The Fine Structure of Herman Rings
We study the geometric structure of the boundary of Herman rings in a model family of Blaschke products of degree 3 (up to quasiconformal deformation). Shishikura’s quasiconformal surgery relates the Herman ring to the Siegel disk of a quadratic polynomial. By studying the regularity properties of the maps involved, we transfer McMullen’s results on the fine local geometry of Siegel disks to the Herman ring setting.
New basis set for the prediction of the specific rotation in flexible biological molecules

Using a novel method based on increasingly accurate calculations, we obtain the main conformers of a set of flexible molecules. We then employ the recently developed ORP basis set for calculating the specific rotation of the found set carried out at the TD-DFT level of theory. The results are compared to those obtained with the (d-)aug-cc-pVXZ (X = D, T and Q) basis sets of Dunning et al. The ORP values are in good overall agreement with the aug-cc-pVTZ results making the ORP a good basis set for routine TD-DFT optical rotation calculations of conformationally flexible molecules. The results presented for the investigated chiral azido alcohols are to our knowledge the first estimations of their specific rotations.

General information
State: Published
Organisations: Department of Applied Mathematics and Computer Science, Mathematics, Kazimierz Wielki University in Bydgoszcz, Nicolaus Copernicus University, University of Santiago de Compostela
Authors: Baranowska-Łaczkowska, A. (Ekstern), Z. Łaczkowski, K. Z. Ł. (Ekstern), Henriksen, C. (Intern), Fernandez, B. (Ekstern), Kozak, M. (Ekstern), Zielinska, S. (Ekstern)
Pages: 19897-19902
Publication date: 2016
Main Research Area: Technical/natural sciences

Publication information
Journal: RSC Advances
Volume: 6
Issue number: 24
ISSN (Print): 2046-2069

Ratings:
BFI (2018): BFI-level 1
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Web of Science (2017): Indexed yes
In this study we evaluate a high-level ab initio ground-state intermolecular potential-energy surface for the pyridine–He van der Waals complex, using the CCSD(T) method and Dunning’s augmented correlation consistent polarized valence double-$\zeta$ basis set extended with a set of 3s3p2d1f1g midbond functions. The potential is characterized by two symmetric global minima of $-93.2$ cm$^{-1}$ that correspond to geometries where the distance between the helium atom and the pyridine center of mass is 3.105 Å and the angle with respect to the pyridine $c$ rotational axis is 3.9°. Six local minima can be observed for geometries with the helium atom in the plane containing the pyridine molecule. To further analyze the nature of the intermolecular interactions in the complex, we use symmetry-adapted perturbation theory (SAPT). Additional consideration of the pyridine–He$_2$ complex provides a better insight into many-body nonadditive contributions to intermolecular interactions in systems with more helium atoms.
In this paper a Moving Least Squares method (MLS) for the simulation of 2D free surface flows is presented. The emphasis is on the governing equations, the boundary conditions, and the numerical implementation. The compressible viscous isothermal Navier–Stokes equations are taken as the starting point. Then a boundary condition for pressure (or density) is developed. This condition is applicable at interfaces between different media such as fluid–solid or fluid–void. The effect of surface tension is included. The equations are discretized by a moving least squares method for the spatial derivatives and a Runge–Kutta method for the time derivatives. The computational frame is Lagrangian, which means that the computational nodes are convected with the flow. The method proposed here is benchmarked using the standard lid driven cavity problem, a rotating free surface problem, and the simulation of drop oscillations. A new exact solution to the unsteady incompressible Navier–Stokes equations is introduced for the rotating free surface problem. © 2013 Elsevier Ltd. All rights reserved.
He-, Ne-, and Ar-phosgene intermolecular potential energy surfaces

