamental questions of ESA’s Cosmic Vision Theme "Matter under extreme conditions": what is the equation of state of ultra-dense matter in neutron stars? Does matter orbiting close to the event horizon follow the predictions of general relativity? These goals are elaborated in the mission Yellow Book (http://sci.esa.int/loft/53447-loft-yellow-book/) describing the LOFT mission as proposed in M3, which closely resembles the LOFT mission now being proposed for M4. The extensive assessment study of LOFT as ESA’s M3 mission candidate demonstrates the high level of maturity and the technical feasibility of the mission, as well as the scientific importance of its unique core science goals. For this reason, the LOFT development has been continued, aiming at the new M4 launch opportunity, for which the M3 science goals have been confirmed. The unprecedentedly large effective area, large grasp, and spectroscopic capabilities of LOFT’s instruments make the mission capable of state-of-the-art science not only for its core science case, but also for many other open questions in astrophysics. LOFT’s primary instrument is the Large Area Detector (LAD), a 8.5 m 2 instrument operating in the 2–30 keV energy range, which will revolutionise studies of Galactic and extragalactic X-ray sources down to their fundamental time scales. The mission also features a Wide Field Monitor (WFM), which in the 2–50 keV range simultaneously observes more than a third of the sky at any time, detecting objects down to mCrab fluxes and providing data with excellent timing and spectral resolution. Additionally, the mission is equipped with an on-board alert system for the detection and rapid broadcasting to the ground of celestial bright and fast outbursts of X-rays (particularly, Gamma-ray Bursts). This paper is one of twelve White Papers that illustrate the unique potential of LOFT as an X-ray observatory in a variety of astrophysical fields in addition to the core science.

General information
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Organisations: National Space Institute, Astrophysics, National Institute for Astrophysics, University of Urbino "Carlo Bo", Université de Toulouse, Artemis, IRFU, ICRANet, University of Ferrara, NASA Marshall Space Flight Center
Authors: Amati, L. (Ekstern), Stratta, G. (Ekstern), Atteia, J. (Ekstern), De Pasquale, M. (Ekstern), Del Monte, E. (Ekstern), Gendre, B. (Ekstern), Götz, D. (Ekstern), Guidorzi, C. (Ekstern), Izzo, L. (Ekstern), Kouveliotou, C. (Ekstern), Brandt, S. (Intern)
The JEM-X twin X-ray monitors on board the INTEGRAL satellite has detected a new X-ray transient during recent observations of the Galactic Centre and Bulge regions. The new source named IGR J17451-3022 has the following coordinates:

R.A. = 266.27
Dec. = -30.38

with a 2arcmin 90% confidence radius.

The source appeared in JEM-X 3-10 keV mosaic images obtained from the observation of the Galactic Bulge region and Galactic Center performed during INTEGRAL revolution 1448 between 2014 August 22 UTC 20:40 and August 24 UTC 07:16. It has since been detected at about the same constant level during subsequent INTEGRAL observations in revolutions 1449 (August 27 UTC 07:51 - August 28 UTC 04:38), 1450 (August 28 UTC 20:09 - August 31 UTC 07:02), and 1451 (August 31UTC 19:50 - September 3 UTC 03:07). It was not detected during previous observations of the region taken on August 18 and 19 leading to a 3-10 keV flux upper limit of 3 mCrab.

We measure an average flux of $7 \pm 1$ mCrab with only slight variations between 5 and 8 mCrab during the different above-mentioned observations. The source is not visible above 10 keV, leading to an upper limit of 1 mCrab between 10-25 keV.

No significant time variation is seen in the source light-curve.

INTEGRAL will observe the Galactic Center region again between September 6 UTC 19:18 and September 8 UTC 20:31. A 2-ksec target of opportunity with the Swift satellite has been executed on September 5 between UTC 15:27 and 18:32. The new INTEGRAL source is found with the XRT instrument, only 26 arcsec from the JEM-X position, at the enhanced position:

R.A. = 266.27824
Dec. = -30.37876

with a 90% error confidence of 2.1 arcsec.

Further analysis of the Swift data is on-going. We thank the Swift team for having performed this observation of the new transient source. Multi-wavelength follow-up observations are encouraged to unveil the nature of IGR J17451-3022.
IGR J17454-2919: a new X-ray transient found by INTEGRAL/JEM-X close to the Galactic Center

The JEM-X twin X-ray monitors on board the INTEGRAL satellite have again detected a new X-ray transient during the latest observation of the Galactic Center region. The new source named IGR J17454-2919 is found less than 24 arcmin from the Galactic Center.

The source appears in both JEM-X 3-10 keV and 10-25 keV independent mosaic images of each monitor, obtained from the observations of the Galactic Bulge region and Galactic Center performed during INTEGRAL revolution 1460 between 2014 September 27 UTC 19:00 - 22:42, and from September 28 UTC 03:40 to September 30 UTC 01:44. It was not detected during any previous recent observations of the region leading to a 3-25 keV flux upper limit of 1 mCrab. The average JEM-X fluxes are 6.5 ±1 mCrab (3-10 keV) and 8.2 ±1.7 mCrab (10-25 keV). No significant time variation is seen in the source light-curve.

A Swift follow-up observation of 2 ksec exposure has been executed on October 2 between UTC 17:57 and 19:49. Though a PSF-fitted position cannot be obtained the new INTEGRAL source is clearly visible on the XRT image, only 10 arcsec from the JEM-X position, at:
R.A. = 266.366 equivalent to 17h45m28s
Dec. = -29.332 equivalent to -29d19m55s
with a 90% error confidence of 5 arcsec.
The XRT 0.3-10 keV PC-mode count-rate is 0.64 ±0.03 cnt/s.
Further analysis of the Swift data is on-going. We thank the Swift team for having performed this observation of the new transient source.

Multi-wavelength follow-up observations are encouraged to unveil the nature of IGR J17454-2919.

INTEGRAL/JEM-X sees enhanced activity in the Galactic center region: SAX J1747.0-2853 and IGR J17454-2919

During INTEGRAL observations of the Galactic Center region performed between 2014 October 18 UTC 16:43 and Oct. 20 UTC 18:36, the JEM-X monitor has detected the transient source and X-ray superburster SAX J1747.0-2853 in a new outburst. The last time this source has been seen in outburst was in February 2012 (see, e.g., ATels #3183 and #3930). The measured fluxes are:
14 ± 1mCrab between 3-10 keV and 3.5 ± 2mCrab between 10-25 keV.

In the same observation the new source IGR J17454-2919 (ATels #6530) and likely black hole candidate (ATel #6574) is also seen about a factor two brighter compared to previous observations at the following fluxes:
10 ± 1mCrab between 3-10 keV and 15 ± 2mCrab between 10-25 keV.
INTEGRAL observation of GRS 1739-278 in outburst
During the Galactic bulge monitoring observation (Atel #438) performed on 2014 March 19 from 11:00 to 14:42 (UTC), the black-hole candidate GRS 1739-278 (ATel #5986) was also seen by INTEGRAL.

The source is detected by IBIS/ISGRI up to an energy of about 200 keV. The estimated ISGRI flux is 143±2 mCrab in the 18-40 keV energy band and 166±2 mCrab in the 40-100 keV energy band. The fluxes estimated from JEM-X are 60±4 mCrab in the 3-10 keV energy band and 104±8 mCrab in the 10-20 keV energy band.

Its averaged broad-band (3-200 keV) spectrum, extracted by using all available ISGRI and JEM-X data (total exposure time 12.6 ks), could be roughly described with a cut-off power-law model. The measured photon index is 1.4±0.2 and the energy cut-off is 90(-20+40) keV (we fixed the absorption column density to the Galactic value expected in the direction of the source, i.e. 0.8E22 cm^-2). The 3-200 keV X-ray flux derived from the spectral fit is 5E-9 ergs/cm^2/s (not corrected for absorption).

This spectral shape is reminiscent of that displayed by black-hole candidates in the canonical hard state.

Further observations of the source with INTEGRAL are planned for March 28.

Observation of early photons from gamma-ray bursts with the Lomonosov / UFFO-pathfinder
UFFO-pathfinder is a pioneering space mission to observe the early evolution of Gamma-ray Bursts using a fast slewing strategy. It consists of the Slewing Mirror Telescope, for rapid pointing at UV/optical wavelengths and the UFFO Burst Alert and Trigger Telescope. It has a total weight of ~ 20 kg and will be launched on-board the Russian Lomonosov satellite at the end of 2015. The instrumental details of UFFO-pathfinder and its performance are discussed briefly here.
Testing and Performance of UFFO Burst Alert & Trigger Telescope

The Ultra-Fast Flash Observatory pathway (UFFO-p) is a new space mission dedicated to detect Gamma-Ray Bursts (GRBs) and rapidly follow their afterglows in order to provide early optical/ultraviolet measurements. A GRB location is determined in a few seconds by the UFFO Burst Alert & Trigger telescope (UBAT) employing the coded mask imaging technique and the detector combination of Yttrium Oxyorthosilicate (YSO) scintillating crystals and multi-anode photomultiplier tubes. The results of the laboratory tests of UBAT's functionality and performance are described in this
The detector setting, the pixel-to-pixel response to X-rays of different energies, the imaging capability for <50 keV X-rays, the localization accuracy measurements, and the combined test with the Block for X-ray and Gamma-Radiation Detection (BDRG) scintillator detector to check the efficiency of UBAT are all described. The UBAT instrument has been assembled and integrated with other equipment on UFFO-p and should be launched on board the Lomonosov satellite in late-2015.

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The design of the wide field monitor for LOFT
LOFT (Large Observatory For x-ray Timing) is one of the ESA M3 missions selected within the Cosmic Vision program in 2011 to carry out an assessment phase study and compete for a launch opportunity in 2022-2024. The phase-A studies of all M3 missions were completed at the end of 2013. LOFT is designed to carry on-board two instruments with sensitivity in the 2-50 keV range: a 10 m 2 class Large Area Detector (LAD) with a <1° collimated FoV and a wide field monitor (WFM) making use of coded masks and providing an instantaneous coverage of more than 1/3 of the sky. The prime goal of the WFM will be to detect transient sources to be observed by the LAD. However, thanks to its unique combination of a wide field of view (FoV) and energy resolution (better than 500 eV), the WFM will be also an excellent monitoring instrument to study the long term variability of many classes of X-ray sources. The WFM consists of 10 independent and identical coded mask cameras arranged in 5 pairs to provide the desired sky coverage. We provide here an overview of the instrument design, configuration, and capabilities of the LOFT WFM. The compact and modular design of the WFM could easily make the instrument concept adaptable for other missions.

General information
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The Large Observatory For x-ray Timing

The Large Observatory For x-ray Timing (LOFT) was studied within ESA M3 Cosmic Vision framework and participated in the final down-selection for a launch slot in 2022-2024. Thanks to the unprecedented combination of effective area and spectral resolution of its main instrument, LOFT will study the behaviour of matter under extreme conditions, such as the strong gravitational field in the innermost regions of accretion flows close to black holes and neutron stars, and the supra-nuclear densities in the interior of neutron stars. The science payload is based on a Large Area Detector (LAD, 10 m² effective area, 2-30 keV, 240 eV spectral resolution, 2 deg collimated field of view) and a WideField Monitor (WFM, 2-50 keV, 4 steradian field of view, 1 arcmin source location accuracy, 300 eV spectral resolution). The WFM is equipped with an on-board system for bright events (e.g. GRB) localization. The trigger time and position of these events are broadcast to the ground within 30 s from discovery. In this paper we present the status of the mission at the end of its Phase A study.

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The LOFT Burst Alert System and its Burst On-board Trigger

The ESA M3 candidate mission LOFT (Large Observatory For x-ray Timing) has been designed to study strong gravitational fields by observing compact objects, such as black-hole binaries or neutron-star systems and supermassive black-holes, based on the temporal analysis of photons collected by the primary instrument LAD (Large Area Detector), sensitive to X-rays from 2 to 50 keV, offering a very large effective area (>10 m²), but a small field of view (π sr), the WFM actually detects all types of transient sources, including Gamma-Ray Bursts (GRBs), which are of primary interest for a world-wide observers community. However, observing the quickly decaying GRB afterglows with ground-based telescopes needs the rapid knowledge of their precise localization. The task of the Loft Burst Alert System (LBAS) is therefore to detect in near-real-time GRBs (about 120 detections expected per year) and other transient sources, and to deliver their localization in less than 30 seconds to the observers, via a VHF antenna network. Real-time full resolution data download to ground being impossible, the real-time data processing is performed onboard by the LBOT (LOFT Burst On-board Trigger system). In this article we present the LBAS and its components, the LBOT and the associated ground-segment.
The LOFT Ground Segment

LOFT, the Large Observatory For X-ray Timing, was one of the ESA M3 mission candidates that completed their assessment phase at the end of 2013. LOFT is equipped with two instruments, the Large Area Detector (LAD) and the Wide Field Monitor (WFM). The LAD performs pointed observations of several targets per orbit (~90 minutes), providing roughly ~80 GB of proprietary data per day (the proprietary period will be 12 months). The WFM continuously monitors about 1/3 of the sky at a time and provides data for about ~100 sources a day, resulting in a total of ~20 GB of additional telemetry. The LOFT Burst alert System additionally identifies on-board bright impulsive events (e.g., Gamma-ray Bursts, GRBs) and broadcasts the corresponding position and trigger time to the ground using a dedicated system of ~15 VHF receivers. All WFM data are planned to be made public immediately. In this contribution we summarize the planned organization of the LOFT ground segment (GS), as established in the mission Yellow Book. We describe the expected GS contributions from ESA and the LOFT consortium. A review is provided of the planned LOFT data products and the details of the data flow, archiving and distribution. Despite LOFT was not selected for launch within the M3 call, its long assessment phase (> 2 years) led to a very solid mission design and an efficient planning of its ground operations.
The Status of the Ultra Fast Flash Observatory - Pathfinder

The Ultra Fast Flash Observatory (UFFO) is a project to study early optical emissions from Gamma Ray Bursts (GRBs). The primary scientific goal of UFFO is to see if GRBs can be calibrated with their rising times, so that they could be used as new standard candles. In order to minimize delay in optical follow-up measurements, which is now about 100 sec after trigger from the Swift experiment, we rotate a mirror to redirect light path so that optical measurement can be performed within a second after the trigger. We have developed a pathfinder mission, UFFO-pathfinder to launch on board the Lomonosov satellite in 2012. In this talk, I will present scientific motivations and descriptions of the design and development of UFFO-pathfinder. © 2013 Elsevier B.V.

General information

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Organisations: National Space Institute, Astrophysics, Ewha Womans University, National Taiwan University, University of Paris-Sud - University of Paris XI, Instituto de Astrofísica de Andalucía, National Space Organization, Korea Institute of Industrial Technology, Korea Advanced Institute of Science & Technology, University of Valencia, National United University, Sungkyunkwan University, Moscow State University, Yonsei University
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Main Research Area: Technical/natural sciences
Calibration and Simulation of the GRB trigger detector of the Ultra Fast Flash Observatory

The UFFO (Ultra-Fast Flash Observatory) is a GRB detector on board the Lomonosov satellite, to be launched in 2013. The GRB trigger is provided by an X-ray detector, called UBAT (UFFO Burst Alarm & Trigger Telescope), which detects X-rays from the GRB and then triggers to determine the direction of the GRB and then alerts the Slewing Mirror Telescope (SMT) to turn in the direction of the GRB and record the optical photon fluxes. This report details the calibration of the two components: the MAPMTs and the YSO crystals and simulations of the UBAT. The results show that this design can observe a GRB within a field of view of ±35° and can trigger in a time scale as short as 0.2 – 1.0 s after the appearance of a GRB X-ray spike.

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Organisations: National Space Institute, Astrophysics, National United University, University of Paris-Sud - University of Paris XI, Instituto de Astrofísica de Andalucía, National Space Organization, National Taiwan University, Korea Institute of Industrial Technology, Korea Advanced Institute of Science & Technology, University of Valencia, Ewha Womans University, Sungkyunkwan University, Yonsei University, Moscow State University
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Design and implementation of electronics and data acquisition system for Ultra-Fast Flash Observatory

The Ultra-Fast Flash Observatory (UFFO) Pathfinder for Gamma-Ray Bursts (GRBs) consists of two telescopes. The UFFO Burst Alert & Trigger Telescope (UBAT) handles the detection and localization of GRBs, and the Slewing Mirror Telescope (SMT) conducts the measurement of the UV/optical afterglow. UBAT is equipped with an X-ray detector, analog and digital signal readout electronics that detects X-rays from GRBs and determines the location. SMT is equipped with a stepping motor and the associated electronics to rotate the slewing mirror targeting the GRBs identified by UBAT. First the slewing mirror points to a GRB, then SMT obtains the optical image of the GRB using the intensified CCD and its readout electronics. The UFFO Data Acquisition system (UDAQ) is responsible for the overall function and operation of the observatory and the communication with the satellite main processor. In this paper we present the design and implementation of the electronics of UBAT and SMT as well as the architecture and implementation of UDAQ.
Development of Motorized Slewing Mirror Stage for the UFFO Project

The Ultra-Fast Flash Observatory (UFFO) is a space observatory for optical follow-ups of gamma ray bursts (GRBs), aiming to explore the first 60 seconds of GRBs optical emission. UFFO is utilized to catch early optical emissions from GRBs within few sec after trigger using a Gimbal mirror which redirects the optical path rather than slewing entire spacecraft. We have developed a 15 cm two-axis Gimbal mirror stage for the UFFO-Pathfinder which is going to be on board the Lomonosov satellite which is to be launched in 2013. The stage is designed for fast and accurate motion with given budgets of 3 kg of mass and 3 Watt of power. By employing stepping motors, the slewing mirror can rotate faster than 15 deg/sec so that objects in the UFFO coverage (60 deg × 60 deg) can be targeted in ~1 sec. The obtained targeting resolution is better 2 arcmin using a close-loop control with high precision rotary encoder. In this presentation, we will discuss details of design, manufacturing, space qualification tests, as well as performance tests.

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Organisations: National Space Institute, Astrophysics, UFFO Collaboration, National Taiwan University, Ewha Womans University, University of Paris-Sud - University of Paris XI, Instituto de Astrofísica de Andalucía, National Space Organization, Korea Institute of Industrial Technology, Korea Advanced Institute of Science & Technology, University of Valencia, National United University, Sungkyunkwan University, Moscow State University, Yonsei University

The Slewing Mirror Telescope (SMT) is the UV/optical telescope of UFFO-pathfinder. The SMT optical system is a Ritchey-Chrétien (RC) telescope of 100 mm diameter pointed by means of a gimbal-mounted flat mirror in front of the telescope. The RC telescope has a $17 \times 17$\,arcmin$^2$ in Field of View and 4.3\,arcsec resolution (full width half maximum of the point spread function) The beam-steering mirror enables the SMT to access a $35 \times 35$\,degree region and point and settle within 1\,sec. All mirrors were fabricated to about 0.02\,wavelengths RMS in wave front error (WFE) and 84.7\% average reflectivity over 200\,nm $\sim$ 650\,nm. The RC telescope was aligned to 0.05\,wavelengths RMS in WFE (test wavelength 632.8\,nm). In this paper, the technical details of the RC telescope and slewing mirror system assembly, integration, and testing are given shortly, and performance tests of the full SMT optical system are reported.
In-Flight Calibrations of UFFO-Pathfinder

The Ultra-Fast Flash Observatory (UFFO), which will be launched onboard the Lomonosov spacecraft, contains two crucial instruments: UFFO Burst Alert & Trigger Telescope (UBAT) for detection and localization of Gamma-Ray Bursts (GRBs) and the fast-response Slewing Mirror Telescope (SMT) designed for the observation of the prompt optical/UV counterparts. Here we discuss the in-space calibrations of the UBAT detector and SMT telescope. After the launch, the observations of the standard X-ray sources such as pulsar in Crab nebula will provide data for necessary calibrations of UBAT. Several standard stars will be used for the photometric calibration of SMT. The celestial X-ray sources, e.g. X-ray binaries with bright optical sources in their close angular vicinity will serve for the cross-calibration of UBAT and SMT.
INTEGRAL/JEM-X detection of a possible new outburst from GRS 1747-312

During the observations performed during INTEGRAL monitoring of the Galactic Bulge region (see ATel #438) on 2013 March 11, we detected enhanced emission from the direction of the globular cluster Terzan 6 using the INTEGRAL/JEM-X instrument. This likely indicates that the bursting low-mass X-ray binary GRS 1747-312 is active again (as also reported by the MAXI transient alert on 2013-03-11 12:45:25 UT), although it cannot be fully excluded that another X-ray binary has become active in this cluster.

The source is detected in the combined JEM-X mosaic at 25 sigma (effective exposure time 12.5 ksec) with average fluxes of 41+/-3 mCrab in the 3-10 keV energy band and 23+/-4 mCrab in the 10-25 keV energy band. The JEM-X spectrum is well fit by using a black-body model with a temperature of 1.7+/-0.2 keV and an absorption column density fixed to the Galactic value in the direction to the cluster, i.e. 6E21 cm^-2. This gives a 3-10 keV flux of 6.0x10^-10 ergs/cm^2/s.

No type-I X-ray bursts are visible in the JEM-X light-curve.

The source is not detected by IBIS/ISGRI. We estimated an upper limit on the source flux in the 20-40 keV energy band of 8 mCrab at 3 sigma confidence level (effective exposure time 11 ksec).

The next INTEGRAL observations in the direction of the source are planned for 20 March 2013.

INTEGRAL/JEM-X detects a new outburst of the Rapid Burster (MXB 1730-335)

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INTEGRAL sees Swift J174510.8-2624, Swift J1753.7-2544, XTE J1810-189, XTE J1739-285 to be still on, while 1E 1740.7-2942 is off

LOFT - The Large Observatory for X-ray Timing: Assessment Study Report
Observing GRBs with the LOFT Wide Field Monitor

LOFT (Large Observatory For X-ray Timing) is one of the four candidate missions currently under assessment study for the M3 mission in ESAs Cosmic Vision program to be launched in 2024. LOFT will carry two instruments with prime sensitivity in the 2–30 keV range: a 10 m² class large area detector (LAD) with a <1° collimated field of view and a wide field monitor (WFM) instrument. The WFM is based on the coded mask principle, and 5 camera units will provide coverage of more than 1/3 of the sky. The prime goal of the WFM is to detect transient sources to be observed by the LAD. With its wide field of view and good energy resolution of <500 eV, the WFM will be an excellent instrument for detecting and studying GRBs and X-ray flashes. The WFM will be able to detect ~150 gamma ray bursts per year, and a burst alert system will enable the distribution of ~100 GRB positions per year with a ~1 arcmin location accuracy within 30 s of the burst.

General information

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Organisations: National Space Institute, Astrophysics, IT-Department, Institute of Space Sciences, National Institute for Astrophysics, University of Geneva, IRAP, Instituto de Astrofisica de Andalucia, Commissariat Energie Atomique, SRON, Academy of Sciences of the Czech Republic, University of Amsterdam, Space Research Centre, Instituto Nazionale di Fisica Nucleare, University of Tubingen, University of Erlangen-Nuremberg, Copernicus Astronomical Centre, University of Helsinki
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The Slewing Mirror Telescope (SMT) was proposed for rapid response to prompt UV/optical photons from Gamma-Ray Bursts (GRBs). The SMT is a key component of the Ultra-Fast Flash Observatory (UFFO)-pathfinder, which will be launched aboard the Lomonosov spacecraft at the end of 2013. The SMT utilizes a motorized mirror that slews rapidly forward to its target within a second after triggering by an X-ray coded mask camera, which makes unnecessary a reorientation of the entire spacecraft. Subsequent measurement of the UV/optical is accomplished by a 10 cm aperture Ritchey-Chrétien telescope and the focal plane detector of Intensified Charge-Coupled Device (ICCD). The ICCD is sensitive to UV/optical photons of 200–650 nm in wavelength by using a UV-enhanced S20 photocathode and amplifies photoelectrons at a gain of 104–106 in double Micro-Channel Plates. These photons are read out by a Kodak KAI-0340 interline CCD sensor and a CCD Signal Processor with 10-bit Analog-to-Digital Converter. Various control clocks for CCD readout are implemented using a Field Programmable Gate Array (FPGA). The SMT readout is in charge of not only data acquisition, storage and transfer, but also control of the slewing mirror, the ICCD high voltage adjustments, power distribution, and system monitoring by interfacing to the UFFO-pathfinder. These functions are realized in the FPGA to minimize power consumption and to enhance processing time. The SMT readout electronics are designed and built to meet the spacecraft's constraints of power consumption, mass, and volume. The entire system is integrated with the SMT optics, as is the UFFO-pathfinder. The system has been tested and satisfies the conditions of launch and those of operation in space; those associated with shock and vibration and those associated with thermal and vacuum, respectively. In this paper, we present the SMT readout electronics: the design, construction, and performance, as well as the results of space environment test.
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Scopus rating (2012): SJR 0.383 SNIP 0.846 CiteScore 1.14
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): SJR 1.05 SNIP 2.342 CiteScore 1.93
ISI indexed (2011): ISI indexed yes
BFI (2010): BFI-level 1
Scopus rating (2010): SJR 1.519 SNIP 2.798
BFI (2009): BFI-level 1
Scopus rating (2009): SJR 0.689 SNIP 2.715
BFI (2008): BFI-level 1
Scopus rating (2008): SJR 0.279 SNIP 0.596
Scopus rating (2007): SJR 0.206 SNIP 0.491
Original language: English
Electronic versions:
2013_JINST_8_P07012.pdf
DOIs:
10.1088/1748-0221/8/07/P07012
Links:
http://iopscience.iop.org/1748-0221/8/07/P07012/

Relations
Projects:
Readout of the UFFO Slewing Mirror Telescope to detect UV/optical photons from Gamma-Ray Bursts
Source: dtu
Source-ID: u::8139
Publication: Research - peer-review › Journal article – Annual report year: 2013

Report on (non-)activity in the Galactic bulge region as seen by INTEGRAL

General information
State: Published
Organisations: National Space Institute, Astrophysics, European Space Astronomy Centre and European Space Agency, University of Amsterdam, CAB/INTA-CSIC, APC, Southampton, University of Geneva, National Institute for Astrophysics, University of Tokyo, SRON/CIA/RU, NASA Goddard Space Flight Center, European Space Agency, University of Maryland
Number of pages: 1
Publication date: 2013
Main Research Area: Technical/natural sciences

Publication information
Journal: The Astronomer’s Telegram : ATel
Article number: ATel #5332
Original language: English
Electronic versions:
ATel #5332_Report on (non-)activity in the Galactic bulge region as seen by INTEGRAL.pdf
Links:
Slewing Mirror Telescope and the Data Acquisition System for the UFFO-Pathfinder

The Ultra-Fast Flash Observatory (UFFO) aims to detect the earliest moment of Gamma-Ray Bursts (GRBs) which is not well known, resulting into the enhancement of GRB mechanism understanding. The pathfinder mission was proposed to be a scaled-down version of UFFO, and only contains the UFFO Burst Alert & Trigger Telescope (UBAT) measuring the X-ray/gamma-ray with the wide-field of view and the Slewing Mirror Telescope (SMT) with a rapid-response for the UV/optical photons. Once the UBAT detects a GRB candidate with the position accuracy of 10 arcmin, the SMT steers the UV/optical photons from the candidate to the telescope by the fast rotatable mirror and provides the early UV/optical photons measurements with 4 arcsec accuracy. The SMT has a modified Ritchey-Chrétien telescope with the aperture size of 10 cm diameter including the rotatable mirror and the image readout by the intensified charge-coupled device. There is a key board called the UFFO Data Acquisition system (UDAQ) that manages the communication of each telescope and also of the satellite and the UFFO overall operation. This pathfinder is designed and built within the limited size and weight of ~20 kg and the low power consumption up to ~30 W. We will discuss the design and performance of the UFFO-pathfinder, and its integration to the Lomonosov satellite.

General information
State: Published
Organisations: National Space Institute, Astrophysics, Sungkyunkwan University, University of Paris-Sud - University of Paris XI, Instituto de Astrofísica de Andalucía, National Taiwan University, Korea Advanced Institute of Science & Technology, University of Valencia, University of California, National United University, Ewha Womans University, Yonsei University, Moscow State University
Authors: Lim, H. (Ekstern), Ahmad, S. (Ekstern), Barrillon, P. (Ekstern), Brandt, S. (Intern), Budtz-Jørgensen, C. (Intern), Castro-Tirado, A. (Ekstern), Chen, P. (Ekstern), Choi, Y. (Ekstern), Connell, P. (Ekstern), Dagoret-Campagne, S. (Ekstern), Eyles, C. (Ekstern), Grossan, B. (Ekstern), Huang Huang, M. (Ekstern), Jung, A. (Ekstern), Jeong, S. (Ekstern), Kim, J. (Ekstern), Kim, M. (Ekstern), Kim, S. (Ekstern), Kim, Y. (Ekstern), Krasnov, A. (Ekstern), Lee, J. (Ekstern), Linder, E. (Ekstern), Liu, T. (Ekstern), Lund, N. (Intern), Min, K. (Ekstern), Na, G. (Ekstern), Nam, J. (Ekstern), Panasyuk, M. (Ekstern), Park, I. (Ekstern), Ripa, J. (Ekstern), Reglero, V. (Ekstern), Rodrigo, J. (Ekstern), Smoor, G. (Ekstern), Suh, J. (Ekstern), Svertilov, S. (Ekstern), Vedenkin, N. (Ekstern), Wang, M. (Ekstern), Yashin, I. (Ekstern)
Pages: 537-543
Publication date: 2013
Main Research Area: Technical/natural sciences

Publication information
Journal: E A S Publications Series
Volume: 61
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Scopus rating (2014): SJR 0.193 SNIP 0.104 CiteScore 0.18
Scopus rating (2013): SJR 0.204 SNIP 0.095 CiteScore 0.2
ISI indexed (2013): ISI indexed no
Web of Science (2013): Indexed yes
Scopus rating (2012): SJR 0.228 SNIP 0.157 CiteScore 0.26
ISI indexed (2012): ISI indexed no
Scopus rating (2011): SJR 0.195 SNIP 0.087 CiteScore 0.18
ISI indexed (2011): ISI indexed no
Scopus rating (2010): SJR 0.201 SNIP 0.139
Scopus rating (2009): SJR 0.163 SNIP 0.065
Scopus rating (2008): SJR 0.193 SNIP 0.183
Scopus rating (2007): SJR 0.136 SNIP 0.07
Scopus rating (2006): SJR 0.165 SNIP 0.176
Scopus rating (2005): SJR 0.171 SNIP 0.104
Original language: English
Electronic versions:
GRB_EAS_S16334760610000878a.pdf
DOIs:
Slewing Mirror Telescope optics for the early observation of UV/optical photons from Gamma-Ray Bursts

We report on design, manufacture, and testing of a Slewing Mirror Telescope (SMT), the first of its kind and a part of Ultra-Fast Flash Observatory-pathfinder (UFFO-p) for space-based prompt measurement of early UV/optical light curves from Gamma-Ray Bursts (GRBs). Using a fast slewing mirror of 150 mm diameter mounted on a 2 axis gimbal stage, SMT can deliver the images of GRB optical counterparts to the intensified CCD detector within 1.5~1.8 s over ± 35 degrees in the slewing field of view. Its Ritchey-Chrétien telescope of 100 mm diameter provides a 17 × 17 arcmin² instantaneous field of view. Technical details of design, construction, the laboratory performance tests in space environments for this unique SMT are described in conjunction with the plan for in-orbit operation onboard the Lomonosov satellite in 2013.

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Scopus rating (2011): SJR 2.579 SNIP 2.606 CiteScore 4.04
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 2
Scopus rating (2010): SJR 2.943 SNIP 2.466
Web of Science (2010): Indexed yes
BFI (2009): BFI-level 2
Scopus rating (2009): SJR 3.092 SNIP 2.669
Web of Science (2009): Indexed yes
BFI (2008): BFI-level 2
Scopus rating (2008): SJR 3.195 SNIP 2.393
Web of Science (2008): Indexed yes
Scopus rating (2007): SJR 3.27 SNIP 2.032
Web of Science (2007): Indexed yes
Scopus rating (2006): SJR 3.233 SNIP 2.326
Web of Science (2006): Indexed yes
Scopus rating (2005): SJR 3.334 SNIP 2.379
Web of Science (2005): Indexed yes
Scopus rating (2004): SJR 2.833 SNIP 2.499
Web of Science (2004): Indexed yes
Scopus rating (2003): SJR 2.688 SNIP 2.193
Web of Science (2003): Indexed yes
Scopus rating (2002): SJR 1.547 SNIP 1.673
Web of Science (2002): Indexed yes
Scopus rating (2001): SJR 1.442 SNIP 1.39
Web of Science (2001): Indexed yes
Scopus rating (2000): SJR 1.246 SNIP 0.714
Web of Science (2000): Indexed yes
Scopus rating (1999): SJR 1.381 SNIP 0.838
Original language: English
Electronic versions:
Optical_Express-21-2-2263.pdf
DOIs:
10.1364/OE.21.002263
Links:
http://www.opticsinfobase.org/view_article.cfm?gotourl=http%3A%2F%2Fwww.opticsinfobase.org%2FDirectPDFAccess%2F0536C1A2-B9AA-5D5C-F0038200E5CD27E8_248692%2Foe-21-2-2263.pdf%3Fda%3D1%26id%3D248692%26seq%3D0%26mobile%3Dno&org=

Relations
Projects:
Slewing Mirror Telescope optics for the early observation of UV/optical photons from Gamma-Ray Bursts
Source: dtu
Source-ID: u::6809
Publication: Research - peer-review › Journal article – Annual report year: 2013

Status report of the UFFO-pathfinder
Gamma-Ray Bursts (GRBs) are the most energetic explosions in the universe, their optical photon flux rise very quickly, typically within one minute, then fall off gradually. Hundreds of GRBs optical light curves have been measured since the first discovery of GRB in 1967. However, only a handful of measurements have been made within a minute after the gamma ray signal. Because of this drawback, the short-hard type GRBs and rapid-rising GRBs, which may account for 30% of all GRBs, remain practically unexplored. To reach sub-minute timescales, the Ultra-Fast Flash Observatory (UFFO) uses a rapidly moving mirror to redirect the optical beam instead of slewing the entire spacecraft. The first realization of this concept is UFFO-pathfinder, which is equipped with fast-response Slewing Mirror Telescope (SMT) and a UFFO Burst Alert and Trigger Telescope (UBAT). SMT has a slewing mirror to redirect optical photons into a telescope and then record them by an intensified CCD. UBAT uses coded mask to provide X-ray trigger from a GRB and provides the GRB location for SMT. UFFO's sub-minute measurements of the optical emission of dozens of GRBs each year will result in a more
The UFFO-pathfinder is fully integrated with the Lomonosov satellite and is scheduled to be launched in late 2013 or early 2014. We will present the latest progress in this conference.