Using the CCSD(T) model, we evaluated the intermolecular potential energy surfaces of the He-, Ne-, and Ar-phosgene complexes. We considered a representative number of intermolecular geometries for which we calculated the corresponding interaction energies with the augmented (He complex) and double augmented (Ne and Ar complexes) correlation-consistent polarized valence triple-\(\xi\) basis sets extended with a set of 3s3p2d1f1g midbond functions. These basis sets were selected after systematic basis set studies carried out at geometries close to those of the surface minima.
The He-, Ne-, and Ar-phosgene surfaces were found to have absolute minima of -72.1, -140.4, and -326.6 cm\(^{-1}\) at distances between the rare-gas atom and the phosgene center of mass of 3.184, 3.254, and 3.516 Å, respectively. The potentials were further used in the evaluation of rovibrational states and the rotational constants of the complexes, providing valuable results for future experimental investigations. Comparing our results to those previously available for other phosgene complexes, we suggest that the results for Cl\(_2\)-phosgene should be revised.
Refined ab initio intermolecular ground-state potential energy surface for the He-C2H2 van der Waals complex

A refined CCSD(T) intermolecular potential energy surface is developed for the He-C2H2 van der Waals complex. For this, 206 points on the intermolecular potential energy surface, evaluated using the CCSD(T) method and the aug-cc-pVQZ basis set extended with a set of 3s3p2d1f1g midbond functions, are fitted to a 15-parameter analytic function. The potential is characterised by minima of -24.21 cm⁻¹ at distances between the rare gas atom and the C2H2 centre of mass of 4.3453 Å, and with the complex in a linear configuration. At intermediate distances the surface is rather similar to that developed previously by Munteanu and Fernández (J. Chem. Phys., 123, 014309, 2005) but differs notably at short range. The improved potential energy surface should, therefore, be particularly useful for computations of collision line broadening. Dynamical calculations of a number of rovibrational bound state energies and wave functions are presented. Inspection of the nodal surfaces of several low lying excited states shows that the complex is close to the free rotor limit.

General information
State: Published
Organisations: Department of Applied Mathematics and Computer Science, Mathematics, University of Santiago de Compostela, Utah State University
Authors: Fernández, B. (Ekstern), Henriksen, C. (Intern), Farrelly, D. (Ekstern)
Pages: 1173-1177
Publication date: 2013
Main Research Area: Technical/natural sciences

Publication information
Journal: Molecular Physics
Volume: 111
Issue number: 9-11
ISSN (Print): 0026-8976
Ratings:
BFI (2018): BFI-level 1
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 1.65 SJR 0.833 SNIP 0.729
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 0.761 SNIP 0.85 CiteScore 1.68
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 0.697 SNIP 0.667 CiteScore 1.48
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 0.678 SNIP 0.715 CiteScore 1.58
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): SJR 0.801 SNIP 0.738 CiteScore 1.62
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): SJR 0.824 SNIP 0.829 CiteScore 1.67
Ab initio ground state phenylacetylene-argon intermolecular potential energy surface and rovibrational spectrum

We evaluate the phenylacetylene-argon intermolecular potential energy surface by fitting a representative number of ab initio interaction energies to an analytic function. These energies are calculated at a grid of intermolecular geometries, using the CCSD(T) method and the aug-cc-pVDZ basis set extended with a series of 3s3p2d1flg midbond functions. The potential is characterized by two equivalent global minima where the Ar atom is located above and below the phenylacetylene plane at a distance of 3.5781 Å from the molecular center of mass and at an angle of 9.08 degrees with respect to the axis perpendicular to the phenylacetylene plane and containing the center of mass. The calculated interaction energy is -418.9 cm⁻¹. To check further the potential, we obtain the rovibrational spectrum of the complex and the results are compared to the available experimental data. (C) 2012 American Institute of Physics.

[http://dx.doi.org/10.1063/1.4742153]
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 0.953 SNIP 0.767 CiteScore 1.98
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 1.386 SNIP 0.989 CiteScore 2.54
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 2
Scopus rating (2013): SJR 1.532 SNIP 1.17 CiteScore 2.95
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 2
Scopus rating (2012): SJR 1.787 SNIP 1.118 CiteScore 2.86
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 2
Scopus rating (2011): SJR 1.805 SNIP 1.207 CiteScore 3.07
ISI indexed (2011): ISI indexed yes
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 2
Scopus rating (2010): SJR 1.73 SNIP 1.052
Web of Science (2010): Indexed yes
BFI (2009): BFI-level 2
Scopus rating (2009): SJR 2.003 SNIP 1.104
Web of Science (2009): Indexed yes
BFI (2008): BFI-level 2
Scopus rating (2008): SJR 2.189 SNIP 1.12
Web of Science (2008): Indexed yes
Scopus rating (2007): SJR 2.163 SNIP 1.108
Web of Science (2007): Indexed yes
Scopus rating (2006): SJR 2.176 SNIP 1.266
Web of Science (2006): Indexed yes
Scopus rating (2005): SJR 2.27 SNIP 1.359
Web of Science (2005): Indexed yes
Scopus rating (2004): SJR 2.229 SNIP 1.369
Web of Science (2004): Indexed yes
Scopus rating (2003): SJR 2.121 SNIP 1.322
Web of Science (2003): Indexed yes
Scopus rating (2002): SJR 2.256 SNIP 1.341
Web of Science (2002): Indexed yes
Scopus rating (2001): SJR 2.381 SNIP 1.362
Web of Science (2001): Indexed yes
Scopus rating (2000): SJR 2.576 SNIP 1.423
Web of Science (2000): Indexed yes
Scopus rating (1999): SJR 2.133 SNIP 1.419
Original language: English
PHYSICS., CORRELATED MOLECULAR CALCULATIONS, WEAKLY-BOUND COMPLEXES, GAUSSIAN-BASIS SETS, FILTER-DIAGONALIZATION, SPECTROSCOPY, ATOMS, NE, AR, CLUSTERS
DOIs:
10.1063/1.4742153
Source: dtu
Source-ID: n:oai:DTIC-ART:isi/371233599::24302
Publication: Research - peer-review › Journal article – Annual report year: 2012
The Medusa Algorithm for Polynomial Matings

The Medusa algorithm takes as input two postcritically finite quadratic polynomials and outputs the quadratic rational map which is the mating of the two polynomials (if it exists). Specifically, the output is a sequence of approximations for the parameters of the rational map, as well as an image of its Julia set. Whether these approximations converge is answered using Thurston's topological characterization of rational maps.

This algorithm was designed by John Hamal Hubbard, and implemented in 1998 by Christian Henriksen and REU students David Farris and Kuon Ju Liu.

In this paper we describe the algorithm and its implementation, discuss some output from the program (including many pictures) and related questions. Specifically, we include images and a discussion for some shared matings, Lattès examples, and tuning sequences of matings.

General information
State: Published
Organisations: Dynamical systems, Department of Mathematics
Authors: Boyd, S. H. (Ekstern), Henriksen, C. (Intern)
Number of pages: 25
Pages: 161-183
Publication date: 2012
Main Research Area: Technical/natural sciences

Publication Information
Journal: Conformal Geometry and Dynamics
Volume: 16
ISSN (Print): 1088-4173
Ratings:
BFI (2018): BFI-level 1
BFI (2017): BFI-level 1
BFI (2016): BFI-level 1
Scopus rating (2016): SJR 0.284 SNIP 0.425 CiteScore 0.2
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 0.209 SNIP 0.705 CiteScore 0.26
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 0.176 SNIP 0.125 CiteScore 0.31
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 0.178 SNIP 0.208 CiteScore 0.13
ISI indexed (2013): ISI indexed no
BFI (2012): BFI-level 1
Scopus rating (2012): SJR 0.175 SNIP 0.434 CiteScore 0.27
ISI indexed (2012): ISI indexed no
BFI (2011): BFI-level 1
Scopus rating (2011): SJR 0.332 SNIP 0.862 CiteScore 0.37
ISI indexed (2011): ISI indexed no
BFI (2010): BFI-level 1
Scopus rating (2010): SJR 0.373 SNIP 0.855
BFI (2009): BFI-level 1
Scopus rating (2009): SJR 0.492 SNIP 0.677
BFI (2008): BFI-level 1
Scopus rating (2008): SJR 0.254 SNIP 0.454
Scopus rating (2007): SJR 0.39 SNIP 0.612
Scopus rating (2006): SJR 0.837 SNIP 1.147
Scopus rating (2005): SJR 0.337 SNIP 0.354
Scopus rating (2004): SJR 0.453 SNIP 0.633
Scopus rating (2003): SJR 0.263 SNIP 0.133
Scopus rating (2002): SJR 0.111 SNIP 0.213
Scopus rating (2001): SJR 0.405 SNIP 0.465
Scopus rating (2000): SJR 0.204 SNIP 0.194
Meromorphic Vector Fields and Circle Packings