**General information**
State: Published
Organisations: National Space Institute, Astrophysics and Atmospheric Physics, National United University, Sungkyunkwan University, University of Paris-Sud - University of Paris XI, Instituto de Astrofísica de Andalucía, National Space Organization, National Taiwan University, Korea Advanced Institute of Science and Technology, University of Valencia, University of California at Berkeley, Ewha Womans University, Yonsei University, Moscow State University
Number of pages: 4
Publication date: 2013

**Host publication information**
Title of host publication: Proceedings of the 33rd International Cosmic Ray Conference
Main Research Area: Technical/natural sciences
Electronic versions:
Huang_2.pdf

**Bibliographical note**
}

**Relations**
Projects:
Status report of the UFFO-pathfinder
Source: PublicationPreSubmission
Source-ID: 128685907
Publication: Research - peer-review › Article in proceedings – Annual report year: 2013

**The Science Payload of the LOFT Mission**
The scientific payload onboard the Large Observatory For x-ray Timing mission (LOFT, see presentation by P. Ray et al. at this meeting) is composed of two instruments, the Large Area Detector (LAD, 10 m2 effective area in the primary energy range 2-30 keV, 1-deg collimated field of view) and the Wide Field Monitor (WFM, arcmin imaging over a 4-steradian field of view in the primary energy range 2-50 keV). In this paper we present the design solutions for the two experiments, together with their characteristics and anticipated scientific performance.

**General information**
State: Published
Organisations: National Space Institute, Astrophysics, National Institute for Astrophysics, SRON, Universiteit van Amsterdam, NRL, JAXA, University of Erlangen-Nuremberg, IRAP, Université de Genève, MSSL, Institute of Space Sciences, Eberhard-Karls-Universität Tübingen
Number of pages: 1
Publication date: 2013
Event: Abstract from 13th meeting of the high energy astrophysics division (HEAD), California, United States.
Main Research Area: Technical/natural sciences
Links:
http://adsabs.harvard.edu/abs/2013HEAD...1312316F
The Ultra-Fast Flash Observatory (UFFO) project is a space observatory for optical follow-ups of GRBs, aiming to explore the first 60 seconds of GRBs optical emission. Using fast moving mirrors to redirect our optical path rather than slewing the entire spacecraft, UFFO is utilized to catch early optical emissions from GRB within 1 sec. We have developed the UFFO Pathfinder Telescope which is going to be on board of the Lomonosov satellite and launched in middle of 2012. We will discuss about scientific potentials of the UFFO project and present the payload development status, especially for Slewing Mirror Telescope which is the key instrument of the UFFO-pathfinder mission.

Number of pages: 8
Publication date: 2013
Main Research Area: Technical/natural sciences

Publication information
Journal: Modern Physics Letters A
Volume: 28
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Article number: 1340003
ISSN (Print): 0217-7323
Ratings:
BFI (2017): BFI-level 1
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BFI (2016): BFI-level 1
Scopus rating (2016): SJR 0.6 SNIP 0.514 CiteScore 0.85
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 0.609 SNIP 0.516 CiteScore 0.83
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 0.624 SNIP 0.594 CiteScore 0.95
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 0.72 SNIP 0.582 CiteScore 1.07
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): SJR 0.718 SNIP 0.535 CiteScore 0.95
ISI indexed (2012): ISI indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): SJR 0.719 SNIP 0.511 CiteScore 0.9
ISI indexed (2011): ISI indexed yes
BFI (2010): BFI-level 1
Scopus rating (2010): SJR 0.71 SNIP 0.466
BFI (2009): BFI-level 1
Scopus rating (2009): SJR 0.77 SNIP 0.47
BFI (2008): BFI-level 1
Scopus rating (2008): SJR 0.897 SNIP 0.635
Scopus rating (2007): SJR 0.973 SNIP 0.658
Scopus rating (2006): SJR 0.798 SNIP 0.573
Scopus rating (2005): SJR 0.736 SNIP 0.527
Scopus rating (2004): SJR 0.756 SNIP 0.554
Scopus rating (2003): SJR 0.987 SNIP 0.578
Scopus rating (2002): SJR 0.89 SNIP 0.623
Scopus rating (2001): SJR 0.739 SNIP 0.493
Scopus rating (2000): SJR 0.81 SNIP 0.512
Scopus rating (1999): SJR 0.969 SNIP 0.585
Original language: English
Gamma ray bursts, After glow, Fast slewing
DOIs:
10.1142/S0217732313400038

Relations
Projects:
The UFFO slewing mirror telescope for early optical observation from gamma ray bursts
Ultra-Fast Flash Observatory: Fast Response Space Missions for Early Time Phase of Gamma Ray Bursts

One of the unexplored domains in the study of gamma-ray bursts (GRBs) is the early time phase of the optical light curve. We have proposed Ultra-Fast Flash Observatory (UFFO) to address this question through extraordinary opportunities presented by a series of small space missions. The UFFO is equipped with a fast-response Slewing Mirror Telescope that uses a rapidly moving mirror or mirror array to redirect the optical beam rather than slewing the entire spacecraft or telescope to aim the optical instrument at the GRB position. The UFFO will probe the early optical rise of GRBs with sub-second response, for the first time, opening a completely new frontier in GRB and transient studies. Its fast response measurements of the optical emission of dozens of GRB each year will provide unique probes of the burst mechanism and test the prospect of GRB as a new standard candle, potentially opening up the $z > 10$ universe. We describe the current limit in early photon measurements, the aspects of early photon physics, our soon-to-be-launched UFFO-pathfinder mission, and our next planned mission, the UFFO-100.
Ultra-Fast Flash Observatory for the observation of early photons from gamma-ray bursts: Paper

One of the least documented and understood aspects of gamma-ray bursts (GRBs) is the rise phase of the optical light curve. The Ultra-Fast Flash Observatory (UFFO) is an effort to address this question through extraordinary opportunities presented by a series of space missions including a small spacecraft observatory. The UFFO is equipped with a fast-response Slewing Mirror Telescope (SMT) that uses a rapidly moving mirror or mirror array to redirect the optical beam rather than slewing the entire spacecraft to aim the optical instrument at the GRB position. The UFFO will probe the early optical rise of GRBs with sub-second response, for the first time, opening a completely new frontier in GRBs and transient studies. Its fast response measurements of the optical emission of dozens of GRBs each year will provide unique probes of the burst mechanism and test the prospect of GRBs as a new standard candle, potentially opening up the \( z > 10 \) universe. For the first time we employ a motorized slewing stage in SMT that can point to the event within 1 s after the x-ray trigger provided by the UFFO Burst Alert and Trigger Telescope. These two scientific instruments comprise the UFFO-pathfinder payload, which will be placed onboard the Lomonosov satellite and launched in 2013. The UFFO-pathfinder is the first step of our long-term program of space instruments for rapid-response GRB observations. We describe early photon science, our soon-to-be-launched UFFO-pathfinder hardware and mission, and our next planned mission, the UFFO-100.

General information
State: Published
Organisations: National Space Institute, Astrophysics, Sungkyunkwan University, Instituto de Astrofísica de Andalucía, National Taiwan University, Universidad de Valencia, University of California at Berkeley, National United University, Ewha Womans University, Korea Advanced Institute of Science & Technology, Moscow Lomonosov State University, Yonsei University
Ultra-Fast Flash Observatory (uffo) for Observation of Early Photons from Gamma Ray Bursts

One of the least documented and understood aspects of gamma-ray bursts (GRB) is the rise phase of the optical light curve. The Ultra-Fast Flash Observatory (UFFO) is an effort to address this question through extraordinary opportunities presented by a series of space missions including a small spacecraft observatory. The UFFO is equipped with a fast-response Slewing Mirror Telescope (SMT) which uses rapidly moving mirror or mirror arrays to redirect the optical beam rather than slewing the entire spacecraft to aim the optical instrument at the GRB position. The UFFO will probe the early optical rise of GRBs with a sub-second response, for the first time, opening a completely new frontier in GRB and transient studies, the only GRB system which can point and measure on these time scales. Its fast response measurements of the optical emission of dozens of GRB each year will provide unique probes of the burst mechanism, shock breakouts in core-collapse supernovae, tidal disruptions around black holes, test Lorentz violation, be the electromagnetic counterpart to neutrino and gravitational wave signatures of the violent universe, and verify the prospect of GRB as a new standard candle potentially opening up the z>10 universe. As a first step, we employ a motorized slewing stage in SMT which can point to the event within 1s after X-ray trigger, in the UFFO-pathfinder payload onboard the Lomonosov satellite to be launched in 2012. The pathfinder was a small and limited, yet remarkably powerful micro-observatory for rapid optical response to bright gamma-ray bursts, the first part of our GRB and rapid-response long-term program. We describe the early photon science, the space mission of UFFO-pathfinder, and our plan for the next step.

General information
State: Published
Organisations: National Space Institute, Astrophysics, Ewha Womans University, University of Paris-Sud - University of Paris XI, Instituto de Astrofísica de Andalucía, National Taiwan University, Korea Advanced Institute of Science & Technology, University of Valencia, University of California, National United University, Moscow State University, Yonsei University
Pages: 259-273
Publication date: 2013

Host publication information
Title of host publication: Towards Ultimate Understanding of the Universe - Proceedings of the First Lecospa Symposium
Publisher: World Scientific Publishing Co Pte Ltd
Editor: Pisin, C.
ISBN (Print): 9789814449373
Main Research Area: Technical/natural sciences
Conference: First Lecospa Symposium, Taipei, Taiwan, Province of China, 06/02/2012 - 06/02/2012
Gamma Ray Burst, Ultra-fast flash observatory (UFFO), Slewing Mirror Telescope (SMT), Lomonosov spacecraft, Optical light curve, UV/Optical afterglows
DOIs: 10.1142/9789814449373_0023

Relations
Projects:
Ultra-Fast Flash Observatory (uffo) for Observation of Early Photons from Gamma Ray Bursts
Publication: Research - peer-review › Article in proceedings – Annual report year: 2013

1E 1740.7-2942 (the Great Annihilator) enters a low-intensity state

General information
State: Published
Organisations: National Space Institute, Astrophysics
Pages: ATel #4471
Publication date: 2012
Main Research Area: Technical/natural sciences

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Journal: The Astronomer’s Telegram : ATel
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X-ray, Binary, Black hole, Variables
Electronic versions: ATel #4471_ 1E 1740.pdf
Links:
http://www.astronomerstelegram.org/?read=4471
Source: dtu
Source-ID: u::6077
Publication: Research - peer-review › Journal article – Annual report year: 2012

Accelerator experiments with soft protons and hyper-velocity dust particles: application to ongoing projects of future X-ray missions
We report on our activities, currently in progress, aimed at performing accelerator experiments with soft protons and hyper-velocity dust particles. They include tests of different types of X-ray detectors and related components (such as filters) and measurements of scattering of soft protons and hyper-velocity dust particles off X-ray mirror shells. These activities have been identified as a goal in the context of a number of ongoing space projects in order to assess the risk posed by environmental radiation and dust and qualify the adopted instrumentation with respect to possible damage or performance degradation. In this paper we focus on tests for the Silicon Drift Detectors (SDDs) used aboard the LOFT space mission. We use the Van de Graaff accelerators at the University of Tübingen and at the Max Planck Institute for Nuclear Physics (MPIK) in Heidelberg, for soft proton and hyper-velocity dust tests respectively. We present the experimental set-up adopted to perform the tests, status of the activities and some very preliminary results achieved at present time.

General information
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Organisations: National Space Institute, Astrophysics
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Publication date: 2012
Conference: Space Telescopes and Instrumentation 2012: Ultraviolet to Gamma Ray, Amsterdam, Netherlands, 01/07/2012 - 01/07/2012
Main Research Area: Technical/natural sciences

Publication information
Journal: Proceedings of SPIE, the International Society for Optical Engineering
Volume: 8443
Issue number: PART 1
ISSN (Print): 0277-786X
A next generation Ultra-Fast Flash Observatory (UFFO-100) for IR/optical observations of the rise phase of gamma-ray bursts

The Swift Gamma-ray Burst (GRB) observatory responds to GRB triggers with optical observations in ~ 100 s, but cannot respond faster than ~ 60 s. While some rapid-response ground-based telescopes have responded quickly, the number of sub-60 s detections remains small. In 2013 June, the Ultra-Fast Flash Observatory-Pathfinder is expected to be launched on the <i>Lomonosov</i> spacecraft to investigate early optical GRB emission. Though possessing unique capability for optical rapid-response, this pathfinder mission is necessarily limited in sensitivity and event rate; here we discuss the next generation of rapid-response space observatory instruments. We list science topics motivating our instruments, those that
require rapid optical-IR GRB response, including: A survey of GRB rise shapes/times, measurements of optical bulk Lorentz factors, investigation of magnetic dominated (vs. non-magnetic) jet models, internal vs. external shock origin of prompt optical emission, the use of GRBs for cosmology, and dust evaporation in the GRB environment. We also address the impacts of the characteristics of GRB observing on our instrument and observatory design. We describe our instrument designs and choices for a next generation space observatory as a second instrument on a low-earth orbit spacecraft, with a 120 kg instrument mass budget. Restricted to relatively modest mass, power, and launch resources, we find that a coded mask X-ray camera with 1024 cm$^2$ of detector area could rapidly locate about 64 GRB triggers/year. Responding to the locations from the X-ray camera, a 30 cm aperture telescope with a beam-steering system for rapid (~1 s) response and a near-IR camera should detect ~29 GRB, given $i$-Swift$/$GRB properties. The additional optical camera would permit the measurement of a broadband optical-IR slope, allowing better characterization of the emission, and dynamic measurement of dust extinction at the source, for the first time.© (2012) COPYRIGHT Society of Photo-Optical Instrumentation Engineers (SPIE). Downloading of the abstract is permitted for personal use only.

General information
State: Published
Organisations: National Space Institute, Astrophysics
Number of pages: 13
Pages: 84432R
Publication date: 2012
Conference: Space Telescopes and Instrumentation 2012: Ultraviolet to Gamma Ray, Amsterdam, Netherlands, 01/07/2012 - 01/07/2012
Main Research Area: Technical/natural sciences

Publication information
Journal: Proceedings of SPIE - International Society for Optical Engineering
Volume: 8443
ISSN (Print): 0277-786X
Ratings:
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Web of Science (2016): Indexed yes
Scopus rating (2015): CiteScore 0.3
Scopus rating (2014): CiteScore 0.3
Scopus rating (2013): CiteScore 0.26
ISI indexed (2013): ISI indexed no
Web of Science (2013): Indexed yes
Scopus rating (2012): CiteScore 0.27
ISI indexed (2012): ISI indexed no
Web of Science (2012): Indexed yes
Scopus rating (2011): CiteScore 0.31
Web of Science (2010): Indexed yes
Web of Science (2008): Indexed yes
Web of Science (2007): Indexed yes
Web of Science (2004): Indexed yes
Web of Science (2002): Indexed yes
Original language: English
gamma-ray bursts, X-ray instrumentation, Space astrophysics missions, Space astrophysics instrumentation, Ultra-fast flash observatory (UFFO)

DOIs:
10.1117/12.926391

Relations
Activities:
Space Telescopes and Instrumentation 2012: Ultraviolet to Gamma Ray
Projects:
A next generation Ultra-Fast Flash Observatory (UFFO-100) for IR/optical observations of the rise phase of gamma-ray bursts

Design and Implementation of the UFFO burst alert and trigger telescope

The Ultra Fast Flash Observatory pathfinder (UFFO-p) is a telescope system designed for the detection of the prompt optical/UV photons from Gamma-Ray Bursts (GRBs), and it will be launched onboard the Lomonosov spacecraft in 2012. The UFFO-p consists of two instruments: the UFFO Burst Alert and Trigger telescope (UBAT) for the detection and location of GRBs, and the Slewing Mirror Telescope (SMT) for measurement of the UV/optical afterglow. The UBAT is a coded-mask aperture X-ray camera with a wide field of view (FOV) of 1.8 sr. The detector module consists of the YSO (Yttrium Oxyorthosilicate) scintillator crystal array, a grid of 36 multi-anode photomultipliers (MAPMTs), and analog and digital readout electronics. When the γ /X-ray photons hit the YSO scintillator crystal array, it produces UV photons by scintillation in proportion to the energy of the incident γ /X-ray photons. The UBAT detects X-ray source of GRB in the 5 ~ 100 keV energy range, localizes the GRB within 10 arcmin, and sends the SMT this information as well as drift correction in real time. All the process is controlled by a Field Programmable Gates Arrays (FPGA) to reduce the processing time. We are in the final stages of the development and expect to deliver the instrument for the integration with the spacecraft. In what follows we present the design, fabrication and performance test of the UBAT.
INTEGRAL Bulge monitoring program detects several active transients with JEM-X

General information
State: Published
Organisations: Astrophysics, National Space Institute, SRON, European Space Astronomy Centre and European Space Agency, CAB/INTA-CSIC, APC, Southampton, National Institute for Astrophysics, ISAS, NASA Goddard Space Flight Center, European Space Agency, University of Amsterdam
Number of pages: 1
Pages: ATel #3930
Publication date: 2012
Main Research Area: Technical/natural sciences
Publication information
Journal: The Astronomer’s Telegram
Original language: English
X-ray, Black hole, Neutron star, Transient
Links:
http://www.astronomerstelegram.org/?read=3930

INTEGRAL catches a type-I X-ray burst from the unclassified X-ray source 1RXS J180408.9-342058

General information
State: Published
Organisations: National Space Institute, Astrophysics, ISAS, SRON, European Space Astronomy Centre and European Space Agency, NASA Goddard Space Flight Center, European Space Agency, National Institute for Astrophysics, University of Amsterdam, CAB/INTA-CSIC, APC, University of Southampton
Number of pages: 1
Pages: ATel #4050
Publication date: 2012
Main Research Area: Technical/natural sciences
Publication information
Journal: The Astronomer’s Telegram
Original language: English
X-ray, Neutron star, Transient
Links:
http://www.astronomerstelegram.org/?read=4050

INTEGRAL Galactic Bulge monitoring detects activity from XMMU J174445.5-295044 with JEM-X

General information
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The LAD is a collimated (to distances very close to black holes and neutron stars, as well as the physical state of ultradense matter. These primary missions of the Cosmic Vision programme. The launch window is currently planned for between 2022 and 2024. LOFT is designed to exploit the diagnostics of rapid X-ray flux and spectral variability that directly probe the motion of matter down to distances very close to black holes and neutron stars, as well as the physical state of ultradense matter. These primary science goals will be addressed by a payload composed of a Large Area Detector (LAD) and a Wide Field Monitor (WFM).

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Simulations of the x-ray imaging capabilities of the silicon drift detectors (SDD) for the LOFT wide-field monitor

The Large Observatory For X-ray Timing (LOFT), selected by ESA as one of the four Cosmic Vision M3 candidate missions to undergo an assessment phase, will revolutionize the study of compact objects in our galaxy and of the brightest supermassive black holes in active galactic nuclei. The Large Area Detector (LAD), carrying an unprecedented effective area of 10 m², is complemented by a coded-mask Wide Field Monitor, in charge of monitoring a large fraction of the sky potentially accessible to the LAD, to provide the history and context for the sources observed by LAD and to trigger its observations on their most interesting and extreme states. In this paper we present detailed simulations of the imaging capabilities of the Silicon Drift Detectors developed for the LOFT Wide Field Monitor detection plane. The simulations explore a large parameter space for both the detector design and the environmental conditions, allowing us to optimize the detector characteristics and demonstrating the X-ray imaging performance of the large-area SDDs in the 2-50 keV energy band.
High-time-resolution X-ray observations of compact objects provide direct access to strong-field gravity, to the equation of state of ultradense matter and to black hole masses and spins. A 10 m²-class instrument in combination with good spectral resolution is required to exploit the relevant diagnostics and answer two of the fundamental questions of the European Space Agency (ESA) Cosmic Vision Theme "Matter under extreme conditions", namely: does matter orbiting close to the event horizon follow the predictions of general relativity? What is the equation of state of matter in neutron stars? The Large Observatory For X-ray Timing (LOFT), selected by ESA as one of the four Cosmic Vision M3 candidate missions to undergo an assessment phase, will revolutionise the study of collapsed objects in our galaxy and of the brightest supermassive black holes in active galactic nuclei. Thanks to an innovative design and the development of large-area monolithic silicon drift detectors, the Large Area Detector (LAD) on board LOFT will achieve an effective area of ~12 m² (more than an order of magnitude larger than any spaceborne predecessor) in the 2-30 keV range (up to 50 keV in expanded mode), yet still fits a conventional platform and small/medium-class launcher. With this large area and a spectral resolution of...
The LOFT (Large Observatory for X-ray Timing) background simulations
The Large Observatory For X-ray Timing (LOFT) is an innovative medium-class mission selected for an assessment phase in the framework of the ESA M3 Cosmic Vision call. LOFT is intended to answer fundamental questions about the behavior of matter in the very strong gravitational and magnetic fields around compact objects. With an effective area of $\sim 10\ m^2$, LOFT will be able to measure very fast variability in the X-ray fluxes and spectra. A good knowledge of the in-orbit background environment is essential to assess the scientific performance of the mission and to optimize the instrument design. The two main contributions to the background are cosmic diffuse X-rays and high energy cosmic rays; also, albedo emission from the Earth is significant. These contributions to the background for both the Large Area Detector and the Wide Field Monitor are discussed, on the basis of extensive Geant-4 simulations of a simplified instrumental mass model.


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The LOFT wide field monitor

LOFT (Large Observatory For x-ray Timing) is one of the four missions selected in 2011 for assessment study for the ESA M3 mission in the Cosmic Vision program, expected to be launched in 2024. The LOFT mission will carry two instruments with their prime sensitivity in the 2-30 keV range: a 10 m² class large area detector (LAD) with a <1° collimated field of view and a wide field monitor (WFM) instrument based on the coded mask principle, providing coverage of more than 1/3 of the sky. The LAD will provide an effective area ~20 times larger than any previous mission and will by timing studies be able to address fundamental questions about strong gravity in the vicinity of black holes and the equation of state of nuclear matter in neutron stars. The prime goal of the WFM will be to detect transient sources to be observed by the LAD. However, with its wide field of view and good energy resolution of <300 eV, the WFM will be an excellent monitoring instrument to study long term variability of many classes of X-ray sources. The sensitivity of the WFM will be 2.1 mCrab in a one day observation, and 270 mCrab in 3s in observations of in the crowded field of the Galactic Center. The high duty cycle of the instrument will make it an ideal detector of fast transient phenomena, like X-ray bursters, soft gamma repeaters, terrestrial gamma flashes, and not least provide unique capabilities in the study of gamma ray bursts. A dedicated burst alert system will enable the distribution to the community of ~100 gamma ray burst positions per year with a ~1 arcmin location accuracy within 30 s of the burst. This paper provides an overview of the design, configuration, and capabilities of the LOFT WFM instrument.
(Ekstern), Zampa, G. (Ekstern), Zampa, N. (Ekstern), in't Zand, J. (Ekstern), Zdziarski, A. (Ekstern)
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The LOFT wide field monitor simulator

We present the simulator we developed for the Wide Field Monitor (WFM) aboard the Large Observatory For Xray Timing (LOFT) mission, one of the four ESA M3 candidate missions considered for launch in the 2022–2024 timeframe. The WFM is designed to cover a large FoV in the same bandpass as the Large Area Detector (LAD, almost 50% of its accessible sky in the energy range 2–50 keV), in order to trigger follow-up observations with the LAD for the most interesting sources. Moreover, its design would allow to detect transient events with fluxes down to a few mCrab in 1-day exposure, for which good spectral and timing resolution would be also available (about 300 eV FWHM and 10 μs, respectively). In order to investigate possible WFM configurations satisfying these scientific requirements and assess the instrument performance, an end-to-end WFM simulator has been developed. We can reproduce a typical astr
Since the launch of the SWIFT, Gamma-Ray Bursts (GRBs) science has been much progressed. Especially supporting many measurements of GRB events and sharing them with other telescopes by the Gamma-ray Coordinate Network (GCN) have resulted the richness of GRB events, however, only a few of GRB events have been measured within a minute after the gamma ray signal. This lack of sub-minute data limits the study for the characteristics of the UV-optical light curve of the short-hard type GRB and the fast-rising GRB. Therefore, we have developed the telescope named the Ultra-Fast Flash Observatory (UFFO) Pathfinder, to take the sub-minute data for the early photons from GRB. The UFFO Pathfinder has a coded-mask X-ray camera to search the GRB location by the UBAT trigger algorithm. To determine the direction of GRB as soon as possible it requires the fast processing. We have ultimately implemented all algorithms in field programmable gate arrays (FPGA) without microprocessor. Although FPGA, when compared with microprocessor, is generally estimated to support the fast processing rather than the complex processing, we have developed the implementation to overcome the disadvantage and to maximize the advantage. That is to measure the location as accurate as possible and to determine the location within the sub-second timescale. In the particular case for accuracy of the X-ray trigger, it requires special information from the satellite based on the UFFO central control system. We present the implementation of the UBAT trigger algorithm as well as the readout system of the UFFO Pathfinder.

The readout system and the trigger algorithm implementation for the UFFO Pathfinder

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The slewing mirror telescope of the Ultra Fast Flash Observatory Pathfinder

The Slewing Mirror Telescope (SMT) is a key telescope of Ultra-Fast Flash Observatory (UFFO) space project to explore the first sub-minute or sub-seconds early photons from the Gamma Ray Bursts (GRBs) afterglows. As the realization of UFFO, 20kg of UFFO-Pathfinder (UFFO-P) is going to be on board the Russian Lomonosov satellite in November 2012 by Soyuz-2 rocket. Once the UFFO Burst Alert System (UBAT) detects the GRBs, Slewing mirror (SM) will slew to bring new GRB into the SMT’s field of view rather than slewing the entire spacecraft. SMT can give a UV/Optical counterpart position rather moderated 4arcsec accuracy. However it will provide a important understanding of the GRB mechanism by measuring the sub-minute optical photons from GRBs. SMT can respond to the trigger over 35 degree x 35 degree wide field of view within 1 sec by using Slewing Mirror Stage (SMS). SMT is the reflecting telescope with 10cm Ritchey-Chretien type and 256 x 256 pixilated Intensified Charge-Coupled Device (ICCD). In this paper, we discuss the overall design of UFFO-P SMT instrument and payloads development status. © (2012) COPYRIGHT Society of Photo-Optical Instrumentation Engineers (SPIE). Downloading of the abstract is permitted for personal use only.
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The Ultra-Fast Flash Observatory’s space GRB mission and science

Abstract. The Ultra-Fast Flash Observatory (UFFO) is a space mission to detect the early moments of an explosion from Gamma-ray bursts (GRBs), thus enhancing our understanding of the GRB mechanism. It consists of the UFFO Burst & Trigger telescope (UBAT) for the recognition of GRB positions using hard X-ray from GRBs. It also contains the Slewing Mirror Telescope (SMT) for the fast detection of UV-optical photons from GRBs. It is designed to begin the UV-optical observations in less than a few seconds after the trigger. The UBAT is based on a coded-mask X-ray camera with a wide field of view (FOV) and is composed of the coded mask, a hopper and a detector module. The SMT has a fast rotatable mirror which allows a fast UV-optical detection after the trigger. The telescope is a modified Ritchey-Chrétien telescope with the aperture size of 10 cm diameter, and an image intensifier readout by CCD. The UFFO pathfinder is scheduled to launch into orbit on 2012 June by the Lomonosov spacecraft. It is a scaled-down version of UFFO in order to make the first systematic study of early UV/optical light curves, including the rise phase of GRBs. We expect UBAT to trigger ∼44 GRBs/yr and expect SMT to detect ∼10 GRBs/yr.

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Ultra-Fast Flash Observatory for observation of early photons from gamma ray bursts

We describe the space project of Ultra-Fast Flash Observatory (UFFO) which will observe early optical photons from gamma-ray bursts (GRBs) with a sub-second optical response, for the first time. The UFFO will probe the early optical rise of GRBs, opening a completely new frontier in GRB and transient studies, using a fast response Slewing Mirror Telescope (SMT) that redirects optical path to telescope instead of slewing of telescopes or spacecraft. In our small UFFO-Pathfinder experiment, scheduled to launch aboard the Lomonosov satellite in 2012, we use a motorized mirror in our Slewing Mirror Telescope instrument to achieve less than one second optical response after X-ray trigger. We describe the science and the mission of the UFFO project, including a next version called UFFO-100. With our program of ultra-fast optical response GRB observatories, we aim to gain a deeper understanding of GRB mechanisms, and potentially open up the z<10 universe to study via GRB as point source emission probes.© (2012) COPYRIGHT Society of Photo-Optical Instrumentation Engineers (SPIE). Downloading of the abstract is permitted for personal use only.
Design and Fabrication of Detector Module for UFFO Burst Alert & Trigger Telescope

The Ultra-Fast Flash Observatory (UFFO) pathfinder is a space mission devoted to the measurement of Gamma-Ray Bursts (GRBs), especially their early light curves which will give crucial information on the progenitor stars and central engines of the GRBs. It consists of two instruments: the UFFO Burst Alert & Trigger telescope (UBAT) for the detection of GRB locations and the Slewing Mirror Telescope (SMT) for the UV/optical afterglow observations, upon triggering by UBAT. The UBAT employs a coded-mask γ/X-ray camera with a wide field of view (FOV), and is comprised of three parts: a coded mask, a hopper, and a detector module (DM). The UBAT DM consists of a LYSO scintillator crystal array, multi-anode photo multipliers, and analog and digital readout electronics. We present here the design and fabrication of the UBAT DM, as well as its preliminary test results.

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First superburst observed by INTEGRAL, from SAX J1747.0-2853
A re-analysis of the INTEGRAL Galactic Bulge monitoring observation on February 13 (ATel #3172) shows that the flaring behaviour reported from SAX J1747.0-2853 is in fact due to a superburst. The event started on February 13, 2011 at 13:01:40 UTC with a 2 minutes spike, but the JEM-X (3-30 keV) source light curve attests that the intensity continued to slowly decay during the remaining two hours of the observation. INTEGRAL slewed away from the Galactic centre region while the source intensity was still half of the maximum intensity level at 780 mCrab, and about three times above the average intensity prior to the flare. A rough extrapolation of the light curve suggests a total duration of four hours, which is consistent with a superburst. The time-resolved spectral analysis confirms the nature of the event: the average JEM-X spectrum prior to the superburst is best described by an absorbed power law, while an additional black-body component is necessary to describe the average superburst spectra taken during the subsequent four exposures of 1800 sec duration each. The temperature decreases steadily from $kT=2.1^{+0.1}_{-0.1}$ keV during the spike down to $1.4^{+0.05}_{-0.05}$ keV during the last exposure of the observation. The unabsorbed 3-30 keV persistent source flux prior to the flare is $3.0e^{-9}$ erg/cm$^2$/s. The total unabsorbed 3-30 keV flux at the peak of the superburst is $6.7e^{-8}$ erg/cm$^2$/s. As mentioned in ATel #3172, the whole event was only marginally detected by IBIS/ISGRI, and the 15-25 keV light curve during the entire observation is roughly flat at an average flux of 25 mCrab. This first superburst ever recorded from SAX J1747.0-2853 is also the first superburst observed by INTEGRAL. It is preceded 30 minutes earlier by a shorter type I X-ray burst. The latter started during a 2 minutes slew of the INTEGRAL satellite, but due to the burst duration of several minutes, the tail was still observable during the next stable pointing. A preliminary analysis of this precursor burst indicates a peak count rate approximately at the same level as the peak of the superburst, as well as a dual exponential decay. The above-mentioned persistent flux is derived from the average spectrum taken during the 1800 sec exposure prior to the first burst, i.e., less than one hour before the onset of the superburst. We note that this event is only the 2nd superburst seen from a normal X-ray transient source after the superburst observed from 4U 1608-52 in 2005 (ATel #482).

First superburst observed by INTEGRAL/JEM-X
On February 13, 2011, the X-ray monitor JEM-X onboard INTEGRAL observed for the first time a superburst, which occurred from the Galactic bulge low mass X-ray binary SAX J1747.0-2853. This event is also noticeable in light-curves from the MAXI all-sky monitor onboard the International Space Station. Three days earlier, a flare at GeV energy was detected by the Fermi/LAT instrument from a position consistent with SAX J1747.0-2853, marking the beginning of a new outburst from this transient X-ray source. This talk will present the JEM-X data, showing that the superburst is immediately preceded by a 30 minute long burst. This exceptional sequence of events makes this first superburst ever observed from SAX J1747.0-2853 a very peculiar one. In particular, we will discuss the possibility for the intermediate long burst to act as a firestarter for the superburst.
IGR J17464-3213 (= H1743-322) is active again

The INTEGRAL Galactic bulge (GB) monitoring program observations on UT April 6, 2011, 04:11-07:53 show that IGR J17464-3213 (= H1743-322) started another outburst. The observed JEM-X fluxes are 11 +/- 2 and 26 +/- 4 mCrab in the 3-10 and 10-25 keV energy bands, respectively, while the observed IBIS/ISGRI fluxes are 34 +/- 2 and 57 +/- 3 mCrab in the 18-40 and 40-100 keV energy bands, respectively. The source is clearly in a hard state. Previous GB observations (April 3, 15:13-19:21) did not reveal any significant emission, with JEM-X and IBIS/ISGRI upper limits of about 3 and 10 mCrab (5 sigma), respectively, in the above quoted energy bands. Swift/BAT observations indicate the outburst started around April 5. The source is also seen in the latest RXTE/PCA Galactic Center scan observations at April 6, 18:10: 15+/-.1 mCrab (2-10 keV). The last outburst of this source was in Aug/Sep 2010 (ATels #2774, #2781, #2788, #2792, #2797, #2857). We encourage follow-up observations at all wavelengths.