The objective of the Ph.D. project is to initiate a classification of bifurcations of meromorphic vector fields and to clarify their relation to circle packings. Technological applications are to image analysis and to effective grid generation using discrete conformal mappings. The two branches of dynamical systems, continuous and discrete, correspond to the study of differential equations (vector fields) and iteration of mappings respectively. In holomorphic dynamics, the systems studied are restricted to those described by holomorphic (complex analytic) functions or meromorphic (allowing poles as singularities) functions. There already exists a well-developed theory for iterative holomorphical dynamical systems, and successful relations found between iteration theory and flows of vector fields have been one of the main motivations for the recent interest in holomorphic vector fields. Restricting to structurally stable vector fields, there is an underlying dynamically defined triangulation of the plane. Circle packings are a means to realize such a given combinatorial structure. About 20 years ago, W. Thurston suggested applying circle packings to obtain approximations to Riemann mappings. This gave rise to the development of a theory of discrete analytic functions, which is a new tool in conformal geometry that can be used to implement many of the classical tools from complex analysis. Circle packing is a relatively new subject that has a great potential for technological applications, specifically for imaging problems. Since the class of complex polynomial vector fields in the plane is natural to consider, it is remarkable that its study has only begun very recently. There are numerous fundamental questions that are still open, both in the general classification of these vector fields, the decomposition of parameter spaces into structurally stable domains, and a description of the bifurcations. The same holds true for questions related to vector fields on the Riemann sphere and Riemann surfaces of higher genus. The overall objectives of this Ph.D.-study are to characterize the decomposition of parameter spaces of meromorphic vector fields on Riemann surfaces of low genus and a description of the bifurcations and to implement characteristic vector fields on such surfaces using circle packings. Furthermore, when the implementations using circle packings have been established, applications in conformal geometry and image analysis will be investigated in collaboration with faculty members at MAT and IMM.

The Teichmüller Space of an Entire Function

We consider the Teichmüller space of a general entire transcendental function $f : \mathbb{C} \rightarrow \mathbb{C}$ regardless of the nature of the set of singular values of $f$, i.e., critical and asymptotic values. We prove that, as in the known case of periodic points and critical values, asymptotic values are also fixed points of any quasiconformal automorphism that commutes with $f$ and which is homotopic to the identity, rel. the ideal boundary of the domain. As a consequence, the general framework of McMullen and Sullivan [McMS98] for rational functions applies also to entire functions and we can apply it to study the Teichmüller space of $f$, analyzing each type of Fatou component separately. Baker domains were already considered in [FH06], but the consideration of wandering domains are new. We provide different examples of wandering domains; each of them adding a different quantity to the dimension of the Teichmüller space. In particular, we give examples of rigid wandering domains.
Deformation of Entire Functions with Baker Domains

We consider entire transcendental functions $f$ with an invariant (or periodic) Baker Domain. First, we classify these domains into three types (hyperbolic, simply parabolic and doubly parabolic) according to the surface they induce when we take the quotient by the dynamics. Second, we study the space of quasiconformal deformations of an entire map with
such a Baker Domain by studying its Teichmuller Space.
Herman Rings and Arnold Disks