INTEGRAL discovery of a new hard X-ray transient: IGR J17177-3656

We report on the discovery of a new transient source, IGR J17177-3656, detected during the INTEGRAL observation performed from 2011-03-15 09:23 to 2011-03-15 22:42 UT. The source was detected by IBIS/ISGRI at a significance level of 13 and 9 standard deviations, in the 20-40 keV and 40-80 keV energy bands, respectively. The corresponding fluxes were 20+/-.1 and 22+/-.2 mCrab (exposure time is 24 ks). The source is also marginally detected by combining the two JEM-X units in the 10-20 keV band with a flux of 8+/-.3 mCrab (total exposure 12.5 ks). It is not detected in the 3-10 keV band with a 3 sigma upper limit of 5 mCrab. The best determined source position from the IBIS/ISGRI data is at: RA = 259.414 (17:17:39) Dec = -36.938 (-36:56:17) (J2000) with a 90% confinement radius of 2.2 arcmin. The best position determined from the JEM-X monitor is RA=259.443 (17:17:46), Dec=-36.945 (-36:56:42) (J2000) with a 90% confinement radius of 1.5 arcmin, fully consistent with the ISGRI position. The IBIS/ISGRI spectrum (20-150 keV) can be well described by a power-law with photon index 1.8+/-.0.3 (chi2/df=0.5 for 8 dof). The estimated 20-100 keV flux is 3.7e-10 erg/s/cm2. We could not detect any significant variability during the observation. A subsequent INTEGRAL observation from the Galactic bulge monitoring program was performed on 2011-03-16 from 12:33 to 14:51 UT (exposure of 5.4 ks): the source flux in the 20-40 keV band was 23+/-.4 mCrab (30+/-.6 mCrab), suggesting an increasing luminosity trend. Previous INTEGRAL observations of the region were performed between 2011-03-13 03:21 and 2011-03-13 16:39. We derived a 5 sigma upper limit on the source flux in the 20-40 keV band of 7 mCrab, exploiting an IBIS/ISGRI effective exposure time of 8 ks. A Swift/XRT pointed observation in the region of the source was performed between 2011-01-27 08:21 and 2011-01-27 08:30 (exposure time is 548 s), no source was detected in the FOV with a 3 sigma upper limit of
1.5e-12 erg/s/cm² in the 1-10 keV band (0.05 mCrab), assuming a power-law spectrum with photon index 1.8 and Galactic absorption (NH = 1.2e22 cm⁻²). We encourage multiwavelength observations to investigate the nature of the system, which has the typical characteristics of either an X-ray transient in an initial hard state or a transient highly absorbed source.

INTEGRAL Galactic Bulge monitoring: transient activity from KS 1741-293, MXB 1730-335, and IGR J17498-2921

As part of its regular monitoring of the Galactic Bulge (see ATel #438) INTEGRAL observed this region of the sky on September 13, 2011, between UTC 9:14:50 and 12:56:26. Both the JEM-X and the IBIS/ISGRI instruments detect the transient neutron star low-mass X-ray binary KS 1741-293 at the following flux levels: JEM-X: 6 +/-3 mCrab (3-10 keV) and 14 +/-6 mCrab (10-25 keV) ISGRI: 11 +/-2 mCrab (18-40 keV) and 13 +/-2 mCrab (40-100 keV) We note that the activity of this source already started two weeks ago as has been reported by Linares et al. (ATel #3632) and Barthelmy et al. (GCN #12319) using Swift data. No X-ray burst is detected during the INTEGRAL observation. We also report on renewed activity (see, e.g., ATel #1398) from the Rapid Burster (MXB 1730-335) with the following fluxes: JEM-X: 139 +/-18 mCrab (3-10 keV) and 63 +/-20 mCrab (10-25 keV) ISGRI: 10 +/-2 mCrab (18-40 keV) and 5 sigma upper limit of 10 mCrab (40-100 keV) A series of 15 type II bursts is detected when the source was inside the JEM-X field of view, with an average burst recurrence time of about four minutes. The new transient source IGR J17498-2921 (see, e.g., ATels #3551, #3556, #3558, #3568, #3606) is only marginally detected by JEM-X in the 3-10 keV range at a flux level of 5 +/-3 mCrab and a 6 sigma upper limit of 2 mCrab between 10-25 keV. IBIS/ISGRI does not detect the source with 5 sigma upper limits of about 3 and 10 mCrab in the above quoted energy bands. This indicates the source is fading back to quiescence. The next observation of the Galactic Bulge by INTEGRAL is planned for September 16, 2011.
INTEGRAL/JEM-X sees Markarian 817

We report the detection of an X-ray source in JEM-X mosaic images of the field observed during the INTEGRAL public Target of Opportunity on SN2011fe, that took place between 2011 October 7, 18:10 (UTC) and November 6, 5:22 (UTC). The source position is determined at RA, Dec = 219.075, +58.792 deg. with an uncertainty of 1.5 arcmin, at only 33 arcsec from the SIMBAD position for the Seyfert 1.5 galaxy Markarian 817, for which an X-ray luminosity increase in recent years has been reported (Winter et al., 2011, ApJ 728, 28). Though the detection is close to the sensitivity limit of the instruments, the source is clearly visible in independent mosaic images from each unit of the twin JEM-X monitor. Combining the whole 400 ks dataset for both JEM-X units the source is detected at 8 sigma between 3-10 keV with an average flux of 0.7 +/-0.2 mCrab, or 1.5 e-11 erg/cm²/s. There is no firm detection above 10 keV with a 5-sigma upper limit of 0.4 mCrab between 10-25 keV. The source is not detected by the IBIS/ISGRI camera with a flux upper limit of 0.7 mCrab in the 18-40 keV energy range. No significant variability is detected during the above-mentioned time interval. We conclude that both the position and the flux of the source detected by JEM-X are consistent with its identification with Mrk 817.

INTEGRAL sees continuing activity from SAX J1747.0-2853, but not from SAX J1750.8-2900

The JEM-X instrument detects strong flaring activity between 80 and 700 mCrab (3-25 keV). The average JEM-X spectrum is well described (reduced chi-squared is 1.1 for 11 degrees of freedom) by an absorbed black body plus power law (fixing the interstellar absorption, N_H, to 9e22 cm^-2, Natalucci et al. 2004, A&A 416, 699): kT = 1.6+/-0.1 keV and black-body luminosity of (3.8+/-0.3)e37 erg/s (at a distance of 9 kpc, Natalucci et al. 2000, ApJ, 543, L73), power-law index = 3.0+/-0.1 with power-law normalization of 9+/-2 photons/keV/cm²/s at 1 keV. The total unabsorbed 3-25 keV flux is 7.4e-9 erg/cm²/s. Although at the position of SAX J1747.0-2853 we do not detect any emission with IBIS/ISGRI, the analysis is complicated in this region because of the nearby blended source 1E1743.1-2852 (see also ATel #3170). We, therefore, regard the emission seen in this region to be due to SAX J1747.0-2853, as it is the only active source as seen by the Swift/XRT (Atel #3163) and JEM-X. We find a flux of 15+/-2 mCrab, which is consistent with the steep JEM-X spectrum. SAX J1747.0-2853 is also burst active; we detected a type I X-ray burst starting near UT 13 Feb 13:34 which lasted at least 2 min, and had a net-peak flux of about 700 mCrab (3-25 keV). The high, soft flux and strong flaring is the first of its kind seen in the Galactic bulge monitoring program, since its start in February 2005 (ATel #438). The behaviour is, however, comparable to that seen in March 2004 with INTEGRAL (ATel #256, see also Tarana et al. 2008, PoS[Integral08]045), when the source was also bright and soft. We note that SAX J1750.8-2900, reported to be active a few days earlier (ATel #3170), is not seen in our observations, with a 3 sigma upper limit of 11 mCrab in JEMX1 (3-10 keV) and 8 mCrab in ISGRI (20-40 keV). We thank the ISDC for providing us the results of their quick look analysis, on which this ATel is partly based.

General information
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Organisations: Astrophysics, National Space Institute, European Space Agency, University of Geneva, LAEX-CAB, INTA-CSIC, APC, Southampton
Authors: Kuulkers, E. (Ekstern), Chenevez, J. (Intern), Bozzo, E. (Ekstern), Alfonso-Garzon, J. (Ekstern), Beckmann, V. (Ekstern), Bird, T. (Ekstern), Brandt, S. (Intern), EFSA Publication
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The soft spectral state of the black hole candidate IGR J17091-3624 observed by INTEGRAL and Swift
The currently on-going outburst of the black hole candidate (BHC) IGR J17091-3624 (ATel #3144, #3159, #3167) has been recently observed simultaneously with INTEGRAL and Swift. The source was in the IBIS FOV on 2011 Feb. 28 from 17:45 to 21:23 (UTC; exposure time 7.7 ks) during the Galactic Bulge monitoring (Kuulkers et al. 2007, A&A, 466, 595) and pointed with the narrow field instrument on board Swift, XRT, on 2011 Feb. 28 from 19:00 to 20:36 (UTC; exposure time 1.2 ks). Fitting the XRT spectrum with an absorbed power law model results in an unacceptable reduced chi^2=1.4 (304 d.o.f.). However, a better description of the spectrum (confirmed by the F-test) can be obtained adding a disk black-body component (red. chi^2=1.1 (302 d.o.f.)). The fit of the joint XRT+IBIS/ISGRI broad-band spectrum (0.8-200 keV) gives an absorption column density of N_H=1.00+/-0.06, a disc black-body temperature of 1.0+/-0.1 keV and a power-law photon index of 2.2+/-0.2 (red. chi^2=1.1 (312 d.o.f.)). No high-energy cut-off is requested up to 200 keV. The estimated fluxes in the 2-10 keV and 20-100 keV energy bands are 2E-09 erg/cm^2/s and 9E-10 erg/cm^2/s, respectively. These results confirm that IGR J17091-3624 is presently in the canonical high/soft spectral state of BHCs (see also ATel #3179), unlike the previous reported INTEGRAL observation (Feb. 07-08) during which the source was in a low/hard state (ATel #3159). Further simultaneous INTEGRAL and Swift observations are already planned. We thank the Swift team for the rapid scheduling of simultaneous Swift ToO observations with the pre-planned INTEGRAL Galactic Bulge monitoring.

The UFFO (Ultra Fast Flash Observatory) Pathfinder: Science and Mission
Hundreds of gamma-ray burst (GRB) optical light curves have been measured since the discovery of optical afterglows. However, even after nearly 7 years of operation of the Swift Observatory, only a handful of measurements have been made soon (within a minute) after the gamma ray signal. This lack of early observations fails to address burst physics at short time scales associated with prompt emissions and progenitors. Because of this lack of sub-minute data, the characteristics of the rise phase of optical light curve of short-hard type GRB and rapid-rising GRB, which may account for ~30% of all GRB, remain practically unknown. We have developed methods for reaching sub-minute and sub-second timescales in a small spacecraft observatory. Rather than slewing the entire spacecraft to aim the optical instrument at the GRB position, we use rapidly moving mirror to redirect our optical beam. As a first step, we employ motorized slewing mirror telescope (SMT), which can point to the event within 1s, in the UFFO Pathfinder GRB Telescope onboard the Lomonosov satellite to be launched in Nov. 2011. UFFO’s sub-minute measurements of the optical emission of dozens of GRB each year will result in a more rigorous test of current internal shock models, probe the extremes of bulk Lorentz factors, provide the first early and detailed measurements of fast-rise GRB optical light curves, and help verify the prospect of GRB as a new standard candle. We will describe the science and the mission of the current UFFO Pathfinder project, and our plan of a full-scale UFFO-100 as the next step.
Ultra-fast flash observatory for detecting the early photons from gamma-ray bursts

Gamma-ray bursts (GRBs) are the most luminous transient events with short intense flashes that have been detected in random directions in the sky once or twice per day. Their durations have been measured in seconds, especially short GRBs with duration of <2 sec. The Ultra-Fast Flash Observatory (UFFO) space mission aims to detect the earliest moments of an explosion which presents the nature of GRBs, resulting into the enhancement of GRB mechanism understanding. The UFFO consists of a couple of wide Field-of-View (FOV) trigger telescopes, a narrow-FOV Slew Mirror Telescope (SMT) for the fast measurement of the UV-optical photons from GRBs, and a gamma-ray monitor for energy measurement. The triggering is done by the UFFO burst Alert & Trigger telescope (UBAT) using the hard X-ray from GRBs and the UV/optical Trigger Assistant Telescope (UTAT) using the UV/optical photons from GRBs. The UBAT monitors the sky for GRB, and determines their position with sufficient accuracy (10’ at 7.0σ) for follow-up UV/optical observations with the SMT. The primary trigger telescope is based on a fast recognition of position using hard X-ray from GRBs. Whereas the fastest previous experiment, the SWIFT observatory, rarely observed GRB in less than 60 seconds after trigger, the UFFO is designed to begin the UV/optical observations in less than a few seconds after trigger. The SMT uses the novel approach of steering our telescope beam using the rotatable mirror, instead of re-orienting the instrument platform like SWIFT and other previous instruments. The UFFO pathfinder is scheduled to launch into orbit on 2011 November by the Lomonosov spacecraft. This pathfinder is the scaled-down version of UFFO in order to make the first systematic study of early UV/optical light curves, including the rise phase of GRBs. It contains two instruments of UBAT and SMT. It only allows the payload mass of 20 kg and the power consumption of 20 W. The SMT has a fast rotatable mirror, a modified Ritchey-Chrétien telescope with the aperture size of 10 cm diameter, and an image intensifier readout by CCD. The UBAT is using a coded-mask aperture for position detection and their X-ray photons are readout by LYSO crystals and Multi-Anode photomultiplier tubes (MAPMTs) with the effective active area size of 191.1 cm2. With this design, we expect UBAT to trigger ∼44 GRBs/yr and expect SMT to detect ∼10 GRBs/yr. © 2011 IEEE.
Update on The Ultra-Fast Flash Observatory (UFFO) Pathfinder

The Ultra-Fast Flash Observatory (UFFO) uses an X/gamma and an optical/UV instrument to observe gamma-ray bursts (GRB) starting milliseconds after burst trigger and location. The X/gamma instrument, a standard coded-mask camera, locates the GRB and triggers the system. The optical/UV instrument, the Slewing Mirror Telescope (SMT), is planned to use an array of micro-electromechanical (MEMS) mirrors, with negligible moments of inertia, to steer its beam rapidly and accurately. The UFFO Pathfinder is scheduled to be launched into orbit by 2012 January. In this presentation, we give the current design of the pathfinder, with a 191 square centimeter LSO+MAPMT X/gamma detector and a 10 cm aperture SMT. We estimate that we will observe ~44 GRB per year, and detect ~10 GRB with both instruments. The UFFO will provide the most rapid optical/UV observations of GRB available thus far, and yield a sizable sample of observations of the rise-phase of GRB light curves for the first time.

General information

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Organisations: National Space Institute, Astrophysics, University of California, Instituto de Astrofísica de Andalucía
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A hard X-ray transient in the direction of Terzan 5 detected by INTEGRAL

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Organisations: Astrophysics, National Space Institute, Eberhard-Karls-Universität Tübingen, European Space Astronomy Centre and European Space Agency
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Main Research Area: Technical/natural sciences

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Source: orbit
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Publication: Research › Journal article – Annual report year: 2010

A photospheric radius-expansion burst observed from XTE J1701-407 by INTEGRAL: an update on distance
On 2010-08-22 00:56:19 the INTEGRAL Burst Alert System (IBAS) triggered on an event ((GCN 11132, Gotz & Ferrigno, 2009) from the known burst source XTE J1701-407 (Falanga et al., A&A 496, 333, 2009; Linares et al., MNRAS 392, L11, 2009) during an observation of the field around SNR RXJ1713.7-3946 (Pi R. Terrier). As part of our monitoring of long thermonuclear X-ray bursts with INTEGRAL, we have analysed both the JEM-X and ISGRI data covering this event, and we identify it as another type I (thermonuclear) X-ray burst. The duration of the burst was about 3 minutes (3-30 keV), with an exponential decay time of 118s. The peak flux was about 4 Crab (1e-7 erg/cm2/s) in the 3-30 keV energy band (JEM-X) and 0.35 Crab (3.4 e-9 erg/cm2/s) in the 18-40 keV band (IBIS/ISGRI). The JEM-X light curve shows evidence for photosperic radius expansion, with a 2s precursor starting about 4s before the main burst. The time resolved spectral analysis of the burst allows us to measure the unabsorbed bolometric peak flux of (1.5 +/-0.2)e-7 erg/cm2/s. Assuming that the burst reached the empirically-measured Eddington limit of L_Edd=3.8e38 erg/s (Kuulkers et al.2003), we derive the distance to the source to be 5.0 +/- 0.4 kpc, which is slightly lower than the previous estimated distance of 6.2 kpc by Falanga et al. (2009). Recent RXTE PCA monitoring observations of 4U 1701-407 (see also Markwardt et al. ATel #1569) indicate that the source is beginning a new outburst. Indeed, we estimate the source flux in the hour preceding the burst to be (2.1 +/-0.3)e-9 erg/cm2/s extrapolated between 0.3-100 keV. At the source distance this translates to a persistent bolometric luminosity of about 6.3e36 erg/s, which is close to the luminosity (8.3e36 erg/s) the source had at the moment
CAPSiTT: A sensitive 100 keV – 100 MeV all sky Survey

Proposed in response to the ESA call for the third Medium size mission (M3), CAPSiTT is a small mission designed for a 3-year survey of the non-thermal high energy sky from an equatorial LEO orbit. With a large effective area and a very wide field of view, its single instrument, a silicon tracker, provides good imaging, spectroscopic and polarimetric capabilities with a sensitivity 10-100 times better than COMPTEL. Nucleosynthesis and particle acceleration mechanisms in various sites are the main scientific topics addressed by CAPSiTT.
Improved JEM-X imaging

A new imaging method has been developed for JEM-X. The flux from each sky pixel is obtained from a fit to the observed shadowgram rather than from a back projected image. The fitting method is more direct than the standard back projection method used in the public OSA software and allows better possibilities for elimination of systematic image artifacts. An improvement of more than a factor two for the signal-to-noise of weak sources in mosaic images has been obtained at low energies near strong sources.

INTEGRAL and RXTE spectral analysis of IGR J17480-2446, the new transient in Terzan 5

General information

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Organisations: Astrophysics, National Space Institute, University of Geneva, European Space Astronomy Centre and European Space Agency, Eberhard-Karls-Universität Tübingen
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INTEGRAL and Swift detection of high energy emission from Swift J1749.4-2807

INTEGRAL and Swift confirm that XTE J1728-295 = IGR J17285-2922

INTEGRAL Galactic bulge monitoring observation is foreseen to start at UT 4 Sep 2010 11:26.
INTEGRAL detection of the new MAXI transient MAXI J1659-152

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Organisations: Astrophysics, National Space Institute, University of Geneva, European Space Astronomy Centre and European Space Agency
Authors: Vovk, I. (Ekstern), Kuulkers, E. (Ekstern), Brandt, S. K. (Intern), Chenevez, J. (Intern), al., E. (Ekstern)
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INTEGRAL/JEM-X detection of an X-ray burst from Swift J1749.4-2807

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INTEGRAL/JEM-X detects an X-ray burst from SAX J1753.5-2349

General information
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Organisations: Astrophysics, National Space Institute
Authors: Chenevez, J. (Intern), Brandt, S. K. (Intern), EFSA Publication
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Main Research Area: Technical/natural sciences

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Original language: English
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Publication: Research › Journal article – Annual report year: 2010

INTEGRAL reports renewed activity from KS 1741-293

General information
INTEGRAL sees IGR J17544-2619 active again

INTEGRAL Galactic bulge monitoring observations (see, e.g., ATels #438 and #1266) between UT 29 Aug 2010 22:54 and 30 Aug 2010 02:35 revealed X-ray flaring from the Supergiant Fast X-ray Transient (SFXT) IGR J17544-2619. Its last activity was reported about 180 days ago, in March 2010 (ATel #2463). IGR J17544-2619 flared on time scales of about half an hour, from around a peak IBIS/ISGRI count rate of 60 +/- 10 mCrab (18-40 keV) during an 1800-sec pointing down to about 10 mCrab, i.e., near the half-an-hour detection limit. The average IBIS/ISGRI detection significance over the 12.6 kaec observation is about 19 sigma (18-40 keV). The behaviour is similar to that seen during its previous detected activity by INTEGRAL (e.g., ATel #1266, #1697). JEM-X detects IGR J17544-2619 too, at 22 +/- 12 mCrab (3-10 keV, 3 sigma), and 40 +/- 22 mCrab (10-25 keV, 4 sigma), over the course of the observation. Since activity at other wavelengths is expected (see, e.g., ATel #2475) we encourage follow-up observations. The next INTEGRAL Galactic bulge monitoring observation is expected to start at UT 4 Sep 2010 11:26. The INTEGRAL Galactic bulge monitoring results (JEM-X and IBIS/ISGRI light curves and mosaic images) are publicly available at http://isdc.unige.ch/Science/BULGE/.

INTEGRAL shows MAXI J1659-152 further declines in hard X-rays

INTEGRAL shows MAXI J1659-152 further declines in hard X-rays

INTEGRAL shows MAXI J1659-152 further declines in hard X-rays
Spectral and temporal properties of long GRBs detected by INTEGRAL from 3 keV to 8 MeV

Since its launch in 2002, INTEGRAL has triggered on more than 78 γ-ray bursts in the 20-200 keV energy range with the IBIS/ISGRI instrument. Almost 30% of these bursts occurred within the fully coded field of view of the JEM-X detector (5) which operates in the 3-35 keV energy range. A detailed study of the spectral and temporal evolution of a subset of 7 INTEGRAL γ-ray bursts across a wide energy range from 3 keV to 8 MeV has been carried out. This GRB sample is characterised by long multi-peaked bursts that are bright in the JEM-X energy range and encompass X-ray rich bursts, X-ray flashes and classical GRBs. We report the detection of X-ray prompt and afterglow emission from GRB 041219A and GRB081003A with JEM-X for the first time. At least two temporal breaks have been identified in the X-ray afterglow light curve of GRB 081003A. These results demonstrate INTEGRAL’s broadband capabilities for the study of the transition from X-ray prompt to afterglow emission in γ-ray bursts.

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Organisations: National Space Institute, Astrophysics, University College Dublin
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What ignites on the neutron star of 4U0614+091?

The low-mass X-ray binary 4U 0614+091 is a source of sporadic thermonuclear (type I) X-ray bursts. We find bursts with a wide variety of characteristics in serendipitous wide-field X-ray observations by the WATCH on EURECA, the ASM on RXTE, the WFCs on BeppoSAX, the FREGATE on HETE-2, the IBIS/ISGRI on INTEGRAL, and the BAT on Swift, as well as pointed observations with the PCA and HEXTE on RXTE. Most of the bursts are bright, i.e., they reach a peak flux of about 15 Crab, but a few are weak and only reach a peak flux below a Crab. One of the bursts shows a very strong photospheric radius-expansion phase. This allows us to evaluate the distance to the source, which we estimate to be 3.2 kpc. The burst durations vary generally from about 10 s to 5 min. However, after one of the intermediate-duration bursts, a faint tail is seen to at least about 2.4 h after the start of the burst. One very long burst was observed, which lasted for several hours. This superburst candidate was followed by a normal type-I burst only 19 days later. This is, to our knowledge, the shortest burst-quench time among the superbursters. The observation of a superburst in this system is difficult to reconcile if the system is accreting at about 1% of the Eddington limit. We describe the burst properties in relation to the persistent emission. No strong correlations are apparent, except that the intermediate-duration bursts occurred when 4U 0614+091’s persistent emission was lowest and calm, and when bursts were infrequent (on average roughly one every month to 3 months). The average burst rate increased significantly after this period. The maximum average burst recurrence rate is about once every week to 2 weeks. The burst behaviour may be partly understood if there is at least an appreciable amount of helium present in the accreted material from the donor star. If the system is an ultra-compact X-ray binary with a CO white-dwarf donor, as has been suggested, this is unexpected. If the bursts are powered by helium, we find that the energy production per accumulated mass is about 2.5 times less than expected for pure helium matter. © 2010 ESO.

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Scopus rating (2006): SJR 3.224 SNIP 1.349
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Scopus rating (2003): SJR 1.967 SNIP 1.373
Web of Science (2003): Indexed yes
Scopus rating (2002): SJR 1.742 SNIP 1.346
INTEGRAL detects an X-ray burst from SAX J1747.0-2853 with no detectable persistent emission

A new season of observations for the INTEGRAL Galactic Bulge monitoring (see ATEL #438) has started on 2009 Feb 21st. During the latest observation between 2009 Feb 25 13:21 and 17:02 (UT) a type I X-ray burst from SAX J1747.0-2853 (1A 1743-28, aka GX 1.2-0.2) was detected by JEM-X at UT 14:50:51 (MJD=54887.61865). The burst profile showed clear evidence of a photospheric radius expansion event and the peak flux reached 1.6 Crab (4.2x10^{-8} erg/cm^2/s) in the 3-25 keV range. The total duration of the event was about 20 s, which is quite typical for the X-ray bursts from this source (see, e.g., ATELS #256, #642, and #734). No persistent emission from the source was otherwise detected by JEM-X with upper limits of 5 mCrab (8x10^{-11} erg/cm^2/s) and 2 mCrab (2x10^{-11} erg/cm^2/s) in the 3-10 keV and 10-25 keV energy bands, respectively. The upper limit for ISGRI (10-40 keV) is about 10 mCrab. This burst could be the first indication of renewed activity from this recurrent neutron star transient. A new outburst, if it is confirmed, would indeed be consistent with previous observations showing a periodicity of about 185 days (see Atel #1228), and expected to reach a maximum around the end of April 2009. We will observe the source again on 2009 March 03 as part of the INTEGRAL Galactic Bulge monitoring program. Follow-up observations are encouraged.

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Organisations: Astrophysics, National Space Institute, European Space Astronomy Centre and European Space Agency, University of Geneva, Southampton, UK, Laboratorio de Astrofísica Espacial y Física Fundamental, ISAS, SRON, The Netherlands, USA, European Space Agency, National Institute for Astrophysics, Southampton, UK, University of Amsterdam
Pages: 1944
INTEGRAL discovered a new hard X-ray source: IGRJ17511-3057

During the latest observations of the Galactic Bulge monitoring (see ATel #438), carried out between 2009-09-12 03:21:34 and 2009-09-12 05:27:22 (UTC), INTEGRAL discovered a new bright hard X-ray source, which we designate IGRJ17511-3057. The source is detected in the INTEGRAL/IBIS mosaic image with a significance of 14 sigma in the 20-40 keV energy band, and 7 sigma in the 40-80 keV energy band. The corresponding count rates in these bands are 4.2±0.3 cts/s (28 mCrab) and 1.8±0.3 cts/s (25 mCrab), respectively. The source is also detected in the JEM-X mosaic in the three energy bands 3-7 keV, 7-11 keV, and 11-20 keV. The source flux is ~20 mCrab and the detection significance is 3 sigma in all bands. The best determined source position is RA: 267.811 DEC: -30.954 (J2000), with a 90% error radius of 2.0 arcmin. The combined IBIS/ISGRI and JEM-X spectrum in the 3-100 keV energy range is well described by a single power-law with photon index 2.0±0.2. The source flux is 5.7e-10 erg/cm²/s in the 3-20 keV energy band and 4.8e-10 erg/cm²/s in the 20-100 keV energy band.

INTEGRAL sees transient activity in the Galactic Bulge: XTE J1751-305 and GRS 1741.9-2853 in outburst

INTEGRAL monitoring observations of the Galactic Bulge (e.g. ATels #438 and #1944) have been performed between 2009 Oct 7th 20:29 and 8th 00:11 (UTC) during which transient activity from a few known sources has been recorded with respect to an observation 6 days earlier. The transient low-mass X-ray binary and known X-ray burster GRS 1741.9-2853 (e.g. Cocchi et al. A&A 346, L45, 1999) is detected by INTEGRAL/JEM-X at an average flux of about 58 mCrab (9.3E-10 erg/cm²/s) and 25 mCrab (2.75E-10 erg/cm²/s) in 3-10 keV and 10-25 keV, respectively. The source showed strong variations with a maximum at 92 +/- 12 mCrab (3-10 keV) and 37 +/- 11 mCrab (10-25 keV) during one pointing between 2009 Oct 7 21:01 and 21:31 (UTC), and another at 46 +/- 2 mCrab (3-10 keV) and 13 +/- 4 mCrab (10-25 keV) during a pointing between 23:09 and 23:39 (UTC). At other times the source intensity stayed below 10 mCrab and 4 mCrab in above-mentioned energy ranges. IBIS/ISGRI did also detect GRS 1741.9-2853 with an average intensity of about 10 mCrab and significance of 6.1 sigma in the 18-40 keV range. The accreting millisecond X-ray pulsar XTE J1751-305 (e.g. Markwardt et al. ApJ 575, L21, 2002) is detected with JEM-X at 15 +/- 6 mCrab (3-10 keV) and 22 +/- 10 mCrab (10-25 keV), and with IBIS/ISGRI at 9 +/- 2mCrab (18-40 keV) and 14 +/- 3mCrab (40-100 keV). The source was not detected in the previous Bulge observation with 3-sigma upper limits of 4 mCrab and 2 mCrab in the same respective JEM-X energy bands. On the other hand, the closeby and recently discovered accreting millisecond X-ray pulsar IGR J17511-3057 (e.g. ATels #2196-2199) has dimmed to below the INTEGRAL detection levels, whereas it was still detected 6 days earlier at about 12 mCrab averaged over the above-mentioned energy bands. The 3-sigma upper limits are now about 5 mCrab and about 2 mCrab between 3-10 keV and 10-25 keV, respectively. We further notice that none of the X-ray bursters in the close source pair SLX 1744-299/300 is significantly detected in JEM-X with 3-sigma upper limits of about 6 mCrab (3-10 keV) and about 3 mCrab (10-25 keV). This seems to indicate an unusual change in their spectral state, for the pair is
simultaneously detected by IBIS/ISGRI at 16.5 mCrab with a significance of 10.6 sigma (18-40 keV), while it was 8 mCrab (6 sigma significance), and 20 mCrab in average for JEM-X, in the previous observation. The next INTEGRAL Galactic Bulge observation is planned for 2009 October 16th.

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Authors: Nørgaard-Nielsen, H. U. (Intern), Brandt, S. K. (Intern)
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JEM-X: six years in space
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RENEWED ACTIVITY FROM THE X-RAY TRANSIENT SAX J 1810.8-2609 WITH INTEGRAL

We report on the results of International Gamma-Ray Astrophysics Laboratory (INTEGRAL) observations of the neutron star low-mass X-ray binary SAX J1810.8-2609 during its latest active phase in 2007 August. The current outburst is the first one since 1998 and the derived luminosity is 1.1-2.6 x 10^{36} erg s^{-1} in the 20-100 keV energy range. This low outburst luminosity and the long-term time-average accretion rate of similar to 5 x 10^{-12} M_{\odot} yr^{-1} suggest that SAX J1810.8-2609 is a faint soft X-ray transient. During the flux increase, spectra are consistent with a thermal Comptonization model with a temperature plasma of kT(e) similar to 23-30 keV and an optical depth of \tau = 1.2-1.5, independent of the luminosity of the system. This is a typical low hard spectral state for which the X-ray emission is attributed to the upscattering of soft seed photons by a hot, optically thin electron plasma. During the decay, spectra have a different shape, the high energy tail being compatible with a single power law. This confirm similar behavior observed by BeppoSAX during the previous outburst, with the absence of visible cutoff in the hard X-ray spectrum. INTEGRAL/JEM-X instrument observed four X-ray bursts in Fall 2007. The first one has the highest peak flux (approximate to 3.5 crab in 3-25 keV) giving an upper limit to the distance of the source of about 5.7 kpc, for a L-Edd approximate to 3.8 \times 10^{38} erg s^{-1}. The observed recurrence time of similar to 1.2 days and the ratio of the total energy emitted in the persistent flux to that emitted in the bursts (alpha similar to 73) allow us to conclude that the burst fuel was composed by mixed hydrogen and helium with X >= 0.4.
Swift follow-up of the newly discovered burster millisecond pulsar IGR J17511-3057

Following the discovery of the new hard X-ray transient IGR J17511-3057 by INTEGRAL (Atel #2196) and its classification as a millisecond pulsar by RXTE (Atel #2197), a Swift ToO was performed. Swift/XRT observed IGR J17511-3057 on 2009-09-13 at 19:53:31 for a total exposure time of 4 ks. The first 2.5 ks were accumulated in window timing (WT) mode. A thermonuclear type-I X-ray burst was discovered in the WT light curve of the source at 2009-09-14 00:51:37 UTC with an exponential decay time of ~12.5 s. This burst is most likely a He burst. The WT 0.5-10 keV X-ray spectrum is well described (reduced chi^2 of 1.08 for 283 dof) by applying an absorbed cut-off power-law model. We obtained an absorption column density of (0.6+/-0.1)E22 cm^(-2), compatible with the Galactic absorption in the direction of the source, a cut-off energy of 3.3+/-0.6 keV, and a power-law photon index of 0.2+/-0.2. The absorbed 0.5-10 keV X-ray flux is 6.0e-10 ergs/cm^2/s.
The Accretion Powered Spin-up of GRO 1750–27

The transient Be X-ray pulsar GRO J1750-27 was originally detected in 1995 by CGRO/BATSE during a giant outburst. After a long period of quiescence the source was detected in another outburst early 2008. Following this outburst with hard X-ray data from INTEGRAL and Swift, the orbital parameters have been confirmed and improved and a clear spin-up measured. For the first time the broad-band spectrum and pulse profile have been obtained, making it possible to estimate the source distance and the magnetic field strength. We discuss the evolution of the spectrum and pulse profiles over the outburst in 2008.