General information
State: Published
Organisations: Department of Mathematics, Université Toulouse III - Paul Sabatier, Montana State University, Universitat de Barcelona
Authors: Buff, X. (Ekstern), Fagella, N. (Ekstern), Geyer, L. (Ekstern), Henriksen, C. (Intern)
Pages: 689-716
Publication date: 2005
Main Research Area: Technical/natural sciences

Publication information
Journal: Journal of the London Mathematical Society
Volume: 72
Issue number: 3
ISSN (Print): 0024-6107
Ratings:
BFI (2018): BFI-level 2
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 2
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 2
Scopus rating (2016): SJR 1.519 SNIP 1.096 CiteScore 0.8
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 1.738 SNIP 1.436 CiteScore 0.93
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 1.956 SNIP 1.398 CiteScore 0.9
BFI (2013): BFI-level 2
Scopus rating (2013): SJR 1.693 SNIP 1.593 CiteScore 0.9
ISI indexed (2013): ISI indexed yes
BFI (2012): BFI-level 2
Scopus rating (2012): SJR 1.467 SNIP 1.42 CiteScore 0.94
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 2
Scopus rating (2011): SJR 1.33 SNIP 1.287 CiteScore 0.73
ISI indexed (2011): ISI indexed yes
BFI (2010): BFI-level 2
Scopus rating (2010): SJR 1.762 SNIP 1.118
BFI (2009): BFI-level 2
Scopus rating (2009): SJR 1.679 SNIP 1.33
BFI (2008): BFI-level 2
Scopus rating (2008): SJR 1.489 SNIP 1.163
Web of Science (2008): Indexed yes
Scopus rating (2007): SJR 1.42 SNIP 1.616
Scopus rating (2006): SJR 1.169 SNIP 1.314
Scopus rating (2005): SJR 1.509 SNIP 1.51
Web of Science (2005): Indexed yes
Scopus rating (2004): SJR 1.537 SNIP 1.379
Scopus rating (2003): SJR 1.394 SNIP 1.44
Scopus rating (2002): SJR 1.624 SNIP 1.184
Scopus rating (2001): SJR 0.857 SNIP 1.221
Scopus rating (2000): SJR 0.992 SNIP 0.777
Scopus rating (1999): SJR 1.337 SNIP 1.036
Original language: English
Source: orbit
Source-ID: 185378
On König's root finding algorithms

In this paper, we first recall the definition of a family of root-finding algorithms known as König's algorithms. We establish some local and some global properties of those algorithms. We give a characterization of rational maps which arise as König's methods of polynomials with simple roots. We then estimate the number of non-repelling cycles König's methods of polynomials may have. We finally study the geometry of the Julia sets of König's methods of polynomials and produce pictures of parameter spaces for König's methods of cubic polynomials.
The Combinatorial Rigidity Conjecture is False for Cubic Polynomials

General information
State: Published
Organisations: Department of Mathematics
Authors: Henriksen, C. (Intern)
Pages: 3625-3639
Publication date: 2003
Main Research Area: Technical/natural sciences

Publication information
Volume: 355
Issue number: 9
ISSN (Print): 0002-9947
Ratings:
BFI (2018): BFI-level 2
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 2
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 2
Scopus rating (2016): SJR 2.233 SNIP 1.871 CiteScore 1.34
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 2.171 SNIP 1.775 CiteScore 1.18
BFI (2014): BFI-level 2
The Geometry of the Scroll Compressor

General information
State: Published
Organisations: Geometry, Department of Mathematics, Dynamical systems
Authors: Gravesen, J. (Intern), Henriksen, C. (Intern)
Pages: 113-126
Publication date: 2001
Main Research Area: Technical/natural sciences