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Authors: Kretschmar, P. (Ekstern), Shaw, S. (Ekstern), Hill, A. B. (Ekstern), Kuulkers, E. (Ekstern), Brandt, S. K. (Intern), Chenevez, J. (Intern)
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The accretion powered spin-up of GRO J1750-27

The timing properties of the 4.45 s pulsar in the Be X-ray binary system GRO J1750-27 are examined using hard X-ray data from INTEGRAL and Swift during a type II outburst observed during 2008. The orbital parameters of the system are measured and agree well with those found during the last known outburst of the system in 1995. Correcting the effects of the Doppler shifting of the period, due to the orbital motion of the pulsar, leads to the detection of an intrinsic spin-up that is well described by a simple model including P and P terms of -7.5 x 10(-10) s s(-1) and 1 x 10(-16) s s(-2), respectively. The model is then used to compare the time-resolved variation of the X-ray flux and intrinsic spin-up against the accretion torque model of Ghosh & Lamb; this finds that GRO J1750-27 is likely located 12-22 kpc distant and that the surface magnetic field of the neutron star is similar to 2 x 10(12) G. The shape of the pulse and the pulsed fraction shows different behaviour above and below 20 keV, indicating that the observed pulsations are the convolution of many complex components.

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Continuous brightening of IGR J17473-2721
Renewed accretion activity has been reported by Swift/XRT (ATel #1459), XTE/PCA (ATel #1460) and INTEGRAL/IBIS/ISGRI (ATel #1461) from the RXTE transient IGR J17473-2721 (= XTE J1747-274; ATels #467, #498) after the detection of an X-ray burst by SuperAGILE (ATel #1445). From the on-going Galactic bulge monitoring program (see ATels #1385, #1461) we report that the transient continues to brighten as seen with IBIS/ISGRI and JEM-X.
Earlier activity from XTE J1739-302/IGR J17391-3021 detected by INTEGRAL

The recently reported outburst from the supergiant fast X-ray transient XTE J1739-302/IGR J17391-3021 (ATEL #1466) began already about five hours earlier than the Swift/BAT trigger on 2008-04-08. The INTEGRAL/JEM-X monitor detected a flare starting at 16:18 (UTC) on the same day during recent Galactic Bulge monitoring observations (see ATEL #1385 and #1468). The flux averaged over the ~2 hour flare reached 42+/-8 mCrab (3-10 keV) and 80+/-15 mCrab (10-25 keV) with upper limits previous to the flare of 4 mCrab (3-10 keV) and 8 mCrab (10-25 keV).

Further observations of GRO J1750-27 (AXJ1749.1-2639) with INTEGRAL

The transient accreting X-ray pulsar GRO J1750-27 (AX J1749.1-2639), which became active end of January 2008 (ATel #1376), has been repeatedly observed by the INTEGRAL Galactic Bulge monitoring program since mid February (ATel #1385) on 11, 20 and 23 Feb. 2008. During the three observations, totalling about 27 ks, the source has remained bright at a roughly constant level with the following flux averaged over the 3 observations: 186+/-9 mCrab (3-10 keV), 319+/-15 mCrab (10-25 keV), 198+/-2 mCrab (18-40 keV), and 20+/-3 mCrab (40-100 keV).
Hard X-ray activity of IGR J17473-2721

Persistent X-ray activity has been reported by Swift/XRT (ATel #1459) and RXTE/PCA (ATel #1460) from the transient IGR J17473-2721 (= XTE J1747-274; ATels #467, #498) after the detection of an X-ray burst by SuperAGILE (ATel #1445). We report the detection of persistent activity at 18-100 keV with INTERAL/IBIS/ISGRI. The average hard X-ray flux during the Galactic bulge monitoring observations (see ATel #1385) which started on UT 2008 April 1, 16:55 of the source was 41±2 mCrab and 42±3 mCrab, at 18-40 keV and 40-100 keV, respectively, indicating a hard spectral state.

INTEGRAL Galactic bulge monitoring observations of GRO J1750-27 (AX J1749.1-2639), H1743-322 and SLX 1746-331

A new season of the INTEGRAL Galactic Bulge monitoring program (see ATels #438, #874, #1005; Kuulkers et al. 2007, A&A 466, 595) started, with observations on UT 11 Feb 2008, 16:33-18:07. We here report on results from three currently active transient sources. The IBIS/ISGRI and JEM-X1 images show a bright source near GX 3+1, coincident with the position of the transient accreting X-ray pulsar GRO J1750-27 (AX J1749.1-2639).

INTEGRAL hard X-ray detection of HMXB GX 304-1 and H1417-624

We report on the first detection of the Be star HMXBs GX 304-1 and H1417-624 above 20 keV with the IBIS/ISGRI X-ray imager on board INTEGRAL. From 2008-06-24 to 2008-07-09, INTEGRAL performed monitoring observations of the Galactic plane around l=305 degrees for a total exposure time of 352 ksec. GX 304-1 was detected in all spacecraft revolutions, and shows brightening with time. H 1417-624 was detected only in revolution 699 and 700 (2008-07-04 to
INTEGRAL monitoring of the X-ray burster XTE J1739-285

XTE J1739-285 is a recurrent X-ray transient first discovered by INTEGRAL as an X-ray burster. We have carried out a systematic search for X-ray bursts at various levels of accretion rate onto the Neutron Star surface during the source outbursts in 2005 and 2006. A total of 25 X-ray bursts were found as a result of this analysis. Their main properties are studied here, and are related to the overall source state by the time of burst occurrence.

INTEGRAL monitoring of unusually long X-ray bursts

Thermonuclear bursts on the surface of accreting neutron stars in low mass X-ray binaries have been studied for many years and have in a few cases confirmed theoretical models of nuclear ignition and burning mechanisms. The large majority of X-ray bursts last less than 100s. A good number of the known X-ray bursters are frequently observed by INTEGRAL, in particular in the frame of the Key Programmes. Taking advantage of the INTEGRAL instrumentation, an international collaboration led by the JEM-X team at the Danish National Space Institute has been monitoring the occurrence of uncommon burst events lasting more than a few minutes. Of special interest are exceptional X-ray bursts which duration about a few tens of minutes is intermediate between usual short bursts and hour long superbursts. The processes driving such long bursts are not yet fully understood: depending on the composition of the accreted material, these bursts may be explained by either the unstable burning of a large pile of mixed hydrogen and helium, or the ignition of a thick pure helium layer. Long duration bursts are particularly expected at very low accretion rates and make possible to study the transition from a hydrogen-rich bursting regime to a pure helium regime. Moreover, a handful of long bursts have shown, before the extended decay phase, an initial spike similar to a normal short X-ray burst. Such twofold bursts might be a sort of link between short and super-bursts, where the premature ignition of a carbon layer could be triggered by the helium flash. Half of the 15 intermediate long bursts known to date have been observed by INTEGRAL, and the mechanisms up to high energies of these unusual events have been investigated. Observation results will be presented that lead to an advanced description of the relationship between bursting regimes and the accretion states of the system,
as described by the current burst theory.

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Authors: Chenevez, J. (Intern), Falanga, M. (Ekstern), Cumming, A. (Ekstern), Kuulkers, E. (Ekstern), Brandt, S. K. (Intern), Lund, N. (Intern)
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INTEGRAL monitoring of unusually long X-ray bursts
X-ray bursts are thermonuclear explosions on the surface of accreting neutron stars in X-ray binaries. As most of the known X-ray bursters are frequently observed by INTEGRAL, an international collaboration have been taking advantage of its instrumentation to specifically monitor the occurrence of exceptional burst events lasting more than ~10 minutes. Half of the dozen so-called intermediate long bursts registered so far have been observed by INTEGRAL. The goal is to derive a comprehensive picture of the relationship between the nuclear ignition processes and the accretion states of the system leading up to such long bursts. Depending on the composition of the accreted material, these bursts may be explained by either the unstable burning of a large pile of mixed hydrogen and helium, or the ignition of a thick pure helium layer. Intermediate long bursts are particularly expected to occur at very low accretion rates and make possible to study the transition from a hydrogen-rich bursting regime to a pure helium regime.

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INTEGRAL spots renewed activity from H1743-322
INTEGRAL Galactic Bulge monitoring (see ATels #438, #874, #1005, #1385) observations on UT 2008 Sep 23 08:51-12:34 reveal a new outburst of the Galactic black-hole candidate and X-ray transient H1743-322/IGR J17464-3213 (see ATels #132, #136, #576, #593, #1348, #1385, #1414). JEM-X and IBIS/ISGRI show a hard X-ray source; the observed fluxes are about 10 mCrab (3-10 keV), 12 mCrab (10-25 keV), 17 mCrab (18-40 keV), and 31 mCrab (40-100 keV).

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Organisations: National Space Institute, Astrophysics
Recent activity of the Rapid Burster (MXB 1730-335)
Observations taken as part of the INTEGRAL Galactic bulge monitoring program (see ATel #1385) on 2008, February 23 13:32-17:13 (UT) showed bursting activity from the X-ray transient, the Rapid Burster (MXB 1730-335). During one of the 1800-sec pointings when the source was in the field-of-view of JEM-X a series of 6 X-ray bursts were observed, once every 250-350 sec, with durations of 30-60 sec and peak fluxes of about 0.6-0.9 Crab (3-10 keV).

A JEM-X catalog of X-ray sources
The JEM-X catalog of X-ray sources presented here is based on detections in individual science windows with a sensitivity limit of about 10 mCrab (5-15 keV). It contains 127 sources and only those that can be identified from the existing reference catalog. The input data are taken from the, up to now, similar to 300 INTEGRAL orbits with public data.
A new outburst of the recurrent neutron star transient SAX J1747.0-2853

Cygnus X-3 transition from the ultrasoft to the hard state

Cygnus X-3 is a binary system that might host a black hole or a neutron star. Recent observations by INTEGRAL have shown that Cygnus X-3 was again in an extremely ultrasoft state. Here we present our analysis of the transition from the ultrasoft state, dominated by blackbody radiation at soft X-rays plus non-thermal emission in the hard X-rays, to the low hard state. INTEGRAL observed Cyg X-3 six times during three weeks in late May and early June 2007. Data from IBIS/ISGRI and JEM-X1 were analysed to show the spectral transition. During the ultrasoft state, the soft X-ray spectrum is well-described by an absorbed (NH = 1.5 x 10^{22} cm^{-2}) black body model, whereas the X-ray spectrum above 20 keV appears to be extremely low and hard (Gamma similar or equal to 1.7). During the transition, the radio flux rises to a level of > 1 Jy, and the soft X-ray emission drops by a factor of similar to 3, while the hard X-ray emission rises by a factor of similar to 14 and becomes steeper (up to Gamma = 4).

Conclusions. The ultrasoft state apparently precedes the emission of a jet, which is apparent in the radio and hard X-ray domain.
Detection of X-ray bursts from IGR J17597-2201 by JEM-X on INTEGRAL

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Web of Science (2005): Indexed yes
Scopus rating (2004): SJR 2.633 SNIP 1.462
Web of Science (2004): Indexed yes
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Scopus rating (2002): SJR 1.742 SNIP 1.346
Web of Science (2002): Indexed yes
Scopus rating (2001): SJR 1.555 SNIP 0.727
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Evidence of 1122 Hz X-ray burst oscillations from the neutron star X-ray transient XTE J1739-285

We report on millisecond variability from the X-ray transient XTE J1739-285. We detected six X-ray type I bursts and found evidence for oscillations at 1122 +/- 0.3 Hz in the brightest X-ray burst. Taking into consideration the power in the oscillations and the number of trials in the search, the detection is significant at the 99.96% confidence level. If the oscillations are confirmed, the oscillation frequency would suggest that XTE J1739-285 contains the fastest rotating neutron star yet found. We also found millisecond quasi-periodic oscillations in the persistent emission with frequencies ranging from 757 to 862 Hz. Using the brightest burst, we derive an upper limit on the source distance of about 10.6 kpc.

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Authors: Kaaret, P. (Ekstern), Prieskorn, Z. (Ekstern), in 't Zand, J. (Ekstern), Brandt, S. K. (Intern), Lund, N. (Intern), Mereghetti, S. (Ekstern), Gotz, D. (Ekstern), Kuulkers, E. (Ekstern), Tomsick, J. (Ekstern)
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Web of Science (2005): Indexed yes
IGR J17254-3257, a new bursting neutron star

Aims. The study of the observational properties of uncommonly long bursts from low luminosity sources is important when investigating the transition from a hydrogen - rich bursting regime to a pure helium regime and from helium burning to carbon burning as predicted by current burst theories. On a few occasions X-ray bursts have been observed with extended decay times up to several tens of minutes, intermediate between usual type I X-ray bursts and so-called superbursts. Methods. IGR J17254-3257 is a recently discovered X-ray burster of which only two bursts have been recorded: an ordinary short type I X-ray burst, and a 15 min long burst. The properties of the X-ray bursts observed from IGR J17254-3257 are investigated. The broad-band spectrum of the persistent emission in the 0.3-100 keV energy band is studied using contemporaneous INTEGRAL and XMM-Newton data. Results. A refined position of IGR J17254-3257 is given and an upper limit to its distance is estimated to about 14.5 kpc. The persistent bolometric flux of 1.1 x 10(-10) erg cm(-2) s(-1) corresponds, at the canonical distance of 8 kpc, to L-pers approximate to 8.4 x 1035 erg s(-1) between 0.1-100 keV, which translates to a mean accretion rate of about 7 x 10(-11) M-circle dot yr(-1). Conclusions. The low X-ray persistent luminosity of IGR J17254-3257 seems to indicate the source may be in a state of low accretion rate usually associated with a hard spectrum in the X-ray range. The nuclear burning regime may be intermediate between pure He and mixed H/He burning. The long burst is the result of the accumulation of a thick He layer, while the short one is a premature H-triggered He burning burst at a slightly lower accretion rate.

General information
State: Published
Organisations: Astrophysics, National Space Institute, Commissariat a l'Energie Atomique, European Space Astronomy Centre and European Space Agency, INTEGRAL Science Data Center, University of California, European Space Agency
Authors: Chenevez, J. (Intern), Falanga, M. (Ekstern), Kuulkers, E. (Ekstern), Walter, R. (Ekstern), Bildsten, L. (Ekstern), Brandt, S. K. (Intern), Lund, N. (Intern), Oosterbroek, T. (Ekstern), Heras, J. Z. (Ekstern)
Pages: L27-L30
Publication date: 2007
Main Research Area: Technical/natural sciences

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Scopus rating (2015): SJR 2.543 SNIP 1.189 CiteScore 3.5
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 2.823 SNIP 1.219 CiteScore 2.82
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 2
Scopus rating (2013): SJR 2.544 SNIP 1.058 CiteScore 2.01
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 2
IGR J17453-2853 = Granat 1741.9-2853?

**General information**

State: Published
Organisations: Astrophysics, National Space Institute
Authors: Kuulkers, E. (Ekstern), Shaw, S. (Ekstern), Chenevez, J. (Intern), Brandt, S. K. (Intern), Kretschmar, P. (Ekstern), Markwardt, C. (Ekstern), Mowlavi, C. (Ekstern), Paizis, A. (Ekstern), Risquez, D. (Ekstern), Sanchez-Fernandez, C. (Ekstern), Wijnands, R. (Ekstern)
Publication date: 2007
Main Research Area: Technical/natural sciences

**Publication information**

Journal: The Astronomer's Telegram
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Source: orbit
Source-ID: 209781
INTEGRAL detects a new outburst of MXB 0656-072

General information
State: Published
Organisations: Astrophysics, National Space Institute
Authors: Kreykenbohm, I. (Ekstern), Shaw, S. (Ekstern), Bianchin, V. (Ekstern), Diehl, R. (Ekstern), Brandt, S. K. (Intern), Mas-Hesse, M. (Ekstern), Parmar, A. (Ekstern), Hermsen, W. (Ekstern), Krivonos, R. (Ekstern)
Publication date: 2007
Main Research Area: Technical/natural sciences

Publication information
Journal: The Astronomer's Telegram
Original language: English
Source: orbit
Source-ID: 209755
Publication: Research - peer-review – Journal article – Annual report year: 2007

INTEGRAL observations of the cosmic X-ray background in the 5-100 keV range via occultation by the Earth
Aims. We study the spectrum of the cosmic X-ray background (CXB) in energy range similar to 5-100 keV. Methods. Early in 2006 the INTEGRAL observatory performed a series of four 30 ks observations with the Earth disk crossing the field of view of the instruments. The modulation of the aperture flux due to occultation of extragalactic objects by the Earth disk was used to obtain the spectrum of the Cosmic X-ray Background (CXB). Various sources of contamination were evaluated, including compact sources, Galactic Ridge emission, CXB reflection by the Earth atmosphere, cosmic ray induced emission by the Earth atmosphere and the Earth auroral emission. Results. The spectrum of the cosmic X-ray background in the energy band 5-100 keV is obtained. The shape of the spectrum is consistent with that obtained previously by the HEAO-1 observatory, while the normalization is similar to 10% higher. This difference in normalization can (at least partly) be traced to the different assumptions on the absolute flux from the Crab Nebulae. The increase relative to the earlier adopted value of the absolute flux of the CXB near the energy of maximum luminosity (20-50 keV) has direct implications for the energy release of supermassive black holes in the Universe and their growth at the epoch of the CXB origin.

General information
State: Published
Organisations: Astrophysics, National Space Institute, Cognitive Systems, Department of Informatics and Mathematical Modeling
Pages: 529-540
Publication date: 2007
Main Research Area: Technical/natural sciences

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Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 2.543 SNIP 1.189 CiteScore 3.5
Web of Science (2015): Indexed yes
Recent and past activity of the supergiant fast X-ray transient IGR J17544-2619 as seen by INTEGRAL

General information
State: Published
Organisations: Astrophysics, National Space Institute
Authors: Kuulkers, E. (Ekstern), Oneca, D. R. (Ekstern), Brandt, S. K. (Intern), Shaw, S. (Ekstern), Beckmann, V. (Ekstern), Chenevez, J. (Intern), Courvoisier, T. (Ekstern), Domingo, A. (Ekstern), Ebisawa, K. (Ekstern), Jonker, P. (Ekstern),
Refined distance estimation of XMMU J174716.1-281048

General information
State: Published
Organisations: Astrophysics, National Space Institute
Authors: Del Santo, M. (Ekstern), Chenevez, J. (Intern), Brandt, S. K. (Intern), Bazzano, A. (Ekstern), Ubertini, P. (Ekstern)
Publication date: 2007
Main Research Area: Technical/natural sciences

Publication information
Journal: The Astronomer's Telegram
Original language: English
Source: orbit
Source-ID: 209761
Publication: Research › Journal article – Annual report year: 2007

Renewed activity of the Galactic center transients Swift J174535.5-290135.6 and GRS 1741.9-2853 as observed with Swift/XRT

General information
State: Published
Organisations: Astrophysics, National Space Institute
Publication date: 2007
Main Research Area: Technical/natural sciences

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Journal: The Astronomer's Telegram
Original language: English
Source: orbit
Source-ID: 209777
Publication: Research › Journal article – Annual report year: 2007

SAX J1810.8-2609 displays increasing hard X-ray activity

General information
State: Published
Organisations: National Space Institute, Astrophysics
Number of pages: 1
Pages: ATEL #1227
Publication date: 2007
Main Research Area: Technical/natural sciences

Publication information
Journal: The Astronomer's Telegram : ATEL
The INTEGRAL Galactic bulge monitoring program: the first 1.5 years

Aims. The Galactic bulge region is a rich host of variable high-energy point sources. Since 2005, February 17 we are monitoring the source activity in the Galactic bulge region regularly and frequently, i.e., about every three days, with the instruments onboard INTEGRAL. Thanks to the large field of view, the imaging capabilities and the sensitivity at hard X-rays, we are able to present for the first time a detailed homogeneous (hard) X-ray view of a sample of 76 sources in the Galactic bulge region. Methods. We describe the successful monitoring program and show the first results from the start of the monitoring up to 2006, April 21, i.e., for a period of about one and a half year, during three visibility seasons. We focus on the short (hour), medium (month) and long-term (year) variability in the hard X-ray bands, i.e., 20-60 keV and 60-150 keV. When available, we discuss the simultaneous observations in the soft X-ray, 3-10 keV and 10-25 keV, bands. Results. Almost all the sources in the Galactic bulge region we detect in the 20-60 keV and 60-150 keV bands are variable. During the last two and a half weeks of the third visibility season most of the known persistent (hard) X-ray sources in the Galactic Center region were not detected. Of our sample of sources, per visibility season we detect 32/33 sources in the 20-60 keV band and 8/9 sources in the 60-150 keV band above a signal to noise of 7. On average, we find per visibility season one active bright (greater than or similar to 100 mCrab, 20-60 keV) black-hole candidate X-ray transient and three active weaker (less than or similar to 25 mCrab, 20-60 keV) neutron star X-ray transients. Most of the time a clear anti-correlation can be seen between the soft and hard X-ray emission in some of the X-ray bursters. Hard X-ray flares or outbursts in X-ray bursters, which have a duration of the order of weeks are accompanied by soft X-ray drops. On the other hand, hard X-ray drops can be accompanied by soft X-ray flares/outbursts. During the course of our program we found a number of new sources, IGR J17354-3255, IGR 17453-2853, IGR J17454-2703, IGR J17456-2901b, IGR J17536-2339, and IGR J17541-2252. We report here on some of the high-energy properties of these sources. Conclusions. The high-energy light curves of all the sources in the field of view, and the high-energy images of the region, are made available through the WWW, as soon as possible after the observations have been performed, at http://isdc.unige.ch/Science/BULGE/.

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Main Research Area: Technical/natural sciences

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Scopus rating (2015): SJR 2.543 SNIP 1.189 CiteScore 3.5
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 2.823 SNIP 1.219 CiteScore 2.82
Web of Science (2014): Indexed yes
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Two active X-ray transients in the Galactic Center region as seen by INTEGRAL

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Organisations: Astrophysics, National Space Institute
Authors: Kuulkers, E. (Ekstern), Shaw, S. (Ekstern), Chenevez, J. (Intern), Brandt, S. K. (Intern), Courvoisier, T. (Ekstern), Domingo, A. (Ekstern), Kretschmar, P. (Ekstern), Markwardt, C. (Ekstern), Mowlavi, N. (Ekstern), Paizis, A. (Ekstern), Risquez, D. (Ekstern), Sanchez-Fernandez, C. (Ekstern), Winjnands, R. (Ekstern)
Publication date: 2007
Main Research Area: Technical/natural sciences

Publication information
Journal: The Astronomer's Telegram
Detection of Type I X-ray burst from IGR J17254-3257

General information
State: Published
Organisations: Astrophysics, National Space Institute
Authors: Brandt, S. K. (Intern), Budtz-Jørgensen, C. (Intern), Chenevez, J. (Intern)
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Publication date: 2006
Main Research Area: Technical/natural sciences

Publication information
Journal: The Astronomer's Telegram
Volume: 778
Original language: English
Source: orbit
Source-ID: 209788
Publication: Research › Journal article – Annual report year: 2007

Fast X-ray transient, IGR J17464-2811 detected with INTEGRAL
A fast X-ray transient, possibly a Type-I X-ray burster has been discovered in public INTEGRAL data. The burst occurred at 07:55:33 (UTC) on March 22, 2005, and was detected in the JEM-X X-ray monitor. The position of the source, designated IGR J17464-2811, was determined in the 3-30 keV energy interval to be RA = 266.810 deg, DEC = -28.185 (J2000), with a 90% error radius of 1 arcmin. In the 3-8 keV band the burst showed a fast rise and an exponential decay with a time constant of about 70 seconds. In the 8-30 keV band the burst showed a gradual rise over 25 seconds followed by an exponential decay with a time constant of about 30 seconds, indicating a spectral softening characteristic of Type-I X-ray bursters. The burst reached a peak flux of 1.0 Crab in the JEM-X 3-30 keV band. The outburst was also clearly detected and localized with ISGRI up to 30 keV. 10 weak sources are found within the JEM-X error circle in the XMM 2XMMp and Chandra CXOGCR catalogs.

General information
State: Published
Organisations: National Space Institute, Astrophysics
Number of pages: 1
Pages: ATel #970
Publication date: 2006
Main Research Area: Technical/natural sciences

Publication information
Journal: The Astronomer’s Telegram : ATel
Original language: English
Electronic versions: ATEL_970.pdf
Links:
http://www.astronomerstelegram.org/?read=970
Source: dtu
Source-ID: u::6822
Publication: Research › Journal article – Annual report year: 2006

Further INTEGRAL observations of IGR J17497-2821

General information
State: Published
Organisations: Astrophysics, National Space Institute
INTEGRAL and RXTE monitoring of XTE J1817-330: evolving through a state change?

General information
State: Published
Organisations: Astrophysics, National Space Institute
Authors: Kuulkers, E. (Ekstern), Goldoni, P. (Ekstern), Shaw, S. E. (Ekstern), Brandt, S. K. (Intern), Chenevez, J. (Intern), Courvoisier, T. J. (Ekstern), Ebisawa, K. (Ekstern), Kretschmar, P. (Ekstern), Markwardt, C. (Ekstern), Mowlavi, N. (Ekstern), Oosterbroek, T. (Ekstern), Orr, A. (Ekstern), Paizis, A. (Ekstern), Rodriguez, J. (Ekstern), Sanchez-Fernandez, C. (Ekstern), Wijnands, R. (Ekstern)
Publication date: 2006
Main Research Area: Technical/natural sciences
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Journal: The Astronomer’s Telegram
Volume: 738
Original language: English
Source-ID: 207958
Publication: Research › Journal article – Annual report year: 2006

INTEGRAL detection of SWIFT J2037.2+4151
The source detected by SWIFT (ATEL #853) was independently found in archived JEM-X public data in 5 pointings covering 18200s between 2004-07-19, 19:14 UTC and 2004-07-20, 03:27 UTC. Positioned within 1.2 degrees of Cyg X-3 it has been inside the JEM-X field-of-view more than 400 times with an off-axis angle less than 4 deg between 2002-12-16 and 2005-05-14. The search shows no firm detection except on the date mentioned above. The emission around 2004-07-19, 19:44 UTC can be fit by a powerlaw spectrum with a photon index of 2.0+-0.1 where the intensity reached 25 mCrab decreasing over the next 6 hours. (The source was observed only intermittently due to INTEGRAL dither pointings.) A search using OSA5.1 software in the ISGRI images from the same period in the 20 - 30 keV range showed no sign of the source. The source position was best determined in the 4 - 15 keV energy interval to be RA = 309.264 deg, DEC = 41.833 (J2000) with a 90% error radius of 1.1 arcmin.

General information
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Organisations: National Space Institute, Astrophysics
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Publication date: 2006
Main Research Area: Technical/natural sciences
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Journal: The Astronomer’s Telegram : ATel
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Electronic versions: ATEL #967_ INTEGRAL detection of SWIFT J2037.pdf
Links: http://www.astronomerstelegram.org/?read=967
Source: dtu
Source-ID: u::6823
Publication: Research › Journal article – Annual report year: 2006

INTEGRAL detects hard X-ray emission from XTE J1817-330
INTEGRAL detects SWIFT J174535.5-290135.6

Publication information
Journal: The Astronomer's Telegram
Volume: 756
Original language: English
Source-ID: 205836
Publication: Research › Journal article – Annual report year: 2006

INTEGRAL discovery of two faint hard X-ray sources in the Galactic Bulge

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Journal: The Astronomer's Telegram
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Original language: English
Source-ID: 207980
Publication: Research › Journal article – Annual report year: 2006

JEM-X catalog of X-ray sources

Publication information
Journal: The Astronomer's Telegram
Volume: 731
Original language: English
Source-ID: 207975
Publication: Research › Journal article – Annual report year: 2006
JEM-X: three years in space

General information
State: Published
Organisations: Astrophysics, National Space Institute
Publication date: 2006

New INTEGRAL source, IGR J17354-3255, and continuation of the INTEGRAL Galactic Bulge monitoring program

General information
State: Published
Organisations: Astrophysics, National Space Institute
Publication date: 2006

Refined position of IGR J08408-4503 by JEM-X on INTEGRAL

General information
State: Published
Organisations: Astrophysics, National Space Institute
Pages: 1
Publication date: 2006
The INTEGRAL Galactic Bulge monitoring program

General information
State: Published
Organisations: Astrophysics, National Space Institute
Authors: Kuulkers, E. (Ekstern), Shaw, S. E. (Ekstern), Brandt, S. K. (Intern), Chenevez, J. (Intern), Courvoisier, T. J. (Ekstern), Ebisawa, K. (Ekstern), Kretschmar, P. (Ekstern), Markwardt, C. B. (Ekstern), Mowlavi, N. (Ekstern), Oosterbroek, T. (Ekstern), Orr, A. (Ekstern), Paizis, A. (Ekstern), Sanchez-Fernandez, C. (Ekstern), Wijnands, R. (Ekstern)
Pages: 30-34
Publication date: 2006

Host publication information
Title of host publication: AIP Conf. Proc. 840: The Transient Milky Way: A Perspective for MIRAX
Volume: 840
Main Research Area: Technical/natural sciences
Conference: AIP, 01/01/2006
Source-ID: 207962
Publication: Research - peer-review › Article in proceedings – Annual report year: 2006

The INTEGRAL Galactic Bulge monitoring program: An unshrouded view of our lively Galactic Bulge

General information
State: Published
Organisations: Astrophysics, National Space Institute
Publication date: 2006

Host publication information
Title of host publication: Proceedings of the 6th INTEGRAL Workshop
Main Research Area: Technical/natural sciences

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Activities:
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Source-ID: 207963
Publication: Research - peer-review › Article in proceedings – Annual report year: 2006

Three active neutron star X-ray transients: SAX J1747.0-2853, XTE J1739-285 and GRS 1747-312

General information
State: Published
Organisations: Astrophysics, National Space Institute
Publication date: 2006
Two-phase X-ray burst from GX 3+1 observed by INTEGRAL
INTEGRAL detected on August 31, 2004, an unusual thermonuclear X-ray burst from the low-mass X-ray binary GX 3 3+1. Its duration was 30 min, which is between the normal burst durations for this source (less than or similar to 10 s) and the superburst observed in 1998 ( several hours). We see emission up to 30 keV energy during the first few seconds of the burst where the bolometric peak luminosity approaches the Eddington limit. This peculiar burst is characterized by two distinct phases: an initial short spike of similar to 6 s consistent with being similar to a normal type I X-ray burst, followed by a remarkable extended decay of cooling emission. We discuss three alternative schemes to explain its twofold nature: 1) unstable burning of a hydrogen hydrogen/helium layer involving an unusually large amount of hydrogen; 2) pure helium ignition at an unusually large depth ( unlikely in the present case); and 3) limited carbon burning at an unusually shallow depth triggered by unstable helium ignition. Though none of these provide a satisfactory description of this uncommon event, the former one seems the most probable.

General information
State: Published
Organisations: Astrophysics, National Space Institute
Authors: Chenevez, J. (Intern), Falanga, M. (Ekstern), Brandt, S. (Intern), Farinelli, R. (Ekstern), Frontera, F. (Ekstern), Goldwurm, A. (Ekstern), in't Zand, J. (Ekstern), Kuulkers, E. (Ekstern), Lund, N. (Intern)
Pages: L5-L8
Publication date: 2006
Main Research Area: Technical/natural sciences
Two years of INTEGRAL monitoring of the soft gamma-ray repeater SGR 1806-20: from quiescence to frenzy

SGR 1806-20 has been observed for more than 2 years with the INTEGRAL satellite. In this period the source went from a quiescent state into a very active one culminating in a giant flare on December 27, 2004. Here we report on the properties of all the short bursts detected with INTEGRAL before the giant flare. We derive their number-intensity distribution and confirm the hardness-intensity correlation for the bursts found by Gotz et al. (2004a, A&A, 417, L45). Our sample includes a very bright outburst that occurred on October 5, 2004, during which over one hundred bursts were emitted in 10 minutes, involving an energy release of 3 x 10^42 erg. We present a detailed analysis of it and discuss our results in the framework of the magnetar model.
gamma rays : bursts, stars : pulsars : general, stars : pulsars : individual : SGR 1806-20, gamma rays : observations
Source: orbit
Source-ID: 205103
Publication: Research - peer-review › Journal article – Annual report year: 2006
X-ray bursts observed with JEM-X
We report on the search for X-ray bursts in the JEM-X X-ray monitor on INTEGRAL during the first two years of operations. More than 350 bursts from 25 different type-I X-ray burst sources were found.

A giant flare from the magnetar SGR 1806-20: a tsunami of gamma-rays

Bursts observed with JEM-X - reconstructing light curves, exemplified by bright bursts from SGR 1806-20

Discovery of a new X-ray transient IGR J16283-4838 with INTEGRAL
We report the discovery of a new source by the IBIS/ISGRI detector on board INTEGRAL. The new source, IGR J16283-4838, was detected during a core program observation of the Norma Arm between 2005 April 7 13:56:50 U.T. and April 9
04:44:23 U.T., with a flux of ~3.6 mCrab in the 20-60 keV band and a significance of 6.2 in a mosaic image of 126 ksec. The source was not detected in the 60-200 keV band.