Publication information
Journal: S I A M Review
Volume: 43
Issue number: 1
ISSN (Print): 0036-1445
Ratings:
BFI (2018): BFI-level 2
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 2
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 2
Scopus rating (2016): SJR 2.254 SNIP 3.594 CiteScore 3.26
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 2.654 SNIP 4.178 CiteScore 2.62
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 2.61 SNIP 5.092 CiteScore 3.7
BFI (2013): BFI-level 2
Scopus rating (2013): SJR 3.651 SNIP 6.227 CiteScore 4.88
ISI indexed (2013): ISI indexed yes
BFI (2012): BFI-level 2
Scopus rating (2012): SJR 5.051 SNIP 10.937 CiteScore 8.78
ISI indexed (2012): ISI indexed yes
BFI (2011): BFI-level 2
Scopus rating (2011): SJR 4.103 SNIP 8.536 CiteScore 6.5
ISI indexed (2011): ISI indexed yes
BFI (2010): BFI-level 2
Scopus rating (2010): SJR 2.994 SNIP 5.45
BFI (2009): BFI-level 2
Scopus rating (2009): SJR 1.766 SNIP 3.648
BFI (2008): BFI-level 2
Scopus rating (2008): SJR 1.584 SNIP 3.7
Scopus rating (2007): SJR 1.418 SNIP 3.524
Scopus rating (2006): SJR 4.055 SNIP 7.308
Scopus rating (2005): SJR 2.264 SNIP 4.504
Scopus rating (2004): SJR 2.463 SNIP 5.031
Scopus rating (2003): SJR 1.678 SNIP 3.885
Scopus rating (2002): SJR 1.369 SNIP 3.916
Scopus rating (2001): SJR 1.128 SNIP 3.13
Web of Science (2001): Indexed yes
Scopus rating (2000): SJR 1.086 SNIP 2.007
Scopus rating (1999): SJR 1.498 SNIP 2.132
Original language: English
DOIs:
10.1137/S0036144599362121
Source: orbit
Source-ID: 176802
Publication: Research - peer-review › Journal article – Annual report year: 2001

Geometrien af en scroll-kompressor: Fra et konkret problem til abstrakt matematik

General information
State: Published
Organisations: Department of Mathematics
Authors: Gravesen, J. (Intern), Henriksen, C. (Intern)
Number of pages: 20
Publication date: 1999

Publication information
Original language: Danish
Main Research Area: Technical/natural sciences
Source: orbit
Source-ID: 172182
Publication: Research - peer-review › Report – Annual report year: 1999

Geometrien af en scroll-kompressor: Fra et konkret problem til abstrakt matematik

General information
Scaling Ratios and Triangles in Siegel Disks

General information
State: Published
Organisations: Department of Mathematics, Université Toulouse III - Paul Sabatier
Authors: Buff, X. (Ekstern), Henriksen, C. (Intern)
Pages: 293-305
Publication date: 1999
Main Research Area: Technical/natural sciences

Publication information
Journal: Mathematical Research Letters
Volume: 6
Issue number: 3-4
ISSN (Print): 1073-2780
Ratings:
BFI (2018): BFI-level 2
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 2
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 2
Scopus rating (2016): SJR 1.297 SNIP 0.787 CiteScore 0.61
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 1.441 SNIP 0.906 CiteScore 0.64
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 1.639 SNIP 0.785 CiteScore 0.57
BFI (2013): BFI-level 2
Scopus rating (2013): SJR 2.007 SNIP 1.176 CiteScore 0.75
BFI (2012): BFI-level 2
Scopus rating (2012): SJR 1.524 SNIP 1.263 CiteScore 0.75
BFI (2011): BFI-level 2
Scopus rating (2011): SJR 1.78 SNIP 0.948 CiteScore 0.72
BFI (2010): BFI-level 2
Scopus rating (2010): SJR 2.007 SNIP 1.026
BFI (2009): BFI-level 2
Scopus rating (2009): SJR 1.672 SNIP 0.975
BFI (2008): BFI-level 2
Scopus rating (2008): SJR 1.765 SNIP 1.221
Scopus rating (2007): SJR 1.602 SNIP 1.097
Scopus rating (2006): SJR 1.621 SNIP 0.838
Scopus rating (2005): SJR 1.744 SNIP 1.05
Scopus rating (2004): SJR 1.742 SNIP 1.244
Scopus rating (2003): SJR 2.001 SNIP 1.116
The intrinsic equation of planar curves and the geometry of the scroll compressor