**General information**
State: Published
Organisations: Astrophysics, National Space Institute
Authors: Soldi, S. (Ekstern), Brandt, S. K. (Intern), Garau, A. (Ekstern), Domingo, A. (Ekstern), Grebenev, S. (Ekstern), Kuulkers, E. (Ekstern), Palumbo, G. (Ekstern), Tarana, A. (Ekstern)
Pages: 2005ATel..456....1S
Publication date: 2005
Main Research Area: Technical/natural sciences

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Original language: English
Links:
http://adsabs.harvard.edu/abs/2005ATel..456....1S
Source: orbit
Source-ID: 208753
Publication: Research › Journal article – Annual report year: 2005

**JEM-X Scientific Analysis: Science Validation Report: Version 5.0**

**General information**
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Organisations: Astrophysics, National Space Institute
Publication date: 2005
Main Research Area: Technical/natural sciences

**Publication information**
Original language: English
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Source-ID: 207576
Publication: Research - peer-review › Report – Annual report year: 2005

**On the (hard) X-ray activity of SAX J1747.0-2853 as seen with INTEGRAL**

**General information**
State: Published
Organisations: Astrophysics, National Space Institute
Authors: Kuulkers, E. (Ekstern), Kretschmar, P. (Ekstern), Brandt, S. K. (Intern), Wijnands, R. (Ekstern), Courvoisier, T. (Ekstern), Ebisawa, K. (Ekstern), i't Zand, J. (Ekstern), Markwardt, C. (Ekstern), Mowlavi, N. (Ekstern), Oosterbroek, T. (Ekstern), Orr, A. (Ekstern), Paizis, A. (Ekstern), Shaw, S. (Ekstern)
Publication date: 2005
Main Research Area: Technical/natural sciences

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Journal: The Astronomer's Telegram
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Original language: English
Links:
http://adsabs.harvard.edu/abs/2005ATel..642....1K
Source: orbit
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Publication: Research › Journal article – Annual report year: 2005

**Type-I X-ray bursts from XTE J1739-285**

**General information**
State: Published
Organisations: Astrophysics, National Space Institute, European Space Agency, National Institute for Astrophysics, University of Geneva, Laboratorio de Astrofísica Espacial y Física Fundamental
A JEM-X Survey for Weak Sources

General information
State: Published
Organisations: National Space Institute, Astrophysics
Authors: Westergaard, N. J. S. (Intern), Budtz-Jørgensen, C. (Intern), Lund, N. (Intern), Chenevez, J. (Intern), Brandt, S. (Intern), Kretschmar, P. (Ekstern), Walter, R. (Ekstern), Larsson, S. (Ekstern), Maisala, S. (Ekstern), Huovelin, J. (Ekstern)
Number of pages: 6
Pages: 153-
Publication date: 2004

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Publisher: European Space Agency, ESA
Editors: Schönfelder, V., Lichti, G., Winkler, C.
ISBN (Print): 92-9092-863-8
Main Research Area: Technical/natural sciences
Conference: The 5th INTEGRAL Workshop, München, Germany, 16/02/2004 - 16/02/2004

Relations
Activities:
The 5th INTEGRAL Workshop
Publication: Research - peer-review › Article in proceedings – Annual report year: 2004

Correcting for the Unexpected: Dead Anodes, Glitches, Hotspots and Gain Drift in JEM-X Data Processing

General information
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Organisations: National Space Institute, Astrophysics, INTEGRAL Science Data Center
Number of pages: 4
Pages: 879-
Publication date: 2004

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Title of host publication: Proceedings of the 5th INTEGRAL Workshop on the INTEGRAL Universe
Place of publication: Munich
Publisher: European Space Agency, ESA
Editors: Schönfelder, V., Lichti, G., Winkler, C.
ISBN (Print): 92-9092-863-8
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Conference: The 5th INTEGRAL Workshop, München, Germany, 16/02/2004 - 16/02/2004

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Cross Calibration of Instruments on Board XMM-Newton and INTEGRAL with the Crab

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Organisations: National Space Institute, Astrophysics, European Space Agency, Max Planck Institute, Danish Space Research Institute
Authors: Kirsch, M. G. F. (Ekstern), Becker, W. (Ekstern), Brandt, S. (Intern), Budtz-Jørgensen, C. (Intern), Westergaard, N. J. (Ekstern), Much, R. (Ekstern)
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Main Research Area: Technical/natural sciences

Relations
Activities:
The 5th INTEGRAL Workshop
Source: dtu
Source-ID: u::5825
Publication: Research - peer-review › Paper – Annual report year: 2004

Flares from a new Integral hard X-ray source, IGR J17407-2808, likely associated with the ROSAT source SBM 10
This new hard X-ray source, IGR J17407-2808, is positionally coincident with a faint ROSAT source listed as no. 10 in the catalogue of sources in the Galactic Center region by Sidoli, Belloni & Mereghetti 2001, A&A 368, 835 and as 2RXP J174040.9-280852 in the ROSAT Source Browser. No other observations of [SBM2001] 10 have been published up to date.

The flares were observed with the IBIS instrument in the 20-60 keV energy range, starting at MJD 53287.6310 and over a timespan of 2000 seconds finishing in a strong flare at MJD 53287.6327. Before and after this time period the source was not detected.

The last flare, with peak fluxes of 0.8±0.1 Crab and 0.6±0.1 Crab in the energy ranges 20-40 keV and 40-60 keV respectively, triggered an automatic alert message of the Integral Burst Alert System (IBAS Alert #2010) which led to the discovery of the source (Gotz et al., GCN Circ. #2793). The source was outside the FOV of the JEM-X and OMC monitor instruments during this flare.

Note that the position of J17407-2808 is inconsistent with that of the X-ray burster SLX 1737-282 [AX J1740.7-2818] (in't Zand et al. 2002, A&A 389, L43), which is just ~11 arcmin away. The correct Integral attitude is confirmed by other bright sources in the FOV.

General information
State: Published
Organisations: National Space Institute, Astrophysics
Authors: Kretschmar, P. (Ekstern), Mereghetti, S. (Ekstern), Hermsen, W. (Ekstern), Ubertini, P. (Ekstern), Winkler, C. (Ekstern), Brandt, S. (Intern), Diehl, R. (Ekstern)
Number of pages: 1
Pages: ATel #345
Publication date: 2004
Main Research Area: Technical/natural sciences

Publication information
Journal: The Astronomer’s Telegram
Original language: English
Links:
http://www.astronomerstelegram.org/?read=345
Source: dtu
Source-ID: u::6817
Publication: Research - peer-review › Journal article – Annual report year: 2004
GRB040903 - a XRF?

General information
State: Published
Organisations: National Space Institute, Astrophysics
Authors: Kuulkers, E. (Ekstern), Gotz, D. (Ekstern), Mereghetti, S. (Ekstern), Goldoni, P. (Ekstern), Goldwurm, A. (Ekstern), Brandt, S. (Intern)
Number of pages: 1
Publication date: 2004
Main Research Area: Technical/natural sciences

Publication information
Journal: GRB Coordinates Network
Issue number: 2699
Original language: English
Electronic versions:
GCN_2699.pdf
Links:

Bibliographical note
GRB Coordinates Network, Circular Service
Source: dtu
Source-ID: u::6821
Publication: Research › Journal article – Annual report year: 2004

GRS 1915+105: The First Three Months with INTEGRAL

General information
State: Published
Organisations: National Space Institute, Astrophysics
Number of pages: 7
Pages: 299-
Publication date: 2004

Host publication information
Title of host publication: Proceedings of the 5th INTEGRAL Workshop on the INTEGRAL Universe
Place of publication: Munich
Publisher: European Space Agency, ESA
Editors: Schönfelder, V., Lichti, G., Winkler, C.
ISBN (Print): 92-9092-863-8
Main Research Area: Technical/natural sciences
Conference: The 5th INTEGRAL Workshop , Munich, Germany, 16/02/2004 - 16/02/2004

Relations
Activities:
The 5th INTEGRAL Workshop
Publication: Research › peer-review › Article in proceedings – Annual report year: 2004

High-Energy Behaviour of the BHC IGR J17464-3213

General information
State: Published
Organisations: National Space Institute, Astrophysics
INTEGRAL detection of the X-ray outburst of SAX J1747.0-2853

We report the detection with INTEGRAL of a new outburst of the recurrent BeppoSAX hard X-ray transient SAX J1747.0-2853, an emitting type I X-ray bursts neutron star binary.

The source was detected at RA=266.76 DEC=-28.89 (J2000), 30 arcsec precision, for a total exposure of 13880 s between March 20 18:16:57 and March 21 15:12:33 as part of the Galactic Center Deep Exposure. The source was detected with a flux of 240 mCrab in the 3-10 keV band of JEMX1 and up to 92 mCrab in the 10-30 keV band.

We confirm thus the RXTE/PCA detection reported by Markwardt et al. in ATEL #255.

In addition, we report a detection of only 8.5 mCrab in the 17-45 keV band in ISGRI, which, combined with the low flux in the 10-30 keV of JEMX indicates the source being in high state with softness in the emission. The source had not been detected so far during any of the previous core program observation of INTEGRAL with the source in the field of view. Last outburst was in 2001 september and the source has never been detected brighter than 100 mCrab with BeppoSAX.

JEM-X: The X-ray monitor on INTEGRAL

The INTEGRAL X-ray monitor, JEM-X, (together with the two gamma ray instruments, SPI and IBIS) provides simultaneous imaging with arcminute angular resolution in the 3-35 keV band. The good angular resolution and low energy response of JEM-X plays an important role in the detection and identification of gamma ray sources as well as in the analysis and scientific interpretation of the combined X-ray and gamma ray data. JEM-X is a coded aperture X-ray telescope consisting of two identical detectors. Each detector has a sensitive area of 500 cm(2), and views the sky through its own coded aperture mask. The coded masks are located 3.4 m above the detector windows. The detector field of view is constrained by X-ray collimators (6.6 degrees FOV, FWHM).
Long duration X-ray burst from GX 3+1

During an observation of the Galactic Center the JEM-X instrument on INTEGRAL detected an unusually long X-ray burst from GX 3+1. The burst began on August 31 at 18:57 UTC

After an precursor spike lasting 7 s where the burst reached a flux of about 2000 mCrab in the 4 to 20 keV band the flux fell to around 500 mCrab and then decayed with an e-folding time of about 700 s. This burst appear as intermediate between the normal type-I X-ray bursts (e-folding times up to a few tens of seconds) and the very long "superbursts" (e-folding times of several hours).

Prior to the outburst the source flux was about 150 mCrab.

Follow-up observations are encouraged.

General information
State: Published
Organisations: National Space Institute, Astrophysics
Authors: Brandt, S. (Intern), Lund, N. (Intern), Chenevez, J. (Intern), Budtz-Jørgensen, C. (Intern), Goldoni, P. (Ekstern), Belanger, G. (Ekstern), Goldwurm, A. (Ekstern), Kuulkers, E. (Ekstern)
Number of pages: 1
Pages: ATel #327
Publication date: 2004
Main Research Area: Technical/natural sciences

Publication information
Journal: The Astronomer’s Telegram : ATel
Original language: English
Electronic versions: 8.pdf
Links:
http://www.astronomerstelegram.org/?read=327
Source: dtu
Source-ID: u::6818
Performance of JEM-X on INTEGRAL

General information
State: Published
Organisations: National Space Institute, Astrophysics
Number of pages: 6
Pages: 723-
Publication date: 2004

Host publication information
Title of host publication: Proceedings of the 5th INTEGRAL Workshop on the INTEGRAL Universe
Place of publication: Munich
Publisher: European Space Agency, ESA
Editors: Schönfelder, V., Lichti, G., Winkler, C.
ISBN (Print): 92-9092-863-8
Main Research Area: Technical/natural sciences
Conference: The 5th INTEGRAL Workshop, München, Germany, 16/02/2004 - 16/02/2004

Relations
Activities:
The 5th INTEGRAL Workshop

Search for GRBs and X-Ray Flashes in the X-Ray Monitor on INTEGRAL

General information
State: Published
Organisations: National Space Institute, Astrophysics, INTEGRAL Science Data Center
Authors: Brandt, S. (Intern), Lund, N. (Intern), Produit, N. (Ekstern)
Number of pages: 4
Pages: 633-
Publication date: 2004

Host publication information
Title of host publication: Proceedings of the 5th INTEGRAL Workshop on the INTEGRAL Universe
Place of publication: Munich
Publisher: European Space Agency, ESA
Editors: Schönfelder, V., Lichti, G., Winkler, C.
ISBN (Print): 92-9092-863-8
Main Research Area: Technical/natural sciences
Conference: The 5th INTEGRAL Workshop, München, Germany, 16/02/2004 - 16/02/2004

Relations
Activities:
The 5th INTEGRAL Workshop

Serpens X-1 observed by INTEGRAL
Here we report results of an INTEGRAL-AO1 observation of the X-ray burst and atoll source Ser X-1 performed in May 2003. The object was observed for a total on-source time of 400 ks but nearly 8 degrees off-axis due to its amalgamation with an observation of SS 433, the pointing target source. Ser X-1 has been clearly detected up to 30 keV with unprecedented positional accuracy for high-energy emission. The 20-30 keV light curve showed substantial variability during the observation. Comparison with previous observations indicates that the source was in its high (“banana”) state and displayed a soft spectrum during the INTEGRAL pointing. A (non simultaneous) radio-to-gamma-rays broad-band spectral energy distribution is also presented for the first time and discussed.

General information
State: Published
Organisations: Astrophysics, National Space Institute
Authors: Masetti, N. (Ekstern), Foschini, L. (Ekstern), Palazzi, E. (Ekstern), Beckmann, V. (Ekstern), Lund, N. (Intern), Brandt, S. K. (Intern), Westergaard, N. J. S. (Intern), Amati, L. (Ekstern), Caroli, E. (Ekstern), Del Sordo, S. (Ekstern), Di
The INTEGRAL View of the Soft Gamma-Ray Repeater SGR 1806-20

General information
State: Published
Organisations: National Space Institute, Astrophysics
Number of pages: 8
Pages: 615-
Publication date: 2004

The LMXRB GX354-0 is flaring in the hard X-rays

GX 354-0 (also known as 4U 1728-34) has been monitored by INTEGRAL as part of the Galactic Center Deep Exposure almost continuously from 2004-02-16 until now. Over that period the source flux measured by IBIS/ISGRI between 20-60 keV featured a smooth increase with a maximum flux of 0.2 Crab measured on February 24th. The source flux then decreased by a factor of 5 on a time scale of one week. Below 10 keV the flux measured by JEM-X increased by a factor larger than 6 continuously on a timescale of 3 weeks. The current flux (2004-03-08) measured by JEM-X in the 3-10 keV band is 0.5 Crab. The INTEGRAL monitoring will continue for several days.

General information
State: Published
Organisations: National Space Institute, Astrophysics
Authors: Zurita, J. (Ekstern), Bazzano, A. (Ekstern), Brandt, S. (Intern), Domingo, A. (Ekstern), Winkler, C. (Ekstern), Grebenev, S. (Ekstern)
Number of pages: 1
Pages: ATel #248
Publication date: 2004
Main Research Area: Technical/natural sciences
The potential of INTEGRAL for the detection of high redshift GRBs

We discuss INTEGRAL's ability to detect a high redshift population of Gamma-Ray Bursts (GRBs) in comparison to other high-energy missions. Emphasis is placed on the study of the relative capabilities of IBIS on board INTEGRAL with respect to SWIFT and HETE 2 in detecting a high redshift population of GRBs. We conclude that, if the GRB rate is proportional to the star formation rate, INTEGRAL's ability to study GRBs are complementary to the ones of missions like SWIFT and HETE 2, devoted to prompt localisations of GRBs. Whereas SWIFT and HETE 2 would detect a higher number of GRBs than INTEGRAL, IBIS might be able to detect high redshift (z greater than or similar to 7) GRBs, unreachable by SWIFT and HETE 2. We discuss the relevance of performing near-infrared (NIR) observations of the INTEGRAL GRBs and the strategy that large-class telescopes might follow.
An INTEGRAL ToO Observation of SGR1806-20

General information
State: Published
Organisations: Astrophysics, National Space Institute
Pages: 1309
Publication date: 2003
Conference: American Astronomical Society Meeting, 01/01/2003
Main Research Area: Technical/natural sciences

Publication information
Volume: 35
Original language: English
Source: orbit
Source-ID: 207930
Publication: Research - peer-review › Conference article – Annual report year: 2003

First INTEGRAL observations of GRS 1915+105
We present data from the first of six monitoring Open Time observations of GRS 1915+105 undertaken with the orbiting INTEGRAL satellite. The source was clearly detected with all three X-ray and gamma-ray instruments on board. GRS 1915+105 was in a highly variable state, as demonstrated by the JEMX-2 and ISGRI lightcurves. These and simultaneous RXTE/PCA lightcurves point to a novel type of variability pattern in the source. In addition, we fit the combined JEM X-2 and ISGRI spectrum between 3-300 keV with a disk blackbody+powerlaw model leading to typical parameter values found earlier at similar luminosity levels. A new transient, IGR J19140+098, was discovered during the present observation.
GRB 030227: The first multiwavelength afterglow of an INTEGRAL GRB

We present multiwavelength observations of a gamma-ray burst detected by INTEGRAL (GRB 030227) between 5.3 hours and similar to 1.7 days after the event. Here we report the discovery of a dim optical afterglow (OA) that would not have been detected by many previous searches due to its faintness (R similar to 23). This OA was seen to decline following a power law decay with index alpha(R) = - 0.95 +/- 0.16. The spectral index beta(opt/NIR) yielded - 1.25 +/- 0.14. These values may be explained by a relativistic expansion of a fireball (with p = 2.0) in the cooling regime. We also find evidence for inverse Compton scattering in X-rays.

General information
State: Published
Organisations: Astrophysics, National Space Institute
Pages: L315-L319
Publication date: 2003
Main Research Area: Technical/natural sciences

Publication information
Journal: Astronomy & Astrophysics
Volume: 411
Issue number: 1
ISSN (Print): 0004-6361
Ratings:
BFI (2017): BFI-level 2
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 2
Scopus rating (2016): CiteScore 3.68 SJR 2.246 SNIP 1.16
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 2.543 SNIP 1.189 CiteScore 3.5
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 2.823 SNIP 1.219 CiteScore 2.82
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 2
We summarize the inflight performance of JEM-X, the X-ray monitor on the INTEGRAL mission during the initial ten months of operations. The JEM-X instruments have now been tuned to stable operational conditions. The performance is found to be close to the pre-launch expectations. The ground calibrations and the inflight calibration data permit to determine the instruments characteristics to fully support the scientific data analysis.

General information
State: Published
Organisations: Astrophysics, National Space Institute
JEM-X Performance and Calibration Status: Report (IN-PL-JEM-0018)

General information
State: Published
Organisations: Astrophysics, National Space Institute
Publication date: 2003

Publication information
Original language: English
Main Research Area: Technical/natural sciences
Source: orbit
Source-ID: 205156
Publication: Research - peer-review › Journal article – Annual report year: 2003

JEM-X science analysis software
The science analysis of the data from JEM-X on INTEGRAL is performed through a number of levels including corrections, good time selection, imaging and source finding, spectrum and light-curve extraction. These levels consist of individual executables and the running of the complete analysis is controlled by a script where parameters for detailed settings are introduced. The end products are FITS files with a format compatible with standard analysis packages such as XSPEC.

General information
State: Published
Organisations: Astrophysics, National Space Institute
Pages: L257-L260
Publication date: 2003
Main Research Area: Technical/natural sciences

Publication information
Journal: Astronomy & Astrophysics
Volume: 411
Issue number: 1
ISSN (Print): 0004-6361
Ratings:
BFI (2017): BFI-level 2
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 2
Scopus rating (2016): CiteScore 3.68 SJR 2.246 SNIP 1.16
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
JEM-X: The X-ray monitor aboard INTEGRAL

The JEM-X monitor provides X-ray spectra and imaging with arcminute angular resolution in the 3 to 35 keV band. The good angular resolution and the low energy response of JEM-X plays an important role in the identification of gamma ray sources and in the analysis and scientific interpretation of the combined X-ray and gamma ray data. JEM-X is a coded aperture instrument consisting of two identical, coaligned telescopes. Each of the detectors has a sensitive area of 500 cm², and views the sky through its own coded aperture mask. The two coded masks are inverted with respect to each other and provides an angular resolution of 3' across an effective field of view of about 10 degrees diameter.
X-ray facility for the ground calibration of the X-ray monitor JEM-X on board INTEGRAL

We describe the X-ray facility developed for the calibration of the X-ray monitor JEM-X on board the INTEGRAL satellite. The apparatus allowed the scanning of the detector geometric area with a pencil beam of desired energy over the major part of the passband of the instrument. The monochromatic radiation is obtained with the use of a double crystal monochromator at fixed exit. We discuss the facility performance.

General information
State: Published
Organisations: Astrophysics, National Space Institute
Pages: L239-L242
Publication date: 2003
Main Research Area: Technical/natural sciences

Publication information
Journal: Astronomy & Astrophysics
Volume: 411
Issue number: 1
ISSN (Print): 0004-6361
Ratings:
BFI (2017): BFI-level 2
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 2
Scopus rating (2016): CiteScore 3.68 SJR 2.246 SNIP 1.16
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 2.543 SNIP 1.189 CiteScore 3.5
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 2.823 SNIP 1.219 CiteScore 2.82
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 2
Scopus rating (2013): SJR 2.544 SNIP 1.058 CiteScore 2.01
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
X-ray observations of the Crab Pulsar and Nebula with JEM-X on INTEGRAL

The Crab pulsar is the best studied rotation powered pulsar. We report the results obtained in the 3-35 keV energy band with the X-ray monitor, JEM-X, on ESAs recently launched gamma-ray mission, INTEGRAL.

General information
State: Published
Organisations: INTEGRAL Science Data Center, Space Research Center, European Space Research and Technology Center, Danish Space Research Institute, European Space Operation Center
Pages: L433-L436
Publication date: 2003
Main Research Area: Technical/natural sciences

Publication information
Journal: Astronomy & Astrophysics
Volume: 411
Issue number: 1
ISSN (Print): 0004-6361
Ratings:
BFI (2017): BFI-level 2
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 2
Scopus rating (2016): CiteScore 3.68 SJR 2.246 SNIP 1.16
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 2.543 SNIP 1.189 CiteScore 3.5
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 2.823 SNIP 1.219 CiteScore 2.82
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 2
Scopus rating (2013): SJR 2.544 SNIP 1.058 CiteScore 2.01
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 2
Scopus rating (2012): SJR 2.585 SNIP 1.295 CiteScore 3.14
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 2
Scopus rating (2011): SJR 2.373 SNIP 1.231 CiteScore 3.42
ISI indexed (2011): ISI indexed yes
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 2
Scopus rating (2010): SJR 2.74 SNIP 1.444
Web of Science (2010): Indexed yes
BFI (2009): BFI-level 2
Scopus rating (2009): SJR 2.879 SNIP 1.404
Web of Science (2009): Indexed yes
BFI (2008): BFI-level 2
Scopus rating (2008): SJR 2.923 SNIP 1.297
Web of Science (2008): Indexed yes
Scopus rating (2007): SJR 2.816 SNIP 1.34
Web of Science (2007): Indexed yes
Scopus rating (2006): SJR 3.224 SNIP 1.349
Web of Science (2006): Indexed yes
Scopus rating (2005): SJR 2.891 SNIP 1.355
Web of Science (2005): Indexed yes
Scopus rating (2004): SJR 2.633 SNIP 1.462
Web of Science (2004): Indexed yes
Scopus rating (2003): SJR 1.967 SNIP 1.373
Web of Science (2003): Indexed yes
Scopus rating (2002): SJR 1.742 SNIP 1.346
Web of Science (2002): Indexed yes
Scopus rating (2001): SJR 1.555 SNIP 0.727
Web of Science (2001): Indexed yes
Scopus rating (2000): SJR 2.178 SNIP 1.039
Web of Science (2000): Indexed yes
Scopus rating (1999): SJR 2.489 SNIP 1.076
Original language: English
pulsars: individual: PSR B0531+21, instrumentation: detectors, X-rays: stars

DOIs:
10.1051/0004-6361:20031255
Source: orbit
Source-ID: 205168
Publication: Research - peer-review › Journal article – Annual report year: 2003

GRB/XRF 020427, detection of an underlying system with the VLT

General information
State: Published
Organisations: Astrophysics, National Space Institute
Authors: Castro-Tirado, A. (Ekstern), Gorosabel, J. (Ekstern), Sanchez-Fernandez, C. (Ekstern), Lund, N. (Intern), Brandt, S. K. (Intern), Castro Ceron, J. M. (Ekstern)
Publication date: 2002
Main Research Area: Technical/natural sciences

Publication information
Journal: GRB Circular Network
Volume: 1439
Original language: English
Source: orbit
Source-ID: 207406
Publication: Research - peer-review › Journal article – Annual report year: 2002

Integral/JEM-X data and analysis

General information
State: Published
Organisations: Astrophysics, National Space Institute
Publication date: 2002
Main Research Area: Technical/natural sciences

Host publication information
Title of host publication: Proceedins of the XXXVII Rencontres de Moriond
Editors: Goldwurm, A., Neumann, D., Van Les Arc, J.
Main Research Area: Technical/natural sciences
Conference: XXXVII Rencontres de Moriond, France, 16-23 March, 01/01/2002
Source: orbit
Source-ID: 206927
Publication: Research - peer-review › Article in proceedings – Annual report year: 2002

JEM-X Commissioning and Performance Report

General information
State: Published
Organisations: Astrophysics, National Space Institute
Authors: Lund, N. (Intern), Brandt, S. K. (Intern), Budtz-Jørgensen, C. (Intern), Westergaard, N. J. S. (Intern)
Publication date: 2002

Publication information
Original language: English
Main Research Area: Technical/natural sciences
Source: orbit
Source-ID: 207811
Publication: Research - peer-review › Report – Annual report year: 2002

JEM-X FS Ground Calibration at Ferrara (IN-PL-JEM-0008)

General information
The Ballerina experiment on the Romer mission

The Romer mission has recently been approved as the next mission within the Danish Small Satellite Program. The scientific payload will consist of two separate experiments, the MONS and the Ballerina payloads. The primary objective of Ballerina is to provide accurate, real-time positions relayed to ground for approximate to 70 Gamma Ray Bursts (GRBs) per year, and to study the temporal and spectral evolution of the early GRB X-ray afterglow. As an additional goal, Ballerina will detect and study bright X-ray transients, in particular X-ray novae and micro-quasar systems. Romer is currently scheduled for launch in late 2003.
The Ballerina experiment on the Rømer mission
The Rømer mission has recently been approved as the next mission within the Danish Small Satellite Program. The scientific payload will consist of two separate experiments, the MONS and the Ballerina payloads. The primary objective of Ballerina is to provide accurate, real-time positions relayed to ground for ~ 70 Gamma Ray Bursts (GRBs) per year, and to study the temporal and spectral evolution of the early GRB X-ray afterglow. As an additional goal, Ballerina will detect and study bright X-ray transients, in particular X-ray novae and micro-quasar systems. Rømer is currently scheduled for launch in late 2003.

General information
State: Published
Organisations: Astrophysics, National Space Institute
Authors: Brandt, S. K. (Intern)
Pages: 313-316
Publication date: 2001
Main Research Area: Technical/natural sciences
Gamma-ray burst arrival-time localizations: Simultaneous observations by Ulysses, Pioneer Venus Orbiter, SIGMA, WATCH, and PHEBUS

Between the launch of the Ulysses spacecraft in 1990 October and the entry of Pioneer Venus Orbiter (PVO) into the atmosphere of Venus in 1992 October, concurrent coverage by Ulysses, PVO, the WATCH experiments aboard the Granat and Eureca spacecraft, and the SIGMA and PHEBUS experiments aboard the Granat spacecraft was obtained for numerous gamma-ray bursts. Fifteen of them were detected by three or more instruments on spacecraft separated by distances of several AU and could therefore be accurately localized by triangulation. In some cases, independent, accurate locations were obtained by SIGMA and/or WATCH. We present these localizations, which range in area from 0.9 to 530 arcmin(2).
INTEGRAL capabilities for faint gamma-ray bursts

General information
State: Published
Organisations: Astrophysics, National Space Institute
Authors: Gorosabel, J. (Ekstern), Lund, N. (Intern), Brandt, S. K. (Intern)
Publication date: 2000

Host publication information
Title of host publication: Proceedings of the 4th INTEGRAL workshop
Main Research Area: Technical/natural sciences

Relations
Activities:
4th INTEGRAL Workshop
Source-ID: 206592
Publication: Research - peer-review › Article in proceedings – Annual report year: 2000

The Ballerina gamma-ray burst experiment on the Rømer mission

General information
State: Published
Organisations: Astrophysics, National Space Institute
Authors: Lund, N. (Intern), Brandt, S. K. (Intern), Westergaard, N. J. S. (Intern), Gorosabel, J. (Ekstern), Pedersen, K. (Ekstern)
Publication date: 2000

Host publication information
Title of host publication: Proceedings of the 2nd workshop: "Gamma Ray Bursts in the Afterglow Era
Main Research Area: Technical/natural sciences
Source-ID: 206623
Publication: Research - peer-review › Article in proceedings – Annual report year: 2000

The INTEGRAL burst alert system

General information
State: Published
Organisations: Astrophysics, National Space Institute
The Olysses supplement to the Granat/WATCH catalog of cosmic gamma-ray bursts

General information
State: Published
Organisations: Astrophysics, National Space Institute
Authors: Hurley, K. (Ekstern), Lund, N. (Intern), Brandt, S. K. (Intern)
Pages: 549
Publication date: 2000
Main Research Area: Technical/natural sciences

Publication information
Journal: Astrophysical Supplement Series
Volume: 128
Original language: English
Source: orbit
Source-ID: 206819
Publication: Research - peer-review › Journal article – Annual report year: 2000

The Ulysses supplement to the Granat/WATCH catalog of cosmic gamma-ray bursts

We present third Interplanetary Network (IPN) localization data for 56 gamma-ray bursts in the Granat/WATCH catalog that occurred between 1990 November and 1994 September. These localizations are obtained by triangulation using various combinations of spacecraft and instruments in the IPN, which consisted of Ulysses, BATSE, Pioneer Venus Orbiter, Mars Observer, WATCH, and PHEBUS. The intersections of the triangulation annuli with the WATCH error circles produce error boxes with areas as small as 16 arcmin(2), reducing the sizes of the error circles by factors of up to 800.

General information
State: Published
Organisations: Astrophysics, National Space Institute
Pages: 549-560
Publication date: 2000
Main Research Area: Technical/natural sciences

Publication information
Volume: 128
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Ratings:
BFI (2017): BFI-level 1
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 8.95
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): CiteScore 8.83
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): CiteScore 9
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 1
Scopus rating (2013): CiteScore 9.83
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): CiteScore 14.26
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): CiteScore 11.32
ISI indexed (2011): ISI indexed yes
BFI (2010): BFI-level 1
Web of Science (2010): Indexed yes
BFI (2009): BFI-level 1
Web of Science (2009): Indexed yes
BFI (2008): BFI-level 1
Web of Science (2008): Indexed yes
Web of Science (2007): Indexed yes
Web of Science (2006): Indexed yes
Web of Science (2005): Indexed yes
Web of Science (2004): Indexed yes
Web of Science (2003): Indexed yes
Web of Science (2002): Indexed yes
Web of Science (2001): Indexed yes
Web of Science (2000): Indexed yes
Original language: English
gamma rays : bursts, catalogs
Electronic versions:
Source: orbit
Source-ID: 205280
Publication: Research - peer-review › Journal article – Annual report year: 2000

Ballerina - pirouettes in search of gamma bursts
The cosmological origin of gamma ray bursts has now been established with reasonable certainty. Many more bursts will need to be studied to establish the typical distance scale, and to map out the large diversity in properties which have been indicated by the first handful of events. We are proposing Ballerina, a small satellite to provide accurate positions and new data on the gamma-ray bursts. We anticipate a detection rate an order of magnitude larger than obtained from Beppo-SAX.

General information
State: Published
Organisations: Astrophysics, National Space Institute
Authors: Brandt, S. K. (Intern), Lund, N. (Intern), Pedersen, H. (Intern), Hjorth, J. (Ekstern)
Pages: 573-574
Publication date: 1999
Main Research Area: Technical/natural sciences

Publication information
Journal: Astronomy & Astrophysics Supplement Series
Volume: 138
Issue number: 3
Observations of short-duration X-ray transients by WATCH on Granat

During 1990-92, the WATCH all-sky X-ray monitor on Granat discovered six short-duration X-ray transients. In this paper we discuss their possible relationship to peculiar stars. Only one of the fast (few hours) X-ray transients (GRS 1100-771) might be tentatively ascribed to a superflare arising from a young stellar object in the Chamaeleon I star-forming cloud. At the distance of similar to 150 pc, L-x = 1.35 x 10(34) erg s(-1) (0.3-15 keV), or 2.6 x 10(34) erg s(-1) (0.1-2.4 keV) assuming a thermal spectrum with kT similar to 10 keV, a temperature higher than those previously seen in T Tauri stars (Tsuboi et al. 1998). The peak X-ray luminosity is at least 2 times higher than that derived for the protostar IRS 43 (Grosso et al. 1997) which would make - to our knowledge- the strongest flare ever seen in a YSO. However, the possibility of GRS
1100-771 being an isolated neutron star unrelated to the cloud cannot be excluded, given the relatively large error box provided by WATCH. Regarding the longer duration (similar to 1 day) X-ray transients, none of them seem to be related to known objects. We suggest that the latter are likely to have originated from compact objects in low-mass or high-mass X-ray binaries, similarly to XTE J0421+560.
The scientific role of JEM-X: the X-ray monitor on INTEGRAL

General information
State: Published
Organisations: Astrophysics, National Space Institute
Authors: Lund, N. (Intern), Westergaard, N. J. S. (Intern), Brandt, S. K. (Intern), Horstrup, A. (Intern), Budtz-Jørgensen, C. (Intern)
Publication date: 1999

Host publication information
Title of host publication: Proceedings of the 5th Compton Symposium
Main Research Area: Technical/natural sciences
Conference: 5th Compton Symposium, Portsmouth NH, 01/01/1999
Source: orbit
Source-ID: 206720
Publication: Research - peer-review › Article in proceedings – Annual report year: 1999

Wide-field all-sky monitor for X-ray astronomy

General information
State: Published
Organisations: Astrophysics, National Space Institute
Authors: Borozdin, K. (Ekstern), Priedhorsky, W. (Ekstern), Arefiev, V. (Ekstern), Kaniovsky, A. (Ekstern), Black, K. (Ekstern), Brandt, S. K. (Intern)
Number of pages: 20
Publication date: 1999

Host publication information
Title of host publication: AIP Conference Proceedings
Volume: 499
Editor: Brumby, S.
Main Research Area: Technical/natural sciences
Workshop: Small missions for energetic astrophysics, Los Alamos, NM, United States, 22/02/1999 - 22/02/1999

Relations
Activities:

A BATSE-based search for repeaters in the sample of gamma-ray bursts detected by the WATCH experiment
This study is the first known attempt to search for gamma-ray burst repeaters combining data from gamma-ray experiments flying on board different satellites and making use of information derived from the bursts detected simultaneously by all the experiments. The proposed method is suitable to correlate GRB data provided by experiments
that overlap partially or totally in time. As an application of this method we have correlated the positions of 57 gamma-ray bursts observed by WATCH/GRANAT and WATCH/EURECA with 1905 bursts detected by BATSE. Comparing the so-called "added correlation" between the WATCH and BATSE bursts with that obtained with simulated WATCH catalogues, we conclude that there is no indication of recurrent activity of WATCH bursts in the BATSE sample. We derive an upper limit of 15.8%, with a confidence level of 94%, for the number of WATCH gamma-ray bursts that could represent a population of repeaters in the BATSE sample.