General information
State: Published
Organisations: Department of Mathematics
Authors: Gravesen, J. (Intern), Henriksen, C. (Intern)
Number of pages: 14
Publication date: 1999

Publication Information
Original language: English
Main Research Area: Technical/natural sciences
Source: orbit
Source-ID: 173120
Publication: Research - peer-review › Journal article – Annual report year: 1999

Danfoss: Scroll Optimization

General information
State: Published
Organisations: Department of Mathematics, University of Oxford
Authors: Gravesen, J. (Intern), Henriksen, C. (Intern), Howell, P. (Ekstern)
Pages: 3-35
Publication date: 1998

Host publication information
Title of host publication: 32nd European Study Group with Industry - Final report
Place of publication: Lyngby
Publisher: Department of Mathematics, Technical University of Denmark
Main Research Area: Technical/natural sciences
Source: orbit
Source-ID: 169909
Publication: Research - peer-review › Article in proceedings – Annual report year: 1998

Holomorphic Dynamics and Herman Rings

General information
State: Published
Organisations: Department of Mathematics
Authors: Henriksen, C. (Intern)
Number of pages: 102
Publication date: 1997

Publication information
Original language: English
Main Research Area: Technical/natural sciences
Source: orbit
Source-ID: 170158
Publication: Research - peer-review › Report – Annual report year: 1997

Projects:
From non-smooth to smooth - on regularization using slow-fast theory

Department of Applied Mathematics and Computer Science
Period: 15/10/2014 → 14/10/2017
Number of participants: 7
Phd Student:
Bossolini, Elena (Intern)
Supervisor:
Galvanetto, Ugo (Ekstern)
Kristiansen, Kristian Uldall (Intern)
Main Supervisor:
Brøns, Morten (Intern)
Examiner:
Henriksen, Christian (Intern)
Hogan, Stephen John (Ekstern)
Szmolyan, Peter (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut stipendie (DTU)

Relations
Publications:
Geometric singular perturbation analysis of systems with friction
Project: PhD

Topological fluid dynamics: Symmetry breaking and fluid interfaces

Department of Applied Mathematics and Computer Science
Period: 01/09/2012 → 19/11/2015
Number of participants: 5
Phd Student:
Balci, Adnan (Intern)
Main Supervisor:
Brøns, Morten (Intern)
Examiner:
Henriksen, Christian (Intern)
Blackmore, Denis (Ekstern)
Hartnack, Johan Nicolai (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: Stipendie fra udlandet
Project: PhD

Matematicum : The mathematical inspiratorium at DTU
This project is concerned with the theme of unfolding mathematical concepts and results for students and other
mathematically curious visitors to Matematicum via hands-on experiments and stories. Each story and activity is ideally
centered around a well-defined mathematical crux, which is then to be uncovered, unfolded, and applied to properly
understand a given, otherwise non-obvious – or maybe even mysterious – phenomenon. For example: How can two
circular rotations combine to give the linear motion of a pump? What are the rotors actually doing in the Enigma encryption
machine? Why and how does a (good) boomerang return? How do we make a swarm of intercommunicating robots
collaborate to solve a given task? How do the ants find or construct their shortest pathways? Which roofs pick up the most
solar energy throughout the year? Concerning content and development of concept (as of December 2007): The
Matematicum at the Department of Mathematics is a room which has now been arranged to receive up to 15 visitors at a
time. A boomerang ‘story’ and a robot swarming ‘story’ have been implemented and tested. A 3D printer and 3D scanner
have been installed. The printer is in full operation and supplies concrete models of geometric shape and function such as
minimal surfaces and ingenious pumps. A fume cupboard is being installed for proper and safe post-processing of the 3D-
printed objects. An original three-rotor German military Enigma machine has been purchased. We expect it to become the
essential central ‘object’ for great ‘stories’ and activities in the Matematicum concerning the history and development of
modern cryptology. Matematicum was officially opened at a reception at DTU Mathematics on March 6.th 2008.
Geometry
Department of Mathematics
Period: 01/07/2007 → 01/12/2009
Number of participants: 5
Mathematical Inspiratorium
Project ID: 10109
Project participant:
Henriksen, Christian (Intern)
Schmidt, Karsten (Intern)
Knudsen, Lars Ramkilde (Intern)
Starke, Jens (Intern)