General information
State: Published
Organisations: Astrophysics, National Space Institute
Authors: Gorosabel, J. (Ekstern), Castro-Tirado, A. (Ekstern), Brandt, S. K. (Intern), Lund, N. (Intern)
Pages: 57-62
Publication date: 1998
Main Research Area: Technical/natural sciences

Publication information
Journal: Astronomy and Astrophysics
Volume: 336
Issue number: 1
ISSN (Print): 0004-6361
Ratings:
BFI (2017): BFI-level 2
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 2
Scopus rating (2016): CiteScore 3.68 SJR 2.246 SNIP 1.16
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 2.543 SNIP 1.189 CiteScore 3.5
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 2.823 SNIP 1.219 CiteScore 2.82
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 2
Scopus rating (2013): SJR 2.544 SNIP 1.058 CiteScore 2.01
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 2
Scopus rating (2012): SJR 2.585 SNIP 1.295 CiteScore 3.14
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 2
Scopus rating (2011): SJR 2.373 SNIP 1.231 CiteScore 3.42
ISI indexed (2011): ISI indexed yes
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 2
Scopus rating (2010): SJR 2.74 SNIP 1.444
Web of Science (2010): Indexed yes
BFI (2009): BFI-level 2
Scopus rating (2009): SJR 2.879 SNIP 1.404
Web of Science (2009): Indexed yes
BFI (2008): BFI-level 2
Scopus rating (2008): SJR 2.923 SNIP 1.297
Web of Science (2008): Indexed yes
Scopus rating (2007): SJR 2.816 SNIP 1.34
Web of Science (2007): Indexed yes
Scopus rating (2006): SJR 3.224 SNIP 1.349
Web of Science (2006): Indexed yes
BATSE repeaters in the context of the WATCH/EURECA and WATCH/GRANAT catalogues

General information
State: Published
Organisations: Astrophysics, National Space Institute
Authors: Gorosabel, J. (Ekstern), Castro-Tirado, A. (Ekstern), Brandt, S. K. (Intern), Lund, N. (Intern)
Publication date: 1998

Host publication information
Title of host publication: AIP Conference Proceedings
Volume: 428
Main Research Area: Technical/natural sciences
Conference: Gamma-Ray Bursts. 4th Huntsville Symposium, 01/01/1998
Source: orbit
Source-ID: 205972
Publication: Research - peer-review › Article in proceedings – Annual report year: 1998

GRANAT/WATCH catalogue of cosmic gamma-ray bursts: December 1989 to September 1994
We present the catalogue of gamma-ray bursts (GRB) observed with the WATCH all-sky monitor on board the GRANAT satellite during the period December 1989 to September 1994. The cosmic origin of 95 bursts comprising the catalogue is confirmed either by their localization with WATCH or by their detection with other GRB experiments. For each burst its time history and information on its intensity in the two energy ranges 8-20 keV and 30-60 keV are presented. Most events show hardening of the energy spectrum near the burst peak. In part of the bursts an X-ray precursor or a tail is seen at 8-20 keV. We have determined the celestial positions of the sources of 47 bursts. Their localization regions (at 3 sigma confidence level) are equivalent in area to circles with radii ranging from 0.2 to 1.6 deg. The burst sources appear isotropically distributed on the sky on large angular scales.

General information
State: Published
Organisations: Astrophysics, National Space Institute
Authors: Sazonov, S. (Ekstern), Sunyaev, R. (Ekstern), Terekhov, O. (Ekstern), Lund, N. (Intern), Brandt, S. K. (Intern), Castro-Tirado, A. (Ekstern)
Pages: 1-8
Publication date: 1998
Main Research Area: Technical/natural sciences

Publication information
Journal: Astronomy & Astrophysics Supplement Series
Volume: 129
Issue number: 1
ISSN (Print): 0365-0138
Ratings:
Observations of GRB X-ray afterglows with SODART/SRG

Despite recent progress with the detection of afterglows of Gamma Ray Bursts (GRBs), the nature of these events is unknown. However, important clues to understanding what the GRBs are, may very well be found by studying the X-ray afterglows. The combination on SRG of the MOXE all-sky monitor for detecting GRBs, and the powerful pointed SODART telescopes will be a unique tool for studying the long-term behavior of GRB afterglows. It is shown that SODART will be able to follow the temporal and spectral development of a GRB similar to the now famous GRB 970228 event for well over 20 days in order to provide constraints on theoretical models.
Photometry and spectroscopy of the GRB 970508 optical counterpart

An optical transient within the error box of the gamma ray burst GRB 970508 was imaged 4 hours after the event. It displayed a strong ultraviolet excess, and reached maximum brightness 2 days later. The optical spectra did not show any emission lines, and no variations on time scales of minutes were observed for 1 hour during the decline phase. According to the fireball and afterglow models, the intensity should rise monotonically before the observed optical maximum, but the data indicate that another physical mechanism may be responsible for the constant phase seen during the first hours after the burst.

General information
State: Published
Organisations: Danish Space Research Institute, Los Alamos National Laboratory
Pages: 1011-1014
Publication date: 1998
Main Research Area: Technical/natural sciences

Publication information
Journal: Science
Volume: 279
Issue number: 5353
ISSN (Print): 0036-8075
Ratings:
BFI (2017): BFI-level 2
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 2
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 12.012 SNIP 8.269 CiteScore 12.68
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 2
Scopus rating (2013): SJR 12.305 SNIP 7.87 CiteScore 12.43
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 2
Scopus rating (2012): SJR 13.159 SNIP 8.124 CiteScore 12.39
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 2
Scopus rating (2011): SJR 14.049 SNIP 8.309 CiteScore 11.97
ISI indexed (2011): ISI indexed yes
The MOXE all sky X-ray monitor

General information
State: Published
Organisations: Astrophysics, National Space Institute
Authors: Brandt, S. K. (Intern), Priedhorsky, W. (Ekstern), Fenimore, E. (Ekstern), Moss, C. (Ekstern), Black, K. (Ekstern), Kelley, R. (Ekstern), Stillwell, D. (Ekstern), Birsa, F. (Ekstern), Borozdin, K. (Ekstern), Kaniovsky, A. (Ekstern), Arefiev, V. (Ekstern), Efremov, V. (Ekstern)
Pages: 21
Publication date: 1998
Main Research Area: Technical/natural sciences

Publication information
Journal: Physica Scripta
Volume: T77
ISSN (Print): 0031-8949
Ratings:
BFI (2017): BFI-level 1
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 0.84
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): CiteScore 0.64
BFI (2014): BFI-level 1
Scopus rating (2014): CiteScore 0.62
BFI (2013): BFI-level 1
Scopus rating (2013): CiteScore 0.61
ISI indexed (2013): ISI indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): CiteScore 0.67
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): CiteScore 0.85
ISI indexed (2011): ISI indexed yes
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 1
Web of Science (2010): Indexed yes
BFI (2009): BFI-level 1
BFI (2008): BFI-level 1
Web of Science (2006): Indexed yes
Web of Science (2005): Indexed yes
Web of Science (2004): Indexed yes
Web of Science (2002): Indexed yes
Web of Science (2000): Indexed yes
Original language: English

Relations
Activities:
Nordic Conference in Theoretical High-Energy Astrophysics
Source: orbit
Source-ID: 205902
Publication: Research - peer-review › Journal article – Annual report year: 1998

GRBs Observed with WATCH and BATSE (3B Catalogue)

General information
State: Published
Organisations: Astrophysics, National Space Institute
Authors: Gorosabel, J. (Ekstern), Castro-Tirado, A. (Ekstern), Lund, N. (Intern), Brandt, S. K. (Intern), Terekhov, O. (Ekstern), Sunyaev, R. (Ekstern)
Number of pages: 378
Publication date: 1997

Host publication information
Title of host publication: AIP Conference Proceedings Series
Volume: 384
Editors: Kouveliotou, C., Briggs, M., Fishman, G.
Main Research Area: Technical/natural sciences
Conference: 3rd Huntsville Symposium, Huntsville, 01/01/1996
Source: orbit
Source-ID: 207603
Publication: Research - peer-review › Article in proceedings – Annual report year: 1997

WATCH bursts in the context of the BATSE 3B catalogue

General information
State: Published
Organisations: Astrophysics, National Space Institute
Authors: Gorosabel, J. (Ekstern), Castro-Tirado, A. (Ekstern), Brandt, S. K. (Intern), Lund, N. (Intern)
Publication date: 1997
Status of the Search for Optical Counterparts in GRB Error Boxes from the WATCH Instrument on the GRANAT Satellite

General information
State: Published
Organisations: National Space Institute, Astrophysics, Astronomical Observatory of Nikolaev State University, Nikolaev Astronomical Observatory, Laboratorio de Astrofisica Espacial y Fisica Fundamental
Authors: Guziy, S. (Ekstern), Shlyapnikov, A. (Ekstern), Castro-Tirado, A. J. (Ekstern), Brandt, S. (Intern), Lund, N. (Intern)
Pages: 485-486
Publication date: 1996

Host publication information
Title of host publication: The Transparent Universe, Proceedings of the 2nd INTEGRAL Workshop
Publisher: European Space Agency, ESA
Main Research Area: Technical/natural sciences
Conference: 2nd INTEGRAL workshop, St. Malo, France, 16/09/1997 - 16/09/1997
Source: dtu
Source-ID: u::6339
Publication: Research - peer-review › Article in proceedings – Annual report year: 1996

A long-term observation of 4U 1700-37 by the granat/watch all-sky monitor
We present the results of the observations of the X-ray source 4U 1700-37 by the WATCH all-sky monitor on GRANAT during the period 1991 to 1992. We have reconstructed light curves of 4U 1700-37 in two energy bands which prove the strong variability of the source's intensity on various time scales. The light curve having been folded with the orbital period clearly reveals a dependence of the source's intensity upon the orbital phase. This dependence can be explained by scattering and absorption of photons in the stellar wind of the massive optical companion. We interpret the X-ray light curves with the help of Monte-Carlo simulations and derive the basic parameters of the stellar wind. We show that the wind in 4U 1700-37 well fits in the radiatively driven stellar wind theory. Our measurement of the mid-eclipse time together with the measurements of other experiments imply a decrease in the period of the binary.

General information
State: Published
Organisations: National Space Institute, Astrophysics, Russian Academy of Sciences, Danish Space Research Institute
Authors: Sazonov, S. (Ekstern), Lapshov, I. (Ekstern), Sunyaev, R. (Ekstern), Brandt, S. (Intern), Lund, N. (Intern), Castro-Tirado, A. (Ekstern)
Pages: (3)87-(3)90
Publication date: 1995
Main Research Area: Technical/natural sciences

Publication information
Journal: Advances in Space Research
Volume: 16
Issue number: 3
ISSN (Print): 0273-1177
Ratings:
BFI (2017): BFI-level 1
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 1.63 SJR 0.582 SNIP 1.206
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 0.602 SNIP 1.329 CiteScore 1.61
Web of Science (2015): Indexed yes
Monitoring the activity variations of galactic X-ray sources with WATCH on EURECA

Among the many instruments carried on the first EURECA mission was also one aimed at doing astrophysical research. This instrument, WATCH, (Wide Angle Telescope for Cosmic Hard X-rays) is sensitive in the 6 to 150 keV energy range and has a total field of view covering a quarter of the sky. During its 11 month operational life, EURECA tracked the Sun, and WATCH gradually scanned across the entire sky. The signals from more than two dozen known galactic X-ray sources have been identified in the data, and the activity state of each source has been recorded as a function of time. For several sources the observation periods extended over more than 100 days. A number of X-ray transients with durations between one and five days were discovered, and, additionally two long duration X-ray transients (GRS 1915+10 and GRO J0422+32) were active and could be monitored. Towards the end of the mission a special “offset pointing” program was initiated on request from the WATCH PI. This program proved very successful and allowed WATCH to scan more than 80% of the sky in the course of only two weeks.

General information
State: Published
Organisations: National Space Institute, Astrophysics
Authors: Brandt, S. (Intern), Lund, N. (Intern)
Pages: (8)37-(8)42
Publication date: 1995
Main Research Area: Technical/natural sciences
Observations of cosmic gamma ray bursts with WATCH on EURECA
19 Cosmic Gamma-Ray Bursts were detected by the WATCH wide field X-ray monitor during the 11 months flight of EURECA. The identification of the bursts were complicated by a high frequency of background of events caused by high energy cosmic ray interactions in the detector and by low energy, trapped particle streams. These background events may simulate the count rate increases characteristic of cosmic gamma bursts. For 12 of the detected events, their true cosmic nature have been confirmed through consistent localizations of the burst sources based on several independent WATCH data sets. The derived positions of the bursts are reported. Additionally, most of the events have been confirmed by coincident detections with instruments on other spacecrafts. The features of two of the bursts and the results of searches for related events in the optical are described.
Observations of γ-ray bursts and solar flares with GRANAT

General information
State: Published
Organisations: National Space Institute, Astrophysics, Institute for Space Research, Centre d'Etude Spatiale des Rayonnements, Danish Space Research Institute
Pages: 353-357
Publication date: 1995

Review of GRANAT observations of gamma-ray bursts
The GRANAT observatory was launched into a high apogee orbit on 1 December, 1989. Three instruments onboard GRANAT - PHEBUS, WATCH and SIGMA are able to detect gamma-ray bursts in a very broad energy range from 6 keV up to 100 MeV. Over 250 gamma-ray bursts were detected. We discuss the results of the observations of the time histories and spectral evolution of the detected events provided by the different instruments in different energy ranges. Short Gamma-Ray Bursts (<2 s) have 10 ms structure in their time histories. They have harder energy spectra than the long (> 2 s) events. Evidence of the existence of four differently behaving components in gamma-ray burst spectra is discussed. Statistical properties of the gamma-ray burst sources based on the 5 years of observations with (~ 10−6 erg/cm²) sensitivity as well as the results of high sensitivity (~ 10−8 erg/cm²) search for Gamma-Ray Bursts within the SIGMA telescope field of view are reviewed.
Short-Duration X-ray Transients Observed with WATCH on Granat: Are Some of Them Related to Stellar Flares?

During 1990–92, the WATCH all-sky X-ray monitor on GRANAT has discovered 6 short-duration X-ray transients. We discuss their possible relationship to peculiar stars. Only one source, GRS 1100-77 seems to be related to a T Tauri star.

General information
State: Published
Organisations: National Space Institute, Astrophysics, Laboratorio de Astrofísica Espacial y Física Fundamental, Institute for Space Research
Authors: Castro-Tirado, A. J. (Ekstern), Brandt, S. (Intern), Lund, N. (Intern), Lapshov, I. (Ekstern), Sunyaev, R. (Ekstern)
Pages: 158-163
Publication date: 1995

Host publication information
Title of host publication: Flares and Flashes: Proceedings of IAU Colloquium No. 151 Held in Sonneberg, Germany, 5–9 December 1994
Publisher: Springer Berlin Heidelberg
Study of WATCH GRB error boxes
We have studied the first WATCH GRB Catalogue of γ-ray Bursts in order to find correlations between WATCH GRB error boxes and a great variety of celestial objects present in 33 different catalogues. No particular class of objects has been found to be significantly correlated with the WATCH GRBs.

General information
State: Published
Organisations: National Space Institute, Astrophysics, Laboratorio de Astrofísica Espacial y Física Fundamental, Nikolaev Astronomical Observatory
Authors: Gorosabel, J. (Ekstern), Castro-Tirado, A. J. (Ekstern), Lund, N. (Intern), Brandt, S. (Intern), Guziy, S. (Ekstern), Shlyapnikov, A. (Ekstern)
Pages: 297-301
Publication date: 1995
Main Research Area: Technical/natural sciences

Publication information
Journal: Astrophysics and Space Science
Volume: 231
Issue number: 1-2
ISSN (Print): 0004-640X
Ratings:
BFI (2017): BFI-level 1
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 1.23
BFI (2015): BFI-level 1
Scopus rating (2015): CiteScore 1.41
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): CiteScore 1.84
BFI (2013): BFI-level 1
Scopus rating (2013): CiteScore 1.75
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): CiteScore 1.31
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): CiteScore 1.12
ISI indexed (2011): ISI indexed yes
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 1
BFI (2009): BFI-level 1
Web of Science (2009): Indexed yes
BFI (2008): BFI-level 1
Time series analysis of bright galactic X-ray sources

We analyze 70 to 110 day data sets from eight bright galactic X-ray binaries observed by WATCH/Eureca, in search of periodic variations. We obtain new epochs for the orbital variation of Cyg X-3 and 4U 1700-37, and confirmation of a dip in Cyg X-1 at superior conjunction of the X-ray star. No evidence for variation at known and candidate periods is seen for Sco X-1, Cyg X-2, and GX 17+2. We set upper limits for variation at other frequencies in those three sources, GX 5-1, and GRS 1915+105.

General information
State: Published
Organisations: National Space Institute, Astrophysics, Danish Space Research Institute
Authors: Priedhorsky, W. C. (Ekstern), Brandt, S. (Intern), Lund, N. (Intern)
Pages: 415-421
Publication date: 1995
Main Research Area: Technical/natural sciences

Publication information
Journal: Astronomy and Astrophysics
Volume: 300
ISSN (Print): 0004-6361
Ratings:
BFI (2017): BFI-level 2
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 2
Scopus rating (2016): CiteScore 3.68 SJR 2.246 SNIP 1.16
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 2.543 SNIP 1.189 CiteScore 3.5
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 2.823 SNIP 1.219 CiteScore 2.82
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 2
Scopus rating (2013): SJR 2.544 SNIP 1.058 CiteScore 2.01
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 2
Scopus rating (2012): SJR 2.585 SNIP 1.295 CiteScore 3.14
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 2
Scopus rating (2011): SJR 2.373 SNIP 1.231 CiteScore 3.42
ISI indexed (2011): ISI indexed yes
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 2
Scopus rating (2010): SJR 2.74 SNIP 1.444
Web of Science (2010): Indexed yes
WATCH/GRANAT observations of the x-ray pulsar GX 301-2

General information
State: Published
Organisations: National Space Institute, Astrophysics
Authors: Chichkov, M. A. (Ekstern), Syunyaev, R. A. (Ekstern), Lapshov, I. Y. (Ekstern), Lund, N. (Intern), Brandt, S. (Intern), Castro-Tirado, A. (Ekstern)
Pages: 491-498
Publication date: 1995
Main Research Area: Technical/natural sciences

Publication information
Journal: Astronomy Letters
Volume: 21
Issue number: 4
ISSN (Print): 1063-7737
Ratings:
BFI (2017): BFI-level 1
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 0.85
BFI (2015): BFI-level 1
Scopus rating (2015): CiteScore 0.83
BFI (2014): BFI-level 1
Scopus rating (2014): CiteScore 1.17
BFI (2013): BFI-level 1
Scopus rating (2013): CiteScore 1.11
ISI indexed (2013): ISI indexed yes
BFI (2012): BFI-level 1
Wide field monitoring of the X-ray sky using Rotation Modulation Collimators

Wide field monitoring is of particular interest in X-ray astronomy due to the strong time-variability of most X-ray sources. Not only does the time-profiles of the persistent sources contain characteristic signatures of the underlying physical systems, but, additionally, some of the most intriguing sources have long periods of quiescence in which they are almost undetectable as X-ray sources, interspersed with relatively brief periods of intense outbursts, where we have unique opportunities of studying dynamical effects, in, for instance, the evolution of accretion discs. Another question for which wide field monitors may provide key information, is the origin and nature of the cosmic gamma ray bursts. Rotation Modulation Collimators (RMC's) were originally introduced in X-ray astronomy to provide accurate source localizations over extended fields. This role has since been taken over by the grazing incidence telescope systems. The potential of the RMC's as wide field monitors have recently been demonstrated by the WATCH instruments on GRANAT and EURECA. It now appears likely, that for use on large, 3-axis stabilized spacecraft, a pinhole camera system may provide better sensitivity than an RMC-system of corresponding physical dimensions. But due to its simplicity, low data rate, and ability to work on spin stabilized (micro)satellites, the RMC wide field monitor may still have a role to play in the X-ray astronomy of the future.

General information
State: Published
Organisations: National Space Institute, Astrophysics, Danish Space Research Institute
Authors: Lund, N. (Intern), Brandt, S. (Intern)
Pages: 19-24
Publication date: 1995
Main Research Area: Technical/natural sciences

Publication information
Journal: Experimental Astronomy
Volume: 6
Issue number: 4
ISSN (Print): 0922-6435
Ratings:
BFI (2017): BFI-level 1
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 2.14
BFI (2015): BFI-level 1
Scopus rating (2015): CiteScore 2.3
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): CiteScore 2.26
BFI (2013): BFI-level 1
Scopus rating (2013): CiteScore 2.28
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
Comparison of WATCH and IPN Locations of Gamma-Ray Bursts

The WATCH all sky monitors aboard the Granat and EURECA spacecraft have the capability of independently localizing gamma-ray bursts to error circles whose 3 sigma radii are 1 degree or less. These are the most accurate single-experiment localizations currently achievable. In those cases where both WATCH and one or more experiments from the IPN detect a burst, the localizations may be refined considerably. We have identified approximately 35 bursts between 1991 and 1993 in this category. Some were detected by WATCH, Ulysses, PVO, and BATSE, and so on. We present and compare the locations of some of these bursts.

General information
State: Published
Organisations: National Space Institute, Astrophysics, University of California, Danish Space Research Institute, Max-Planck Institut für Extraterrestrische Physik, Institute for Space Research, Los Alamos Scientific Laboratory, NASA Marshall Space Flight Center, NASA Goddard Space Flight Center, Centre d'Etude Spatiale des Rayonnements
Pages: 364-368
Publication date: 1994
Discovery and observations by watch of the X-ray transient GRS 1915+105

General information
State: Published
Organisations: National Space Institute, Astrophysics
Authors: Castro-Tirado, A. J. (Ekstern), Brandt, S. (Intern), Lund, N. (Intern), Lapshov, I. (Ekstern), Sunyaev, R. A. (Ekstern), Shlyapnikov, A. A. (Ekstern), Guziy, S. (Ekstern), Pavlenko, E. P. (Ekstern)
Pages: 469-472
Publication date: 1994
Main Research Area: Technical/natural sciences

Publication information
Volume: 92
Issue number: 2
ISSN (Print): 0067-0049
Ratings:
BFI (2017): BFI-level 1
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 8.95
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): CiteScore 8.83
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): CiteScore 9
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 1
Scopus rating (2013): CiteScore 9.83
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): CiteScore 14.26
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): CiteScore 11.32
ISI indexed (2011): ISI indexed yes
BFI (2010): BFI-level 1
Web of Science (2010): Indexed yes
BFI (2009): BFI-level 1
Web of Science (2009): Indexed yes
BFI (2008): BFI-level 1
Web of Science (2008): Indexed yes
Web of Science (2007): Indexed yes
Web of Science (2006): Indexed yes
Web of Science (2005): Indexed yes
Web of Science (2004): Indexed yes
Web of Science (2003): Indexed yes
Web of Science (2002): Indexed yes
Web of Science (2001): Indexed yes
Web of Science (2000): Indexed yes
Original language: English
Electronic versions:
Gamma ray bursts observed with WATCH-EURECA
The WATCH wide field x-ray monitor has the capability of independently locating bright Gamma Ray Bursts to 1° accuracy. We report the preliminary positions of 12 Gamma Ray Bursts observed with the WATCH monitor flown on the ES spacecraft EURECA during its 11 month mission. Also the recurrence of the Soft Gamma Repeater SGR 1900+14 in 1992 is verified.

General information
State: Published
Organisations: National Space Institute, Astrophysics, Danish Space Research Institute
Authors: Brandt, S. (Intern), Lund, N. (Intern), Castro-Tirado, A. J. (Ekstern)
Pages: 13-16
Publication date: 1994

Host publication information
Title of host publication: Gamma-Ray Bursts, Proceedings of the 2nd Workshop
Publisher: American Institute of Physics
Editor: Fishman, G. J.
Series: AIP Conference Proceedings
Volume: 307
ISSN: 0094-243X
Main Research Area: Technical/natural sciences
DOIs: 10.1063/1.457777

Relations
Activities:
Gamma Ray Bursts
Publication: Research › Article in proceedings – Annual report year: 1994

Observations of Galactic Binary X-Ray Sources and Gamma Ray Bursts with WATCH

General information
State: Published
Organisations: National Space Institute, Astrophysics, University of Copenhagen
Authors: Brandt, S. (Intern), Lund, N. (Intern), Hansen, L. (Ekstern)
Number of pages: 283
Publication date: 1994

Publication information
Place of publication: Lyngby
Publisher: Danish Space Research Institute
Original language: English
Series: DRI Report
Volume: 94
Number: 1
ISSN: 0109-6605
Main Research Area: Technical/natural sciences
Publication: Research › Ph.D. thesis – Annual report year: 1994

Optical Follow-Up of Gamma-Ray Bursts Observed by WATCH
44 Gamma-Ray Bursts have been localized by the WATCH experiments on GRANAT and EURECA. For some of them, Schmidt plates were taken within days after the burst. In other cases, time-correlated plates were found in some of the main astronomical archives. No obvious optical counterpart has been found in any of the investigated plates.
The discovery and observations of the hard x-ray transient source GRS 1009-45 by the WATCH instrument of the GRANAT observatory

General information
State: Published
Organisations: National Space Institute, Astrophysics
Authors: Lapshov, I. Y. (Ekstern), Sazonov, S. Y. (Ekstern), Syunyaev, R. A. (Ekstern), Brandt, S. (Intern), Castro-Tirado, A. (Ekstern), Lund, N. (Intern)
Pages: 205-206
Publication date: 1994
Main Research Area: Technical/natural sciences

Publication information
Journal: Astronomy Letters
Volume: 20
Issue number: 2
ISSN (Print): 1063-7737
Ratings:
BFI (2017): BFI-level 1
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 0.85
BFI (2015): BFI-level 1
Scopus rating (2015): CiteScore 0.83
BFI (2014): BFI-level 1
Scopus rating (2014): CiteScore 1.17
BFI (2013): BFI-level 1
Scopus rating (2013): CiteScore 1.11
ISI indexed (2013): ISI indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): CiteScore 0.72
ISI indexed (2012): ISI indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): CiteScore 0.62
ISI indexed (2011): ISI indexed yes
BFI (2010): BFI-level 1
Two years of observations of the transient X-ray source GRS 1915+105 with the WATCH instrument of the GRANAT Observatory

General information
State: Published
Organisations: National Space Institute, Astrophysics
Authors: Sazonov, S. Y. (Ekstern), Syunyaev, R. A. (Ekstern), Lapshov, I. Y. (Ekstern), Lund, N. (Intern), Brandt, S. (Intern), Castro-Tirado, A. (Ekstern)
Pages: 901-905
Publication date: 1994
Main Research Area: Technical/natural sciences

Publication information
Journal: Astronomy Letters-a Journal of Astronomy and Space Astrophysics
Volume: 20
Issue number: 6
ISSN (Print): 1063-7737
Ratings:
BFI (2017): BFI-level 1
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 0.85
BFI (2015): BFI-level 1
Scopus rating (2015): CiteScore 0.83
BFI (2014): BFI-level 1
Scopus rating (2014): CiteScore 1.17
BFI (2013): BFI-level 1
Scopus rating (2013): CiteScore 1.11
ISI indexed (2013): ISI indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): CiteScore 0.72
ISI indexed (2012): ISI indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): CiteScore 0.62
ISI indexed (2011): ISI indexed yes
BFI (2010): BFI-level 1
BFI (2009): BFI-level 1
BFI (2008): BFI-level 1
Web of Science (2002): Indexed yes
Original language: English
Links:
WATCH observations of gamma ray bursts during 1990–1992

The first WATCH/GRANAT Gamma-Ray Burst Catalogue comprises 70 events which have been detected by WATCH during the period December 1989–September 1992. 32 GRBs could be localized within a 3σ error radii of 1°. We have found a weak (2.2σ) clustering of these 32 bursts towards the Galactic Center. However we conclude that there is no strong evidence of concentration of the bursts towards the Galactic Center or Plane. Around ~10% of the 70 bursts showed x-ray precursor or x-ray tail. We discuss the possibility that two events, GRB 900126 and GRB 920311, would have been produced by the same source.
We report the discovery of the optical counterpart of the type II Soft X-ray Transient GRO J0422+32 on 1992 August 15, ten days after the outburst. As well as the optical light curve during the first 100 days after the outburst, making GRO J0422+32 the slowest one in the optical decline. Archival plates searches show that the object did not undergo a similar outburst after 1928. Its optical and X-ray evolution is similar to other members of its class, like V616 Mon, V404 Cyg and GRS 1124-68. For these later three there are dynamical evidences that place them among the best black holes candidates so far. These similarities suggest that the compact object in GRO J0422+32 may also be a black hole.
GRB J0444-0700

General information
State: Published
Organisations: National Space Institute, Astrophysics
Authors: Brandt, S. (Intern), Lund, N. (Intern), Castro-Tirado, A. J. (Ekstern)
Number of pages: 1
Publication date: 1993
Main Research Area: Technical/natural sciences

Publication information
Journal: International Astronomical Union Circulars (IAUC)
Issue number: 5759
Original language: English
Links:
http://www.cbat.eps.harvard.edu/iauc/05700/05759.html#Item2
Source: dtu
Source-ID: u::6935
Observations of the cosmic gamma-ray burst on 23 July 1992 with the WATCH instrument on the Grant observatory

General information
State: Published
Organisations: National Space Institute, Astrophysics
Authors: Terekhov, O. V. (Ekstern), Lobachev, V. A. (Ekstern), Denisenko, D. V. (Ekstern), Lapshov, I. Y. (Ekstern), Syunyaev, R. A. (Ekstern), Lund, N. (Intern), Castro-Tirado, A. (Ekstern), Brandt, S. (Intern)
Pages: 276-279
Publication date: 1993
Main Research Area: Technical/natural sciences

Publication information
Journal: Astronomy Letters
Volume: 19
Issue number: 4
ISSN (Print): 1063-7737
Ratings:
BFI (2017): BFI-level 1
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 0.85
BFI (2015): BFI-level 1
Scopus rating (2015): CiteScore 0.83
BFI (2014): BFI-level 1
Scopus rating (2014): CiteScore 1.17
BFI (2013): BFI-level 1
Scopus rating (2013): CiteScore 1.11
ISI indexed (2013): ISI indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): CiteScore 0.72
ISI indexed (2012): ISI indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): CiteScore 0.62
ISI indexed (2011): ISI indexed yes
BFI (2010): BFI-level 1
BFI (2009): BFI-level 1
BFI (2008): BFI-level 1
Web of Science (2002): Indexed yes
Original language: English
Electronic versions:
1993AstL___19__276T.pdf
Links:

Bibliographical note
Originally published in Russian in: Pis'ma v Astronomicheskij Zhurnal (ISSN 0320-0108), vol. 19, no. 8, p. 686-692.
Source: dtu
Source-ID: u:.6936
Publication: Research - peer-review › Journal article – Annual report year: 1993
Observations of the x-ray source 4U 1700-37: results from the WATCH instrument on the Grant observatory

General information
State: Published
Organisations: National Space Institute, Astrophysics
Authors: Sazonov, S. Y. (Ekstern), Lapshov, I. Y. (Ekstern), Syunyaev, R. A. (Ekstern), Brandt, S. (Intern), Lund, N. (Intern), Castro-Tirado, A. (Ekstern)
Pages: 272-276
Publication date: 1993
Main Research Area: Technical/natural sciences

Publication information
Journal: Astronomy Letters
Volume: 19
Issue number: 4
ISSN (Print): 1063-7737
Ratings:
BFI (2017): BFI-level 1
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 0.85
BFI (2015): BFI-level 1
Scopus rating (2015): CiteScore 0.83
BFI (2014): BFI-level 1
Scopus rating (2014): CiteScore 1.17
BFI (2013): BFI-level 1
Scopus rating (2013): CiteScore 1.11
ISI indexed (2013): ISI indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): CiteScore 0.72
ISI indexed (2012): ISI indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): CiteScore 0.62
ISI indexed (2011): ISI indexed yes
BFI (2010): BFI-level 1
BFI (2009): BFI-level 1
BFI (2008): BFI-level 1
Web of Science (2002): Indexed yes
Original language: English
Electronic versions:
1993AstL___19__272S.pdf
Links:

Bibliographical note
Originally published in Russian in: Pis’ma v Astronomicheskij Zhurnal (ISSN 0320-0108), vol. 19, no. 8, p. 675-685.
Source: dtu
Source-ID: u::6937
Publication: Research - peer-review › Journal article – Annual report year: 1993

Two transient X-ray sources observed with the WATCH experiment

General information
State: Published
Organisations: National Space Institute, Astrophysics
Authors: Brandt, S. (Intern), Castro-Tirado, A. J. (Ekstern), Lund, N. (Intern), Dremin, V. (Ekstern), Lapshov, I. (Ekstern), Sunyaev, R. (Ekstern)
Pages: 257-260
Publication date: 1993
WATCH observations of the X-ray pulsar 301-2

General information
State: Published
Organisations: National Space Institute, Astrophysics
Authors: Castro-Tirado, A. J. (Ekstern), Brandt, S. (Intern), Lund, N. (Intern), Dremin, V. (Ekstern), Lapshov, I. (Ekstern), Sunyaev, R. (Ekstern)
Pages: 329-331
Publication date: 1993
Main Research Area: Technical/natural sciences

Publication information
Journal: Astronomy & Astrophysics Supplement Series
Volume: 97
Issue number: 1
ISSN (Print): 0365-0138
Ratings:
BFI (2008): BFI-level 1
Scopus rating (2003): SJR 1.91 SNIP 2.557
Scopus rating (2002): SJR 1.366 SNIP 2.231
Scopus rating (2001): SJR 1.056 SNIP 0.973
Scopus rating (2000): SJR 1.94 SNIP 1.045
Scopus rating (1999): SJR 2.014 SNIP 1.119
Original language: English
Electronic versions:
5.pdf
Links:

Relations
Activities:
Toulouse International Colloquium
Source: dtu
Source-ID: u::6938
Publication: Research - peer-review › Journal article – Annual report year: 1993

A1118-61

General information
State: Published
Organisations: National Space Institute, Astrophysics
Authors: Lund, N. (Intern), Brandt, S. (Intern), Castro-Tirado, A. J. (Ekstern)
Detection of a type-I X-ray burst from 4U 0614+09

General information
State: Published
Organisations: National Space Institute, Astrophysics
Authors: Brandt, S. (Intern), Castro-Tirado, A. J. (Ekstern), Lund, N. (Intern), Dremin, V. (Ekstern), Lapshov, I. (Ekstern), Sunyaev, R. (Ekstern)
 Pages: L15-L16
Publication date: 1992
Main Research Area: Technical/natural sciences

Publication information
Journal: Astronomy and Astrophysics
Volume: 262
Issue number: 1
ISSN (Print): 0004-6361
Ratings:
BFI (2017): BFI-level 2
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 2
Scopus rating (2016): CiteScore 3.68 SJR 2.246 SNIP 1.16
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 2.543 SNIP 1.189 CiteScore 3.5
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 2.823 SNIP 1.219 CiteScore 2.82
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 2
Scopus rating (2013): SJR 2.544 SNIP 1.058 CiteScore 2.01
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 2
Scopus rating (2012): SJR 2.585 SNIP 1.295 CiteScore 3.14
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 2
Scopus rating (2011): SJR 2.373 SNIP 1.231 CiteScore 3.42
ISI indexed (2011): ISI indexed yes
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 2
Scopus rating (2010): SJR 2.74 SNIP 1.444
Web of Science (2010): Indexed yes
Discovery and Early X-Ray Lightcurve of the Transient GRS:1124-68 Nova MUSCAE 1991

General information
State: Published
Organisations: National Space Institute, Astrophysics
Authors: Brandt, S. (Intern), Castro-Tirado, A. J. (Ekstern), Lund, N. (Intern), Dremin, V. (Ekstern), Lapshov, I. (Ekstern), Sunyaev, R. (Ekstern)
Pages: L39-L41
Publication date: 1992
Main Research Area: Technical/natural sciences

Publication information
Journal: Astronomy and Astrophysics
Volume: 254
Issue number: FEB(I)
ISSN (Print): 0004-6361
Ratings:
BFI (2017): BFI-level 2
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 2
Scopus rating (2016): CiteScore 3.68 SJR 2.246 SNIP 1.16
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 2.543 SNIP 1.189 CiteScore 3.5
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 2.823 SNIP 1.219 CiteScore 2.82

Links:
Source: dtu
Source-ID: u::6827
Publication: Research › Letter – Annual report year: 1992
General information

State: Published
Organisations: National Space Institute, Astrophysics
Authors: Brandt, S. (Intern), Castro-Tirado, A. J. (Ekstern), Lund, N. (Intern)
Number of pages: 1
Publication date: 1992
Main Research Area: Technical/natural sciences
EU 1902+20 and EU 2017-01

General information
State: Published
Organisations: National Space Institute, Astrophysics
Authors: Brandt, S. (Intern), Castro-Tirado, A. J. (Ekstern), Lund, N. (Intern)
Number of pages: 1
Publication date: 1992
Main Research Area: Technical/natural sciences

Publication information
Journal: International Astronomical Union Circulars (IAUC)
Issue number: 5643
Original language: English
Links: http://www.cbat.eps.harvard.edu/iauc/05600/05643.html#Item1
Source: dtu
Source-ID: u::6927
Publication: Research › Journal article – Annual report year: 1992

GRO J0422+32

General information
State: Published
Organisations: National Space Institute, Astrophysics
Authors: Castro-Tirado, A. J. (Ekstern), Pavlenko, P. (Ekstern), Salyapikov, A. (Ekstern), Gershberg, R. (Ekstern), Hayrapetyan, V. (Ekstern), Brandt, S. (Intern), Lund, N. (Intern)
Number of pages: 1
Publication date: 1992
Main Research Area: Technical/natural sciences

Publication information
Journal: International Astronomical Union Circulars (IAUC)
Issue number: 5659
Original language: English
Links: http://www.cbat.eps.harvard.edu/iauc/05600/05659.html#Item1
Source: dtu
Source-ID: u::6926
Publication: Research › Journal article – Annual report year: 1992

GRO J0422+32 = GRS 0417+335
A. J. Castro-Tirado, S. Brandt, and N. Lund, Granat WATCH team (Danish Space Research Institute, Lyngby; and Space Research Institute, Moscow), report: "The hard x-ray transient reported by Paciesas et al. on IAUC 5580 has been observed by the WATCH all-sky monitor on Granat. The source intensity above 20 keV was 2.5 Crab on Aug. 11.7 UT. The source has been localized to the following position: R.A. = 4h17m.5, Decl. = +33 30' (equinox 1950.0), with a probable error radius of 0.5 deg." R. A. Cameron, Universities Space Research Association; and J. E. Grove, R. A. Kroeger, W. N. Johnson, and J. D. Kurfess, Naval Research Laboratory; on behalf of the Compton Observatory OSSE team, report: "Preliminary analysis of the spectrum of the gamma-ray transient source GRO J0422+32 (IAUC 5580, 5584), derived from OSSE observations between Aug. 11.10 and 12.00 UT, shows the source to have a spectrum similar to, and three times
brighter than, the black-hole candidate Cygnus X-1 as observed by OSSE in 1991 June. Significant emission is observed up to about 600 keV, with an average source flux of 1.8 photons cmE-2 sE-1 MeVE-1 at 100 keV. The continuum spectrum between 60 and 600 keV is not compatible with a single power law. The spectrum over this energy range is well represented by a two-temperature Sunyaev-Titarchuk comptonized plasma emission model (Sunyaev and Titarchuk 1980, A.Ap. 86, 121), with characteristic electron temperatures of 30 and 60 keV. The intensities of these two components are comparable at 100 keV and have optical depths of about 6 and 3, respectively. The OSSE instrument is also collecting event rate data in 8-ms samples on GRO J0422+32. Preliminary analysis of this timing data has shown no evidence for QPO behavior."

**General information**
State: Published
Organisations: National Space Institute, Astrophysics
Authors: Castro-Tirado, A. J. (Ekstern), Brandt, S. (Intern), Lund, N. (Intern), Cameron, R. A. (Ekstern), Grove, J. E. (Ekstern), Kroeger, R. A. (Ekstern)
Number of pages: 1
Publication date: 1992
Main Research Area: Technical/natural sciences

**Publication information**
Journal: International Astronomical Union Circulars (IAUC)
Issue number: 5587
Original language: English
Links:
http://www.cbat.eps.harvard.edu/iauc/05500/05587.html#Item1
Source: dtu
Source-ID: u::6830
Publication: Research - peer-review › Journal article – Annual report year: 1992

**GRS 1915+105**

**General information**
State: Published
Organisations: National Space Institute, Astrophysics
Authors: Castro-Tirado, A. J. (Ekstern), Brandt, S. (Intern), Lund, N. (Intern)
Number of pages: 1
Publication date: 1992
Main Research Area: Technical/natural sciences

**Publication information**
Journal: International Astronomical Union Circulars (IAUC)
Issue number: 5590
Original language: English
Links:
http://www.cbat.eps.harvard.edu/iauc/05500/05590.html#Item2
Source: dtu
Source-ID: u::6826
Publication: Research › Journal article – Annual report year: 1992

**GRS 2037-404**

**General information**
State: Published
Organisations: National Space Institute, Astrophysics
Authors: Castro-Tirado, A. J. (Ekstern), Brandt, S. (Intern), Lund, N. (Intern)
Number of pages: 1
Publication date: 1992
Main Research Area: Technical/natural sciences

**Publication information**
Journal: International Astronomical Union Circulars (IAUC)
Issue number: 5617
Original language: English
Electronic versions:
Observations of an X-ray nova in the Musca constellation by the Watch instrument

General information
State: Published
Organisations: National Space Institute, Astrophysics
Authors: Lapshov, I. Y. (Ekstern), Dremin, V. V. (Ekstern), Syunyaev, R. A. (Ekstern), Brandt, S. (Intern), Lund, N. (Intern)
Number of pages: 4
Publication date: 1992
Main Research Area: Technical/natural sciences

Publication information
Journal: Soviet Astronomy Letters
Volume: 18
Issue number: 1
Original language: English
Electronic versions:
1992SvAL...18....1L.pdf
Links:

Bibliographical note
Originally published in Russian in: Pis'ma v Astronomicheskii Zhurnal (ISSN 0320-0108), vol. 18, no. 1, Jan. 1992, p. 3-10

The discovery and preliminary results of observations of the transient X-ray source GRS 0834 - 43 with the Watch instrument of the GRANAT observatory

The history of discovery and localization of the GRS 0834-430 source with the Watch instrument on Granat is described.

The Light curve of this source for the period January 1990-October 1991 is presented. Outbursts with a period of 114 days are discussed

General information
State: Published
Organisations: National Space Institute, Astrophysics
Authors: Lapshov, I. Y. (Ekstern), Dremin, V. V. (Ekstern), Syunyaev, R. A. (Ekstern), Brandt, S. (Intern), Lund, N. (Intern)
Pages: 30-36
Publication date: 1992
Main Research Area: Technical/natural sciences

Publication information
Journal: Pis'ma v Astronomicheskii Zhurnal
Volume: 18
Issue number: 1
ISSN (Print): 0320-0108
Ratings:
Web of Science (2017): Indexed Yes
Scopus rating (2016): CiteScore 0.85
Scopus rating (2015): CiteScore 0.83
Scopus rating (2014): CiteScore 1.17
Scopus rating (2013): CiteScore 1.11
ISI indexed (2013): ISI indexed no
Scopus rating (2012): CiteScore 0.72
ISI indexed (2012): ISI indexed no
Two years of observations of the X-ray pulsar VELA X-1 with the Watch instrument of the GRANAT observatory

General information
State: Published
Organisations: National Space Institute, Astrophysics
Authors: Lapshov, I. Y. (Ekstern), Syunyaev, R. A. (Ekstern), Chichkov, M. A. (Ekstern), Dremin, V. V. (Ekstern), Brandt, S. (Intern), Lund, N. (Intern)
Number of pages: 4
Pages: 16-19
Publication date: 1992
Main Research Area: Technical/natural sciences

Publication information
Journal: Soviet Astronomy Letters
Volume: 18
Original language: English
Electronic versions:
1992SvAL___18___16L.pdf
Links:

Bibliographical note
Source: dtu
Source-ID: u::6923
Publication: Research - peer-review » Journal article – Annual report year: 1992

X-Ray Activity in Cygnus and Aquila

General information
State: Published
Organisations: National Space Institute, Astrophysics
Authors: Brandt, S. (Intern), Castro-Tirado, A. J. (Ekstern), Lund, N. (Intern)
Number of pages: 1
Publication date: 1992
Main Research Area: Technical/natural sciences

Publication information
Journal: International Astronomical Union Circulars (IAUC)
Issue number: 5664
Original language: English
Electronic versions:
IAUC_5664.pdf
Links:
http://www.cbat.eps.harvard.edu/iauc/05600/05664.html#Item1
Source: dtu
Source-ID: u::6925
Publication: Research » Journal article – Annual report year: 1992
Gamma-ray bursts observed by the watch experiment
After two years in orbit the WATCH instruments on the GRANAT space observatory have localized seven gamma burst sources with better than 1° accuracy. In several cases, follow-up observations with Schmidt telescopes have been made within a few days. Some of the bursts have also been detected by the distant space probes PVO and ULYSSES and there are, therefore, good prospects for obtaining much improved positions using the burst arrival times. The existence of the almost concurrent Schmidt plates could then become particularly interesting.

General information
State: Published
Organisations: National Space Institute, Astrophysics, Danish Space Research Institute
Authors: Lund, N. (Intern), Brandt, S. (Intern), Castro-Tirado, A. J. (Ekstern)
Pages: 53-57
Publication date: 1991
Main Research Area: Technical/natural sciences

Publication information
Journal: A I P Conference Proceedings Series
Issue number: 265
ISSN (Print): 0094-243X
Ratings:
BFI (2017): BFI-level 1
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 0.21 SJR 0.163 SNIP 0.236
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 0.179 SNIP 0.217 CiteScore 0.18
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 0.165 SNIP 0.191 CiteScore 0.17
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 0.16 SNIP 0.173 CiteScore 0.16
ISI indexed (2013): ISI indexed no
BFI (2012): BFI-level 1
Scopus rating (2012): SJR 0.17 SNIP 0.176 CiteScore 0.14
ISI indexed (2012): ISI indexed no
BFI (2011): BFI-level 1
Scopus rating (2011): SJR 0.153 SNIP 0.141 CiteScore 0.12
ISI indexed (2011): ISI indexed no
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 1
Scopus rating (2010): SJR 0.16 SNIP 0.144
BFI (2009): BFI-level 1
Scopus rating (2009): SJR 0.157 SNIP 0.137
BFI (2008): BFI-level 1
Scopus rating (2008): SJR 0.162 SNIP 0.112
Web of Science (2008): Indexed yes
Scopus rating (2007): SJR 0.157 SNIP 0.125
Scopus rating (2006): SJR 0.157 SNIP 0.121
Scopus rating (2005): SJR 0.157 SNIP 0.187
Scopus rating (2004): SJR 0.122 SNIP 0
Web of Science (2004): Indexed yes
Scopus rating (2003): SJR 0.416 SNIP 0.765
Scopus rating (2002): SJR 2.677 SNIP 1.594
Web of Science (2001): Indexed yes
Original language: English
DOIs:
10.1063/1.42778
Looking for optical emission from gamma-ray bursters.

General information
State: Published
Organisations: National Space Institute, Astrophysics
Authors: Boer, M. (Ekstern), Motch, C. (Ekstern), Pedersen, H. (Ekstern), Brandt, S. (Intern), Castro Tirado, A. J. (Ekstern), Lund, N. (Intern), Smette, A. (Ekstern)
Pages: 61-62
Publication date: 1991
Main Research Area: Technical/natural sciences

Observations of Nova Muscae with the WATCH Instrument
A new bright transient x-ray source was discovered by WATCH instrument on board GRANAT spacecraft on January 8, 1991. Maximum flux from the newly discovered source was 2 Crab units in 8-20 keV spectral band. During January 16-21, WATCH detected the dip in the light curve of the x-ray Nova. On January 16, 1991 the flux decreased to half that of the Crab. In five days the source became brighter again. Light curves in two energy bands are presented.

General information
State: Published
Organisations: National Space Institute, Astrophysics, Institute for Space Research
Authors: Lapshov, I. Y. (Ekstern), Dremin, V. V. (Ekstern), Sunyaev, R. A. (Ekstern), Brandt, S. (Intern), Lund, N. (Intern)
Pages: 11-17
Publication date: 1991
Main Research Area: Technical/natural sciences

Host publication information
Place of publication: Lyngby
Publisher: Danish Space Research Institute
Editor: Brandt, S.

Series: DRI Report
Volume: 91
Number: 2
ISSN: 0109-6605
Main Research Area: Technical/natural sciences

Relations
Activities:
Publication: Research - peer-review » Article in proceedings – Annual report year: 1991
X-Ray Transient in Musca (GRS 1121-68 = GS 1124-683)
Research Institute, Lyngby; and Space Research Institute, Moscow), report: "A new x-ray source in Musca, GRS 1121-68, has been discovered in data obtained by the WATCH detectors on Jan. 9. The spectrum of the source was harder than that of the Crab nebula, and the flux was about twice that from the Crab and increasing slowly during the observation. The source remained at a constant intensity level on Jan. 10. On Jan. 5 this source was not bright enough to be detectable by WATCH. The preliminary position is R.A. = 11h21m, Decl. = -68.1 deg (equinox 1950.0; uncertainty about 1 deg). We have not found any catalogued hard x-ray sources within our error circle; however, close to the given position, we have noted the existence of a radio pulsar (at R.A. = 11h10m, Decl. = -69 deg) with a period of 0.8 s, and a gamma-ray burst source, GRB 820829B, detected by Venera 13/14 in 1982. We have not detected any strong pulsations from the new source, but the time resolution of the available data does not allow a search for pulsations with periods shorter than about 20 s." F. Makino and the Ginga Team, Institute of Space and Astronautical Science, telex: "A bright transient x-ray source, designated GS 1124-683, was discovered with the All Sky X-ray Monitor (ASM) aboard Ginga on Jan. 8. The position
determined by combining the ASM position with the line position obtained by scanning with the Large Area Proportional Counters (LAC) is R.A. = 11h24m.6, Decl. = -68° 18' (equinox 1950.0). The corners of the error box are 11h23m.9, -68 08'; 11h23m.7, -68 20'; 11h25m.4, -68 37'; and 11h25m.6, -68 16'. The x-ray flux was about 0.8 Crab on Jan. 8.8 UT and 2.2 Crab on Jan. 11.04, observed with the ASM and LAC, respectively. The spectrum was of power-law type with index of about -2.3. No pulsation was observed in the period range 0.12-30 s. Optical observation is urged." R. H. McNaught, University of Adelaide, reports that A. Jones, Nelson, N.Z., found nothing to mag about 10 in a visual search of the region on Jan. 11.4 UT. R. M. West, European Southern Observatory, reports that a 10-min GPO astrograph plate was taken as La Silla, showing no new object in the 2 x 2 deg field brighter than mag 7-8; a search plate will be taken with the Schmidt telescope at La Silla.

General information
State: Published
Organisations: National Space Institute, Astrophysics
Authors: Lund, N. (Intern), Brandt, S. (Intern), Makino, F. (Ekstern), McNaught, R. H. (Ekstern), Jones, A. (Ekstern), West, R. M. (Ekstern)
Number of pages: 1
Publication date: 1991
Main Research Area: Technical/natural sciences

Publication information
Journal: International Astronomical Union Circulars (IAUC)
Issue number: 5161
Original language: English
Links:
http://www.cbat.eps.harvard.edu/iauc/05100/05161.html#Item1
Source: dtu
Source-ID: u::6831
Publication: Research - peer-review › Journal article – Annual report year: 1991

The WATCH All-Sky Monitor for the Granat Project
The Watch X-ray all-sky monitor, which is designed to localize strong X-ray sources and follow their development, is examined, focusing on the addition of four Watch units to the Granat satellite project. The components of the Watch instrument are described and the capabilities and potential scientific returns of the Granat project are discussed. The applications of the Watch monitor are given, including the study of time variations of known sources and the detection and localization of new, transient sources.

General information
State: Published
Organisations: National Space Institute, Astrophysics, Danish Space Research Institute
Authors: Brandt, S. (Intern), Lund, N. (Intern), Rao, A. R. (Ekstern)
Pages: 239-242
Publication date: 1990
Main Research Area: Technical/natural sciences

Publication information
Journal: Advances in Space Research
Volume: 10
Issue number: 2
ISSN (Print): 0273-1177
Ratings:
BFI (2017): BFI-level 1
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 1.63 SJR 0.582 SNIP 1.206
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 0.602 SNIP 1.329 CiteScore 1.61
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 0.713 SNIP 1.282 CiteScore 1.61
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 0.677 SNIP 1.289 CiteScore 1.56
ISI indexed (2013): ISI indexed yes
Solar and stellar flare observations using WATCH

The Danish experiment WATCH (Wide Angle Telescope for Cosmic Hard X-rays) is to be flown on board the Soviet satellite GRANAT in middle of 1989. The performance characteristics of the WATCH instrument is described. It is estimated that WATCH can detect about 100 solar hard X-ray bursts per day. WATCH can also detect about 40 energetic stellar soft X-ray flares, similar to the fast transient X-ray emissions detected by the Ariel V satellite.

General information
State: Published
Organisations: National Space Institute, Astrophysics
Authors: Brandt, S. (Intern), Lund, N. (Intern), Rao, A. R. (Ekstern)
Pages: 33-36
Publication date: 1989

Host publication information
Title of host publication: Solar and stellar flares : Proceedings of the 104th Colloquium of the International Astronomical Union held in Stanford, California, August 15–19, 1988
Volume: Poster Papers
Publisher: Springer
Editors: Haisch, B. M., Rodonò, M.
Main Research Area: Technical/natural sciences
STROBE-X: X-ray Timing and Spectroscopy Mission

STROBE-X is a NASA probe-class observatory designed for X-ray timing and spectroscopy in the 0.2–30 keV band, with huge collecting area and good spectral resolution. It is optimized for the study of matter in the most extreme conditions found in the Universe and addresses several key science areas including:

- Probing matter spiraling into black holes (BHs) to explore the effects of strong-field general relativity and measure the masses and spins of BHs.
- X-ray reverberation mapping of BH accretion flows across all mass scales, from stellar-mass BHs in our Galaxy to supermassive BHs in active galactic nuclei.
- Fully determining the ultradense matter equation of state by measuring the neutron star (NS) mass-radius relation using >20 pulsars over an extended mass range.
- Exploring cosmic chemical evolution by measuring bulk metallicity of ~100 high-redshift (z > 2) galaxy clusters. Continuously surveying the dynamic X-ray sky with large duty cycle and high spectral and time resolution to characterize source behavior over a vast range of time scales, and to enable multi-wavelength and multi-messenger studies through cross-correlation with high cadence surveys at other wavelengths and in gravitational waves and neutrinos.

National Space Institute
Astrophysics and Atmospheric Physics
Naval Research Laboratory
NASA Marshall Space Flight Center
NASA Goddard Space Flight Center
Massachusetts Institute of Technology
Texas Technical University
The Institute of Space Studies of Catalonia
Istituto di Astrofisica e Planetologia Spaziali Via Fosso del Cavaliere
MSSL
SRON
IAA-Tuebingen
University of Geneva

**Relations**

Activities:
STROBE-X Science Definition Workshop
STROBE-X Steering Committee (External organisation)

Publications:
STROBE-X: X-Ray Timing and Spectroscopy on Dynamical Timescales from Microseconds to Years

**enhanced X-ray Timing and Polarimetry mission, eXTP**

The enhanced X-ray Timing and Polarimetry mission (eXTP) is a science mission designed to study the state of matter under extreme conditions of density, gravity and magnetism. Primary goals are the determination of the equation of state of matter at supra-nuclear density, the measurement of QED effects in highly magnetized star, and the study of accretion
in the strong-field regime of gravity. Primary targets include isolated and binary neutron stars, strong magnetic field systems like magnetars, and stellar-mass and supermassive black holes.

The mission carries a unique and unprecedented suite of state-of-the-art scientific instruments enabling for the first time ever the simultaneous spectral-timing-polarimetry studies of cosmic sources in the energy range from 0.5-30 keV (and beyond).

Key elements of the payload are:

the Spectroscopic Focusing Array (SFA): a set of 11 X-ray optics operating in the 0.5-10 keV energy band with a field-of-view (FoV) of 12 arcmin each and a total effective area of ~0.9 m² and 0.6 m² at 2 keV and 6 keV respectively. The telescopes are equipped with Silicon Drift Detectors offering <180 eV spectral resolution.

the Large Area Detector (LAD): a deployable set of 640 Silicon Drift Detectors, achieving a total effective area of ~3.4 m² between 6 and 10 keV. The operational energy range is 2-30 keV and the achievable spectral resolution better than 250 eV. This is a non-imaging instrument, with the FoV limited to <1° FWHM by the usage of compact capillary plates.

the Polarimetry Focusing Array (PFA): a set of 2 X-ray telescope, achieving a total effective area of 250 cm² at 2 keV, equipped with imaging gas pixel photoelectric polarimeters. The FoV of each telescope is 12 arcmin and the operating energy range is 2-10 keV.

the Wide Field Monitor (WFM): a set of 3 coded mask wide field units, equipped with position-sensitive Silicon Drift Detectors, covering in total a FoV of 3.7 sr and operating in the energy range 2-50 keV.

The eXTP international consortium includes major institutions of the Chinese Academy of Sciences and Universities in China, as well as major institutions in several European countries and other International partners. eXTP is an enhanced mission concept based on the XTP mission, enabled by the collaboration between Chinese and European institutions.

The predecessor of eXTP, the XTP mission concept, has been selected and funded as one of the so-called background missions in the Strategic Priority Space Science Program of the Chinese Academy of Sciences since 2011. The strong European participation has significantly enhanced the scientific capabilities of eXTP.

The planned launch date of the mission is earlier than 2025.

National Space Institute
Astrophysics and Atmospheric Physics
IHEP
CSIC/IEEE
University of Geneva
Tsinghua University
Tongji University
CAS - National Astronomical Observatories
Shanghai Astronomical Observatory Chinese Academy of Sciences
Nanjing University
Purdue University
MPE
Peking University
Fudan University
Guangxi University
Osservatorio Astronomico di Roma
ASTRON
SRON
Leiden University
INAF - Brera Astronomical Observatory
Dr. Karl-Remeis-Sternwarte and Erlangen Center for Astroparticle Physics
Space Research Centre
University of British Columbia
Nicolaus Copernicus Astronomical Center
XiangTan University
Xinjiang University
Beijing Normal University
University of Zielona Gora
INFN - Sezione di Pisa
New York University
University of Rome III
University of Science and Technology of China
CEA Saclay
University of Helsinki
University of Turku
National Institute for Nuclear Physics
Academy of Sciences of the Czech Republic
Silesian University in Opava
Tata Institute of Fundamental Research
University of Oxford
Massachusetts Institute of Technology
University of Urbino "Carlo Bo"
University of Insubria
Nanjing Normal University
Shanghai Institute of Satellite Engineering
Xiamen University
Institute of Spacecraft System Engineering
Cornell University
Università degli Studi di Roma Tor Vergata
Fondazione Bruno Kessler
CAS - Purple Mountain Observatory
University of Alabama in Huntsville
NASA Goddard Space Flight Center
Period: 01/05/2015 → …
Number of participants: 1
Acronym: eXTP
Project participant:
Brandt, Søren (Intern)

Relations
Parent project:
LOFT, the Large Observatory For X-ray Timing
Activities:
eXTP mission design coordination meeting
INTEGRAL follow-up observations of gravitational wave event candidates from LIGO and VIRGO
A collaborative effort among the Laser Interferometer Gravitational-Wave Observatory (LIGO) and LIGO Scientific Collaboration (LSC), the European Gravitational Observatory and Virgo Collaboration (EGO/Virgo), and INTEGRAL Science Data Centre (ISDC) in order to participate in a program to perform follow-up observations of gravitational wave (GW) candidate events with the sharing of proprietary information.

National Space Institute
Astrophysics and Atmospheric Physics
University of Geneva
European Space Astronomy Centre and European Space Agency
Istituto di Astrofisica e Planetologia Spaziali Via Fosso del Cavaliere
University Paris Diderot - Paris 7
University College Dublin
National Institute for Astrophysics
Period: 05/04/2014 → …
Number of participants: 1
Project participant:
Brandt, Søren (Intern)

Relations
Activities:
INTEGRAL 2017
Gravitationsbølger
Gravitationsbølger: Einstein vinder endnu en runde efter 100 år
Tyngdebølger
Gravitational Waves
Tyngdebølger og den nyeste viden om emnet
Publications:
INTEGRAL Detection of the First Prompt Gamma-Ray Signal Coincident with the Gravitational-wave Event GW170817
INTEGRAL IBIS, SPI, and JEM-X observations of LVT151012
INTEGRAL Observations of GW170104
INTEGRAL Upper Limits on Gamma-Ray Emission Associated with the Gravitational Wave Event GW150914
Localization and Broadband Follow-Up of the Gravitational-Wave Transient GW150914
INTEGRAL Upper Limits on Gamma-Ray Emission Associated with the Gravitational Wave Event GW150914
Supplement: "Localization And Broadband Follow-Up of the Gravitational-Wave Transient GW150914" (2016, Apjl, 826, L13)
Press / Media items:
FAKTA: Tyngdebølger er krusninger i rumtiden: De kaldes århundruds opdagelse. Men hvad er de såkaldte gravitationsbølger egentlig for noget?
Jagten på bølgerne fra universet
Opdagelse af tyngdebølger
Forskere: Disse fund kan vi forvente af tyngdebølger
Fysikerne jubler: Vi har fundet tyngdebølger!
Videnskabelig sensation: Forskere bekræfter Einstein-teori: Den største videnskabelige opdagelse i det nye årtusinde er netop blevet afsløret
Sensationel tyngdebølgemåling åbner nyt kapitel i udforskningen af rummet
Ugens podcast: Dansk rumudstyr bidrog til årets astronyhed
The Wide Field Imager for the Athena X-ray Observatory
The WFI is one of the two scientific instruments proposed for Athena, the mission selected to address the “Hot and Energetic Universe” science theme identified by ESA (Athena@ESA) for its L2 large satellite mission with launch in 2028.

The WFI will provide imaging in the 0.2-15 keV energy band over a wide field, simultaneously with spectrally and time-resolved photon counting. The instrument is designed to make optimal use of the grasp (product of collecting area and solid angle) provided by the optical design of the ATHENA mirror system, by combining a sensitive approx. 40’x40’ field of view DEPFET detector with a pixel size properly sampling the angular resolution of 5” on-axis (half energy width).

National Space Institute
Astrophysics and Atmospheric Physics

MPE
Dr. Karl Remeis-Observatory and Erlangen Centre for Astroparticle Physics

IAA-Tuebingen

University of Vienna

CEA Saclay

INAF Istituto di Astrofisica Spaziale e Fisica Cosmica, Bologna

National Institute for Astrophysics

University of Leicester

The Open University

Pennsylvania State University

SLAC National Accelerator Laboratory

Massachusetts Institute of Technology

SAO-CfA

Nicolaus Copernicus Astronomical Center, Polish Academy of Sciences, 00-716, Warsaw, Poland

Space Research Center
Period: 28/03/2014 → …
Number of participants: 6
Acronym: WFI
Contact person:
Kuvvetli, Irfan (Intern)
Project participant:
Brandt, Søren (Intern)
Tcherniak, Denis (Intern)
Della Monica Ferreira, Desiree (Intern)
Project Manager, organisational:
Pedersen, Søren Møller (Intern)
Approving authority:
Hornstrup, Allan (Intern)

Relations
Activities:
LOFT, the Large Observatory For X-ray Timing

LOFT, the Large Observatory For X-ray Timing, is a proposed space mission intended to answer fundamental questions about the motion of matter orbiting close to the event horizon of a black hole, and the state of matter in neutron stars. LOFT was in 2011 selected by ESA as one of the four space missions concepts of the Cosmic Vision programme that will compete for a launch opportunity at the start of the 2020s.

The LOFT payload module will host two instruments: the Large Area Detector (LAD) and the Wide Field Monitor (WFM).

The LAD will improve upon the effective area of the largest area X-ray instrument ever flown (the Rossi X-ray Timing Explorer's Proportional Counter Array) by a factor of about 20. The improved energy resolution (better than 260 eV) of the LAD will allow the exploitation of spectral diagnostics of relativistically-broadened 6-7 keV (Fe-K) lines, in particular. It will be deployed through a mechanism based on that used for Synthetic Aperture Radar missions, such as the Soil Moisture and Ocean Salinity (SMOS) mission, where very large panels are deployed in space with high accuracy.

The Wide Field Monitor (WFM) will discover and localise X-ray transients and impulsive events and monitor spectral state changes with unprecedented sensitivity. Targeted follow-up observations will make this resource important in its own right.

DTU Space is heading the European team planning to provide the Wide Field Monitor instrument.

National Space Institute

Astrophysics

Electronic Engineering

Period: 15/02/2011 → …
Number of participants: 6
Acronym: LOFT
Project participant:
Budtz-Jørgensen, Carl (Intern)
Lund, Niels (Intern)
Kuvvetli, Irfan (Intern)
Hansen, Flemming (Intern)

Project Manager, organisational:
Pedersen, Søren Møller (Intern)
Project Manager, academic:
Brandt, Søren (Intern)

Relations

Activities:
LOFT mission concept Science Study Team (External organisation)
Observing GRBs with the LOFT Wide Field Monitor

Publications:
The Science Payload of the LOFT Mission
Probing the emission physics and weak/soft population of Gamma-Ray Bursts with LOFT. White Paper in Support of the Mission Concept of the Large Observatory for X-ray Timing
The LOFT wide field monitor
The LOFT (Large Observatory for X-ray Timing) background simulations
Accelerator experiments with soft protons and hyper-velocity dust particles: application to ongoing projects of future X-ray missions
The LOFT Burst Alert System and its Burst On-board Trigger
LOFT - The large observatory for x-ray timing
Observing GRBs with the LOFT Wide Field Monitor
High-energy radiation from thunderstorms and lightning with LOFT. White Paper in Support of the Mission Concept of the Large Observatory for X-ray Timing.
Background simulations for the Large Area Detector onboard LOFT
The LOFT Ground Segment
The Large Observatory For x-ray Timing
The design of the wide field monitor for LOFT
The LOFT wide field monitor simulator
LOFT - The Large Observatory for X-ray Timing
The Large Observatory for X-ray Timing (LOFT)
Simulations of the x-ray imaging capabilities of the silicon drift detectors (SDD) for the LOFT wide-field monitor

Press / Media items:
Danskere med i stort rumprojekt: Satellitten LOFT sendes i 2022 ud i rummet med et danskbygget røntgenkamera om bord

Project

Ultra-Fast Flash Observatory, UFFO
The Ultra-Fast Flash Observatory pathfinder (UFFO-p) is a new space mission dedicated to detect Gamma-Ray Bursts (GRBs) and rapidly follow their afterglows in order to provide early optical/ultraviolet measurements.