Project Manager, organisational:
Markvorsen, Steen (Intern)

Financing sources
Source: Forskningsrådene - SNF
Name of research programme: Forskningsrådene - STVF
Amount: 282,000.00 Danish Kroner
Source: Forsk. Private danske - Fonde
Name of research programme: Forsk. Private danske - Fonde
Amount: 100,000.00 Danish Kroner
Source: Udenfor rammen
Name of research programme: Uendt
Amount: 500,000.00 Danish Kroner
Source: Uddannelse. Statslige. Andre statslige
Name of research programme: Uddannelse. Statslige. Andre statslige
Amount: 48,000.00 Danish Kroner

Project

Classification of Meromorphic Vector Fields
A complex polynomial defines a holomorphic vector field in the complex plane. The quasi-conformal conjugacy class of the polynomial is completely determined by a combinatorial invariant. Furthermore, within each combinatorial class the polynomial is uniquely determined by a finite number (settled by the combinatorial class) of complex numbers. This fundamental classification of complex polynomial vector fields is proved using surgery. Further developments are to classify possible bifurcations, to understand the decomposition of parameter spaces due to the different combinatorial classes and the bifurcations among them, and also to extend to meromorphic vector fields arising from rational functions on the Riemann sphere.

Department of Mathematics
Period: 01/09/2006 → 31/08/2009
Number of participants: 3
Holomorphic Dynamical Systems
Project participant:
Dias, Kealey (Intern)
Henriksen, Christian (Intern)

Project Manager, organisational:
Branner, Bodil (Intern)

Financing sources
Source: Ph.d Central finansieret
Name of research programme: Ph.d Central finansieret
Amount: 115,000.00 Danish Kroner

Project

Meromorphic Vector Fields and Circle Packings
Department of Mathematics
Period: 01/09/2006 → 10/02/2010
Number of participants: 6
Phd Student:
Dias, Kealey (Intern)
Universality and classification in holomorphic dynamics

Department of Mathematics
Period: 23/12/2002 → 31/12/2006
Number of participants: 1
Project Manager, organisational: Henriksen, Christian (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: DTU-lønnet stipendie
Project: PhD

Holomorphic Dynamics, Herman Rings.
Geometry of (possibly) degenerated Herman Rings. Geometry of the set of points in parameter space corresponding to maps with a Herman ring exhibiting certain characteristics such as rotation number, modulus and wringing.

Department of Mathematics
Period: 01/09/1997 → 30/03/2001
Number of participants: 6
Phd Student: Henriksen, Christian (Intern)
Supervisor: Petersen, Carsten Lunde (Intern)
Main Supervisor: Branner, Bodil (Intern)
Examiner: Hjorth, Poul G. (Intern)
Astala, Kari (Ekstern)
Douady, Adrien (Ekstern)

Financing sources
Source: Forskningsrådene - SNF
Name of research programme: Forskningsrådene - STVF
Amount: 1,634,020.00 Danish Kroner
Project: Holomorphic Dynamics, Herman Rings.
Activities:

**Workshop and ph.d. course on symbolic dynamics in complex dynamics**
Christian Henriksen (Participant)
Department of Mathematics
Dynamical systems

**Related event**

**Workshop and ph.d. course on symbolic dynamics in complex dynamics**
04/10/2007 → 07/10/2007
Sea Mining Station, Hillerød
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

**Generalizing the spider algorithm**
Period: 1 Jan 2007 → …
Christian Henriksen (Speaker)
Department of Mathematics
Dynamical systems

**Related external organisation**

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