National Space Institute
Astrophysics and Atmospheric Physics
Sungkyunkwan University
Moscow Lomonosov State University
Instituto de Astrofísica de Andalucía
University of Valencia
National Taiwan University
National Space Organization

Korea Advanced Institute of Science & Technology
Period: 01/01/2010 → …
Number of participants: 3
Acronym: UFFO
Project participant:
Brandt, Søren (Intern)
Budtz-Jørgensen, Carl (Intern)
Lund, Niels (Intern)

Relations
Activities:
Workshop on GRB with Lomonosov & the UFFO meeting
University Satellites: Lomonosov, RELEC, Tatiana

Publications:
Ultra-Fast Flash Observatory for the observation of early photons from gamma-ray bursts
Development of Motorized Slewing Mirror Stage for the UFFO Project
Testing and Performance of UFFO Burst Alert & Trigger Telescope
Calibration and Simulation of the GRB trigger detector of the Ultra Fast Flash Observatory
In-Flight Calibrations of UFFO-Pathfinder
Ultra-Fast Flash Observatory for observation of early photons from gamma ray bursts
Ultra-fast flash observatory for detecting the early photons from gamma-ray bursts
Ultra-Fast Flash Observatory: Fast Response Space Missions for Early Time Phase of Gamma Ray Bursts
The Status of the Ultra Fast Flash Observatory - Pathfinder
The slewing mirror telescope of the Ultra Fast Flash Observatory Pathfinder
A next generation Ultra-Fast Flash Observatory (UFFO-100) for IR/optical observations of the rise phase of gamma-ray bursts
Update on The Ultra-Fast Flash Observatory (UFFO) Pathfinder
The Uffo Slewing Mirror Telescope for Early Optical Observation from Gamma Ray Bursts
Design and implementation of the UFFO burst alert and trigger telescope
Observation of early photons from gamma-ray bursts with the Lomonosov / UFFO-pathfinder
Design and Fabrication of Detector Module for UFFO Burst Alert & Trigger Telescope
The UFFO slewing mirror telescope for early optical observation from gamma ray bursts
Slewing Mirror Telescope optics for the early observation of UV/optical photons from Gamma-Ray Bursts
Slewing Mirror Telescope and the Data-Acquisition System for the UFFO-Pathfinder
Readout of the UFFO Slewing Mirror Telescope to detect UV/optical photons from Gamma-Ray Bursts
The UFFO (Ultra Fast Flash Observatory) Pathfinder: Science and Mission
Inverted-conical light guide for crosstalk reduction in tightly-packed scintillator matrix and MAPMT assembly
Development of Slewing Mirror Telescope Optical System for the UFFO-pathfinder
Design and implementation of electronics and data acquisition system for Ultra-Fast Flash Observatory
The Ultra-Fast Flash Observatory’s space GRB mission and science
Ultra-Fast Flash Observatory (uffo) for Observation of Early Photons from Gamma Ray Bursts
The readout system and the trigger algorithm implementation for the UFFO Pathfinder
Status report of the UFFO-pathfinder

INTEGRAL Galactic Bulge Monitoring Program
The Galactic Bulge is a region rich in bright variable high-energy X-ray and gamma-ray sources. Since 2005, we have observed this region regularly during all the visibility periods with ESA’s high energy astrophysics observatory INTEGRAL. Complete hexagonal dither patterns (7 pointings of 1800 sec each) are performed during each INTEGRAL revolution (i.e. every 3 days). As a service to the scientific community, the IBIS/ISGRI and JEM-X light curves and sky images in two energy bands are made publicly available as soon as the observations are performed.

The project is ongoing
National Space Institute
Astrophysics
European Space Astronomy Centre and European Space Agency
Period: 01/02/2005 → …
Number of participants: 3
X-ray sources, neutron stars, black holes, Galactic Center
Project participant:
Brandt, Søren (Intern)
Chenevez, Jérôme (Intern)
Project Coordinator:
Kuulkers, Erik (Ekstern)

The JEM-X X-ray monitor on INTEGRAL
Integral is the first space observatory that can simultaneously observe objects in gamma rays, X-rays and visible light. Its principal targets are violent explosions known as gamma-ray bursts, powerful phenomena such as supernova explosions, and regions in the Universe thought to contain black holes.

DTU Space has provided 2 X-ray monitor instruments, JEM-X to INTEGRAL.

INTEGRAL was launched on Oct 17, 2002. The mission is currently approved by ESA until the end of 2014.

The INTEGRAL mission was approved by ESA in 1994, and launched in 2002. The mission is currently approved by ESA until the end of 2014. ESA will by June 2013 decide if the mission will further be extended until the end of 2016.

National Space Institute
Astrophysics
Period: 17/10/2002 → …
Number of participants: 6
Project participant:
Chenevez, Jérôme (Intern)
Westergaard, Niels Jørgen Stenfeldt (Intern)
Oxborrow, Carol Anne (Intern)
Budtz-Jørgensen, Carl (Intern)
Lund, Niels (Intern)

Project Manager, academic:
Brandt, Søren (Intern)

Relations

Activities:
INTEGRAL’s journey through the high energy sky
Gamma and X-ray astronomy - a personal perspective
INTEGRAL 2017
9th INTEGRAL Workshop (External organisation)
Press / Media items:
Interview på DR P1 Videnskabens verden
Astronomer jubler over den første observation af sammenstød mellem to neutronstjerner

Activities:

INTEGRAL 2017
Period: 15 Oct 2017 → 20 Oct 2017
Søren Brandt (Organizer)
National Space Institute
Astrophysics and Atmospheric Physics

Description
The goal of this Symposium is to present and discuss the main results obtained during last decade in the field of high-energy astrophysics, with an emphasis on Time Domain Astrophysics.
Degree of recognition: International

Related event

INTEGRAL 2017: Energetic Time Domain Astrophysics
15/10/2017 → 20/10/2017
Venice, Italy
Activity: Attending an event › Participating in or organising a conference

6th WFI Proto-Consortium Meeting
Period: 10 Oct 2017 → 12 Oct 2017
Søren Brandt (Participant)
Irfan Kuvvetli (Participant)
Denis Tcherniak (Participant)
National Space Institute
Astrophysics and Atmospheric Physics
Degree of recognition: International
Documents:
6th WFI Proto-Consortium Meeting Agenda

Related event

6th WFI Proto-Consortium Meeting
10/10/2017 → 12/10/2017
Warzaw, Poland
Activity: Attending an event › Participating in or organising a conference

THESEUS Workshop
Period: 5 Oct 2017 → 6 Oct 2017
Søren Brandt (Organizer)
National Space Institute
Astrophysics and Atmospheric Physics
Degree of recognition: International
Links:
http://www.isdc.unige.ch/theseus/workshop2017-venue.html (THESEUS Workshop)
http://www.isdc.unige.ch/theseus/ (THESEUS mission overview)

Related event
THESEUS Workshop
05/10/2017 → 06/10/2017
Napoli, Italy
Activity: Attending an event › Participating in or organising a conference

STROBE-X Science Definition Workshop
Period: 18 Sep 2017 → 20 Sep 2017
Søren Brandt (Participant)
National Space Institute
Astrophysics and Atmospheric Physics

Description
The STROBE-X Science Definition Workshop

Related event
STROBE-X Science Definition Workshop
18/09/2017 → 20/09/2017
Lubbock, Texas, United States
Activity: Attending an event › Participating in or organising a conference

STROBE-X Steering Committee (External organisation)
Period: 1 Jul 2017 → …
Søren Brandt (Member)
National Space Institute
Astrophysics and Atmospheric Physics
Degree of recognition: International
Links:
https://gammaray.nsstc.nasa.gov/Strobe-X/Team.html (The STROBE-X Team)

Related external organisation
STROBE-X Steering Committee
Activity: Membership › Membership of committees, commissions, boards, councils, associations, organisations, or similar

Gravitationsbølger
Period: 3 Apr 2017
Søren Brandt (Speaker)
National Space Institute
Astrophysics and Atmospheric Physics
Degree of recognition: Regional

Related external organisation
Folkeuniversitetet i Aarhus
Ny Munkegade 118, 8000, Aarhus, Denmark
Activity: Talks and presentations › Guest lectures, external teaching and course activities at other universities
**eXTP mission design coordination meeting**  
Period: 21 Mar 2017 → 23 Mar 2017  
Søren Brandt (Speaker)  
National Space Institute  
Astrophysics and Atmospheric Physics  
Degree of recognition: International

**Related event**

**eXTP mission design coordination meeting**  
21/03/2017 → 23/03/2017  
Beijing, China  
Activity: Talks and presentations › Conference presentations

**Gravitationsbølger**  
Period: 13 Mar 2017  
Søren Brandt (Speaker)  
National Space Institute  
Astrophysics and Atmospheric Physics  
Degree of recognition: Regional

**Related external organisation**

**Folkeuniversitetet i København**  
Læderstræde 34, 2, 1201, København, Denmark  
Activity: Talks and presentations › Conference presentations

**High-throughput X-ray Astronomy in the eXTP era**  
Period: 6 Feb 2017 → 8 Feb 2017  
Søren Brandt (Organizer)  
National Space Institute  
Astrophysics and Atmospheric Physics

**Description**  
Member of the Scientific Organizing Committee

*First Science Meeting dedicated to the high-throughput X-ray Astronomy and the eXTP mission.*  
Degree of recognition: International

**Related event**

**High-throughput X-ray Astronomy in the eXTP era**  
06/02/2017 → 08/02/2017  
Rome, Italy  
Activity: Attending an event › Participating in or organising a conference

**5th Athena/WFI Proto-Consortium Meeting**  
Period: 25 Jan 2017 → 26 Jan 2017  
Søren Brandt (Participant)  
Irfan Kuvvetli (Participant)  
National Space Institute  
Astrophysics and Atmospheric Physics  
Degree of recognition: International  
Documents:  
5th WFI Proto-Consortium Meeting Agenda
Related event

5th Athena/WFI Proto-Consortium Meeting
25/01/2017 → 26/01/2017
Palermo, Italy
Activity: Attending an event › Participating in or organising a conference

Gravitationsbølger
Period: 15 Nov 2016
Søren Brandt (Lecturer)
National Space Institute
Astrophysics and Atmospheric Physics

Description

Related event

Gravitationsbølger
15/11/2016 → 15/11/2016
Helsingør, Denmark
Activity: Talks and presentations › Conference presentations

Workshop on Soft γ-ray Astronomical Telescopes
Period: 7 Nov 2016 → 8 Nov 2016
Søren Brandt (Participant)
National Space Institute
Astrophysics and Atmospheric Physics
Degree of recognition: International
Links:

Related event

Workshop on Soft γ-ray Astronomical Telescopes
07/11/2016 → 08/11/2016
Lyngby, Denmark
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

Wide Field Monitor
Søren Brandt (Speaker)
Margarita Hernanz (Other)
National Space Institute
Astrophysics and Atmospheric Physics

Description
An overview of the Wide Field Monitor proposed for the eXTP mission
Degree of recognition: International

Related event
**eXTP Coordination Meeting**

24/10/2016 → 26/10/2016
Beijing, China

Activity: Talks and presentations › Conference presentations

**Description**
eXTP Consortium meeting at the Institute for High Energy Physics (IHEP), Chinese Academy of Sciences (CAS), Beijing

Degree of recognition: International

**Related event**

**11th INTEGRAL Conference**

Beijing, China

Søren Brandt (Participant)
National Space Institute
Astrophysics and Atmospheric Physics

Links:

**Related event**

**Tyngdebølger**

Period: 12 Sep 2016
Søren Brandt (Lecturer)
National Space Institute
Astrophysics and Atmospheric Physics

**Description**
Foredrag i Selskabet for Naturlærens Udbredelse, Øster Voldgade 5-7, København

**Unknown external organisation**

**Activity: Talks and presentations › Conference presentations**

**Gravitational Waves**

Period: 22 Aug 2016
Søren Brandt (Lecturer)
National Space Institute
Astrophysics and Atmospheric Physics

**Description**
After-dinner talk presented at workshop of SPOC, DTU at Sørup Herregård, Ringsted, Denmark

**Related external organisation**

**Unknown external organisation**
Activity: Talks and presentations › Conference presentations

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**Tyngdebølger og den nyeste viden om emnet**
Period: 20 May 2016
Søren Brandt (Lecturer)
National Space Institute

Astrophysics and Atmospheric Physics

**Description**
DTU Bibliotek, Temadag nr. 2: "Vi kigger ud i verdensrummet"

**Related external organisation**

**Unknown external organisation**
Activity: Talks and presentations › Conference presentations

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**Gravitationsbølger: Einstein vinder endnu en runde efter 100 år**
Period: 12 Apr 2016
Søren Brandt (Lecturer)
National Space Institute

Astrophysics and Atmospheric Physics

**Description**
Foredrag i Ingeniørforeningen, IDA, Kalvebod Brygge, 1780, København V

Foredrag i Ingeniørforeningen, IDA
Links:
(Gravitationsbølger)

**Related external organisation**

**Unknown external organisation**
Activity: Talks and presentations › Conference presentations

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**LOFT-WFM concept and design considerations**
Period: 27 Oct 2015
Søren Brandt (Speaker)
National Space Institute

Astrophysics and Atmospheric Physics

**Description**
Overview of the Wide Field Monitor proposed for the LOFT mission and its application for the eXTP mission
Degree of recognition: International

**Related event**

**eXTP Workshop 2015**
26/10/2015 → 27/10/2015
Beijing, China
Activity: Talks and presentations › Conference presentations

**eXTP Workshop 2015**
Søren Brandt (Participant)
National Space Institute
Astrophysics and Atmospheric Physics

**Description**
eXTP Science Workshop
Degree of recognition: International

**Related event**

**eXTP Workshop 2015**
26/10/2015 → 27/10/2015
Beijing, China
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

**INTEGRAL 2015**
Søren Brandt (Organizer)
National Space Institute
Astrophysics and Atmospheric Physics

**Description**
Participant and member of Science Organizing Committee

**INTEGRAL 2015**
The New High Energy Sky after a Decade of Discoveries
Links:

**Related event**

**INTEGRAL 2015**
05/10/2015 → 09/10/2015
Rome, Italy
Activity: Attending an event › Participating in or organising a conference

**WFI Proto-­Consortium Meeting**
Period: 29 Sep 2014 → 1 Oct 2017
Søren Brandt (Participant)
National Space Institute
Astrophysics and Atmospheric Physics

**Description**
WFI Proto-­Consortium Meeting
Degree of recognition: International
Documents:
WFI Proto-­Consortium Meeting Agenda

**Related event**

**WFI Proto-­Consortium Meeting: Ringberg Castle Sep 29 - Oct 1 2014**
29/09/2014 → 01/10/2014
Kreuth, Bavaria, Germany
Activity: Attending an event › Participating in or organising a conference
Hard X-ray Astronomy: Astrosat and beyond
Period: 24 Sep 2014 → 26 Sep 2014
Søren Brandt (Invited speaker)
National Space Institute
Astrophysics
Links:
http://www.tifr.res.in/~astrogoa2014/home.html
(Hard X-ray Astronomy: Astrosat and Beyond, A topical conference
International Center, Goa, India, September 24-26, 2014)

Related event

Hard X-ray Astronomy: Astrosat and beyond: A topical conference
24/09/2014 → 26/09/2014
Goa, India
Activity: Talks and presentations › Conference presentations

10th INTEGRAL Workshop
Period: 15 Sep 2014 → 19 Sep 2014
Søren Brandt (Participant)
National Space Institute
Astrophysics
Degree of recognition: International
Links:
http://www.clemson.edu/ces/physics-astro/conferences/INTEGRAL/
(Conference homepage.)

Related event

10th INTEGRAL Workshop: A Synergistic View of the High Energy Sky
15/09/2014 → 19/09/2014
Annapolis, United States
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

SPIE 2014
Period: 22 Jun 2014 → 27 Jun 2014
Søren Brandt (Participant)
National Space Institute
Astrophysics

Related event

SPIE 2014: Astronomical Telescopes + Instrumentation
22/06/2014 → 27/06/2014
Montreal, Canada
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

INTEGRAL's journey through the high energy sky
Period: 15 Oct 2013 → 18 Oct 2013
Søren Brandt (Participant)
National Space Institute
Astrophysics
Links:
http://www.iaps.inaf.it/sz/integral2013/index.htm
(INTEGRAL's journey through the high energy sky)

Related event
INTEGRAL's journey through the high energy sky
15/10/2013 → 18/10/2013
Rome, Italy
Activity: Attending an event › Participating in or organising a conference

INTEGRAL's journey through the high energy sky (External organisation)
Period: 15 Oct 2013 → 18 Oct 2013
Søren Brandt (Participant)
National Space Institute
Astrophysics

Description
INTEGRAL Workshop
15-18 October 2013
Rome, Italy

Scientific Organizing Committee

Body type: Scientific Organizing Committee
Degree of recognition: International
Links:
http://www.iaps.inaf.it/sz/integral2013/ ("INTEGRAL’s journey through the high energy sky")

Related external organisation

INTEGRAL’s journey through the high energy sky
Activity: Membership › Membership of committees, commissions, boards, councils, associations, organisations, or similar

9th INTEGRAL Workshop (External organisation)
Søren Brandt (Participant)
National Space Institute
Astrophysics

Description
15-19 October 2012, Bibliothèque Nationale de France, Paris, France

Member of Scientific Advisory Committee

Body type: Scientific Advisory Committee
Degree of recognition: International
Links:
http://integralworkshop2012.in2p3.fr/Home.html (9th INTEGRAL Workshop An INTEGRAL view of the high-energy sky (the first 10 years) 15-19 October 2012 Bibliothèque Nationale de France, Paris, France)

Related external organisation

9th INTEGRAL Workshop
Activity: Membership › Membership of committees, commissions, boards, councils, associations, organisations, or similar

Observing GRBs with the LOFT Wide Field Monitor
Period: 11 Oct 2012
Søren Brandt (Lecturer)
National Space Institute
Astrophysics

Related event

2012 Fall Gamma Ray Burst Symposium
08/10/2012 → 12/10/2012
Marbella, Spain
Activity: Talks and presentations › Conference presentations

The Fall 2012 Gamma-Ray Burst Symposium (External organisation)
Søren Brandt (Participant)
National Space Institute
Astrophysics

Description
The Fall 2012 Gamma-Ray Burst Symposium: "15 years of Gamma-Ray Bursts afterglows: progenitors, environments and host galaxies from the nearby to the early Universe", held in Marbella (Málaga, Spain), 8-12 Oct 2012

Member of Scientific Organizing Committee

Body type: Scientific Organizing Committee
Degree of recognition: International
Links:
http://grb2012.iaa.es/ (Fall 2012 Gamma Ray Burst Symposium home page)

Related external organisation

The Fall 2012 Gamma-Ray Burst Symposium
Activity: Membership › Membership of committees, commissions, boards, councils, associations, organisations, or similar

2nd LOFT Science Meeting (External organisation)
Period: 24 Sep 2012 → 27 Sep 2012
Søren Brandt (Participant)
National Space Institute
Astrophysics

Description
24-27 September, Toulouse, France

Body type: Scientific Organizing Committee
Degree of recognition: International
Links:

Related external organisation

2nd LOFT Science Meeting
Activity: Membership › Membership of committees, commissions, boards, councils, associations, organisations, or similar

Ph.D. Committee at Leibniz Universität Hannover (External organisation)
Period: 18 Jul 2012
Søren Brandt (Participant)
National Space Institute
Astrophysics

Description
Ph. D. thesis "Development of a digital phase measuring system with microradian precision for LISA" by Joachim Kullmann

Body type: Ph.D. committee
Degree of recognition: International

Related external organisation
Ph.D. Committee at Leibniz Universität Hannover
Activity: Membership › Membership in review committee

Space Telescopes and Instrumentation 2012: Ultraviolet to Gamma Ray
Period: 1 Jul 2012 → 6 Jul 2012
Søren Brandt (Participant)
National Space Institute
Astrophysics

Related event
Space Telescopes and Instrumentation 2012: Ultraviolet to Gamma Ray
01/07/2012 → 06/07/2012
Amsterdam, Netherlands
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

Annual Danish Astronomy Meeting (External organisation)
Period: 30 May 2012 → 31 May 2012
Søren Brandt (Participant)
National Space Institute
Astrophysics

Description

Member of Organizing Committee

Body type: Organizing Committee

Related external organisation
Annual Danish Astronomy Meeting
Activity: Membership › Membership of committees, commissions, boards, councils, associations, organisations, or similar

LOFT Science Meeting (External organisation)
Søren Brandt (Participant)
National Space Institute
Astrophysics

Description
LOFT Science Meeting, October 26-28 , 2011, Science Park, Amsterdam, the Netherlands

Member of the Scientific Organizing Committee for the LOFT Science Meeting, October 26-28 , 2011, Science Park, Amsterdam, the Netherlands

Body type: Scientific Organizing Committee
Degree of recognition: International
Links:
Related external organisation

LOFT Science Meeting
Activity: Membership › Membership of committees, commissions, boards, councils, associations, organisations, or similar

The Extreme and Variable High Energy Sky (External organisation)
Period: 19 Sep 2011 → 23 Sep 2011
Søren Brandt (Participant)
National Space Institute
Astrophysics

Description
A Science Workshop in Sardinia
Chia Laguna (Cagliari) - Italy
19 - 23 September 2011

Member of Scientific Advisory Committee

Body type: Scientific Advisory Committee
Degree of recognition: International
Links:
http://www.iasf-roma.inaf.it/extremesky_chia2011/index.htm (Workshop website.)

Related external organisation

The Extreme and Variable High Energy Sky
Activity: Membership › Membership of committees, commissions, boards, councils, associations, organisations, or similar

LOFT mission concept Science Study Team (External organisation)
Period: 25 May 2011 → 31 Dec 2013
Søren Brandt (Participant)
National Space Institute
Astrophysics

Description
1) Define and document, jointly with the ESA Study Scientist, the scientific requirements for the LOFT mission and for its payload.
2) Define and document the main characteristics of the payload that will satisfy the science requirements.
3) Advise the ESA internal study team on the scientific implication of the proposed designs.
4) Support the ESA internal study team during the industrial study phase.
5) Provide input to the Report at the end of the Assessment Study, especially on the science related sections.

Body type: ESA Science Study Team
Degree of recognition: International
Links:
http://sci.esa.int/science-e/www/area/index.cfm?fareaid=125 (ESA LOFT home page)

Related external organisation

LOFT mission concept Science Study Team
Activity: Membership › Membership of committees, commissions, boards, councils, associations, organisations, or similar

6th IACHEC meeting
Period: 11 Apr 2011 → 14 Apr 2011
Søren Brandt (Participant)
National Space Institute
Astrophysics

Description
Crab intensity from JEM-X and a source of "deadtime"

Place: Villa Grazioli, Grottaferrata, Italy 11-14 April 2011

Links:
http://web.mit.edu/iachec/meetings/2011/Presentations/Westergaard_JEMX.pdf (EXT-OA)

Related event

6th IACHEC meeting
11/04/2011 → 14/04/2011
Grottaferrata, Italy
Activity: Attending an event › Participating in or organising a conference

Workshop on GRB with Lomonosov & the UFFO meeting
Period: 9 Apr 2011
Søren Brandt (Participant)
National Space Institute
Astrophysics

Related event

Workshop on GRB with Lomonosov & the UFFO meeting
08/04/2011 → 12/04/2011
Seoul, Korea, Republic of
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

Gamma and X-ray astronomy - a personal perspective
Period: 24 Nov 2010
Søren Brandt (Lecturer)
National Space Institute
Astrophysics

Description
Seminar given at ESOC, Darmstadt.

Related external organisation

Unknown external organisation
Activity: Talks and presentations › Conference presentations

8th INTEGRAL Workshop, "The Restless Gamma-ray Universe" (External organisation)
Period: 27 Sep 2010 → 29 Sep 2010
Søren Brandt (Participant)
National Space Institute
Astrophysics

Description

Scientific Organizing Commitee, 8th INTEGRAL Workshop, “The Restless Gamma-ray Universe”, 27th-30th September 2010, Dublin Castle, Dublin, Ireland

Body type: Scientific Organizing Commitee
Degree of recognition: International
Related external organisation

8th INTEGRAL Workshop, "The Restless Gamma-ray Universe"
Activity: Membership › Membership of committees, commissions, boards, councils, associations, organisations, or similar

38th Scientific Assembly of the Committee on Space Research
Period: 18 Jul 2010 → 25 Jul 2010
Søren Brandt (Participant)
National Space Institute
Astrophysics

Related event

38th Scientific Assembly of the Committee on Space Research
18/07/2010 → 25/07/2010
Bremen, Germany
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

University Satellites: Lomonosov, RELEC, Tatiana
Period: 7 Jun 2010 → 10 Jun 2010
Søren Brandt (Participant)
National Space Institute
Astrophysics

Related event

University Satellites: Lomonosov, RELEC, Tatiana
07/07/2010 → 10/07/2010
Moscow, Russian Federation
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

Niels Bohr International Academy Summer School on Stellar Collapse, Compact Objects, Supernovae, and Gamma-Ray Bursts (External organisation)
Søren Brandt (Participant)
National Space Institute
Astrophysics

Description
Body type: Local Organizing Committee
Degree of recognition: International

Related external organisation

Niels Bohr International Academy Summer School on Stellar Collapse, Compact Objects, Supernovae, and Gamma-Ray Bursts
Activity: Membership › Membership of committees, commissions, boards, councils, associations, organisations, or similar

X- and gamma-ray Astronomy with JEM-X and INTEGRAL
Period: 17 Jun 2009
Søren Brandt (Speaker)
National Space Institute
Astrophysics

Documents:
X- and gamma-ray astronomy with JEM-X and INTEGRAL

Related event

Danish Physical Society - Nordic Meeting
16/06/2009 → 18/06/2009
Copenhagen, Denmark
Activity: Talks and presentations › Conference presentations

2009 Annual Meeting of the Danish Physical Society
Søren Brandt (Participant)
National Space Institute
Astrophysics

Related event

2009 Annual Meeting of the Danish Physical Society
16/06/2009 → 18/06/2009
Lyngby, Denmark
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

The 7th INTEGRAL Workshop (External organisation)
Period: 8 Sep 2008 → 11 Sep 2008
Søren Brandt (Participant)
National Space Institute
Astrophysics

Description
"An INTEGRAL view of compact objects", 8-11 September 2008, Copenhagen, Denmark

Co-chair of Scientific Organizing Commitee and member of Local Organizing Commitee

Body type: Scientific Organizing Commitee and Local Organizing Commitee
Degree of recognition: International

Documents:
7th INTEGRAL Workshop photo
7th INTEGRAL Workshop poster

Links:
http://pos.sissa.it/cgi-bin/reader/conf.cgi?confid=67 (Proceedings of the 7th INTEGRAL Workshop in Proceedings of Science)

Related external organisation

The 7th INTEGRAL Workshop
Activity: Membership › Membership of commitees, commissions, boards, councils, associations, organisations, or similar

INTEGRAL Operations Coordination Group (External organisation)
Period: 2007 → …
Søren Brandt (Participant)
National Space Institute
Astrophysics
Description
The INTEGRAL Operations Coordination Group (IOCG) advises the INTEGRAL Mission Manager on all aspects of the operation and conduct of the Integral mission.

Representative for the JEM-X instrument on INTEGRAL

Body type: ESA advisory group
Degree of recognition: International
Links:
http://www.rssd.esa.int/index.php?project=INTEGRAL&page=About_INTEGRAL_Teams_IOCG (ESA's INTEGRAL Operations Coordination Group)

Related external organisation

INTEGRAL Operations Coordination Group
Activity: Membership › Membership of committees, commissions, boards, councils, associations, organisations, or similar

Five years of INTEGRAL
Søren Brandt (Participant)
National Space Institute
Astrophysics

Related event

Five years of INTEGRAL: A Science Workshop in Sardinia
17/10/2007 → 19/10/2007
Cagliari, Italy
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

INTEGRAL User Group (External organisation)
Period: 1 Jan 2007 → …
Søren Brandt (Participant)
National Space Institute
Astrophysics

Description
The INTEGRAL User Group is an advisory group for ESA's high energy observatory INTEGRAL. The task include:
1) Advise the Project Scientist on all matters relevant to maximising the scientific return of INTEGRAL within the boundary conditions.
2) Advise the Project Scientist on how to ensure that INTEGRAL maintains the principal characteristics of an observatory satisfying the objectives of the scientific community at large.
3) Act as a focus for the interests of the scientific community in INTEGRAL and act as an advocate for INTEGRAL within that community.
4) Maintain contact with the wider scientific community on matters specific to INTEGRAL (e.g. coordinated observations, science operations and General Observer interface) and to provide a route so that the community can advise ESA on INTEGRAL's scientific goals from a general point of view.
5) Monitor the ISOC and ISDC activities to ensure that they best meet the needs of the user community within the resources available.
6) Identify, in consultation with the Integral Operations Coordination Group (IOCG), a coherent calibration and performance verification policy.
7) Advise, in consultation with the IOCG, on the maintenance and possible further enhancement of the science ground segment with particular reference to the operational scenario, observatory products and database structure.
8) Participate in major programme reviews.

Body type: ESA INTEGRAL mission advisory group
Degree of recognition: International
Links:
http://www.rssd.esa.int/index.php?project=INTEGRAL&page=IUG (The INTEGRAL Users Group (IUG))
Related external organisation

INTEGRAL User Group
Activity: Membership › Membership of commitees, commissions, boards, councils, associations, organisations, or similar

The 6th INTEGRAL Workshop
Period: 2 Jul 2006 → 8 Jul 2006
Søren Brandt (Participant)
National Space Institute
Astrophysics

Related event

The 6th INTEGRAL Workshop: The Obscured Universe
02/07/2006 → 08/07/2006
Moscow, Russian Federation
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

Gamma-Ray Bursts in the Swift Era
Period: 29 Nov 2005 → 2 Dec 2005
Søren Brandt (Participant)
National Space Institute
Astrophysics

Related event

Gamma-Ray Bursts in the Swift Era: Sixteenth Maryland Astrophysics Conference
29/11/2005 → 02/12/2005
Washington DC, United States
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

39TH ESLAB Symposium on Trends in Space Science and Cosmic Vision 2020
Period: 19 Apr 2005 → 21 Apr 2005
Søren Brandt (Participant)
National Space Institute
Astrophysics

Related event

39TH ESLAB Symposium on Trends in Space Science and Cosmic Vision 2020
19/04/2005 → 21/04/2005
Noordwijk, Netherlands
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

Bursts observed with JEM-X: reconstructing light curves, exemplified by bright bursts from SGR 1806-20
Period: 18 Jan 2005
Søren Brandt (Speaker)
National Space Institute
Astrophysics

Description
Place: INTEGRAL Science Workshop, ESTEC, The Netherlands
Documents:
Bursts observed with JEM-X - reconstructing light curves
JEM-X: status, scientific performance, calibration

Related event
Internal INTEGRAL Science Workshop
18/01/2005 → 21/01/2005
Noordwijk, Netherlands
Activity: Talks and presentations › Conference presentations

Søren Brandt (Participant)
National Space Institute
Astrophysics

Related event

Internal INTEGRAL Science Workshop
Period: 18 Jan 2005 → 21 Jan 2005
Noordwijk, Netherlands
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

First INTEGRAL Data Analysis Workshop
Period: 5 Oct 2004 → 6 Oct 2004
Geneva, Switzerland
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

The 5th INTEGRAL Workshop
Period: 16 Feb 2004 → 20 Feb 2004
Münich, Germany
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

Third Microquasar Workshop
Period: 11 Sep 2000 → 13 Sep 2000
Granada, Spain
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.
4th INTEGRAL Workshop
Period: 4 Sep 2000 → 8 Sep 2000
Søren Brandt (Participant)
National Space Institute
Astrophysics

Related event
4th INTEGRAL Workshop: Exploring the gamma-ray universe
Alicante, Spain
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

High-Energy Spectroscopic Astrophysics
Period: 3 Apr 2000 → 8 Apr 2000
Søren Brandt (Participant)
National Space Institute
Astrophysics

Related event
High-Energy Spectroscopic Astrophysics: Saas Fee Advanced Course 30
03/04/2000 → 08/04/2000
Les Diablerets, Switzerland
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

5th Huntsville Symposium
Period: 19 Oct 1999 → 22 Oct 1999
Søren Brandt (Participant)
National Space Institute
Astrophysics

Related event
5th Huntsville Symposium
19/10/1999 → 22/10/1999
Huntville, AL, United States
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

Small missions for energetic astrophysics
Period: 22 Feb 1999 → 26 Feb 1999
Søren Brandt (Participant)
National Space Institute
Astrophysics

Related event
Small missions for energetic astrophysics: Ultraviolet to gamma-ray
22/02/1999 → 26/02/1999
Los Alamos, NM, United States
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

Meeting of the AAS High Energy Astrophysics Division
Period: 4 Nov 1997 → 7 Nov 1997
Søren Brandt (Participant)
Meeting of the AAS High Energy Astrophysics Division
Estes Park, CO, United States
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

Nordic Conference in Theoretical High-Energy Astrophysics
Period: 14 Sep 1997 → 16 Sep 1997
Copenhagen, Denmark
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

29th ESLAB Symposium
Period: 25 Apr 1995 → 27 Apr 1995
Noordwijk, Netherlands
Activity: Attending an event › Participating in or organising a conference

International Workshop on Imaging in High Energy Astronomy
Period: 26 Sep 1994 → 30 Sep 1994
Anacapri, Italy
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.
Astrophysics

Related event

30th COSPAR Scientific Assembly
Hamburg, Germany
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

The Gamma Ray Sky with Compton GRO and SIGMA
Søren Brandt (Participant)
National Space Institute

Related event

The Gamma Ray Sky with Compton GRO and SIGMA: NATO Advanced Study Institute
25/01/1994 → 04/02/1994
Les Houches, France
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

Gamma Ray Bursts
Søren Brandt (Participant)
National Space Institute

Related event

Gamma Ray Bursts: Second Workshop
19/10/1993 → 21/10/1993
Huntsville, AL, United States
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

Toulouse International Colloquium
Søren Brandt (Participant)
National Space Institute

Related event

Toulouse International Colloquium: Recent Advances in High Energy Astronomy
17/03/1992 → 20/03/1992
Toulouse, France
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

Compton Centennial International Symposium on Gamma Ray Astronomy
Søren Brandt (Participant)
National Space Institute

Related event

Compton Centennial International Symposium on Gamma Ray Astronomy
Workshop on Nova Muscae 1991
Søren Brandt (Organizer)
National Space Institute
Astrophysics

Related event
Workshop on Nova Muscae 1991
14/05/1991 → 16/05/1991
Lyngby, Denmark
Activity: Attending an event › Participating in or organising a conference

Texas-ESO/CERN Symposium on Relativistic Astrophysics, Cosmology, and Fundamental Physics
Period: 16 Dec 1990 → 21 Dec 1990
Søren Brandt (Participant)
National Space Institute
Astrophysics

Related event
Texas-ESO/CERN Symposium on Relativistic Astrophysics, Cosmology, and Fundamental Physics
16/12/1990 → 21/12/1990
Brighton, United Kingdom
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

28th Plenary Meeting of COSPAR
Søren Brandt (Participant)
National Space Institute
Astrophysics

Related event
28th Plenary Meeting of COSPAR
25/06/1990 → 06/07/1990
The Hague, Netherlands
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

23rd ESLAB Symposium on two topics in X-Ray Astronomy
Period: 13 Sep 1989 → 20 Sep 1989
Søren Brandt (Participant)
National Space Institute
Astrophysics

Related event
23rd ESLAB Symposium on two topics in X-Ray Astronomy: X-ray Binaries
Bologna, Italy
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.