Theory of Passively Mode-Locked Photonic Crystal Semiconductor Lasers

We report the first theoretical investigation of passive mode-locking in photonic crystal mode-locked lasers. Related work has investigated coupled-resonator-optical-waveguide structures in the regime of active mode-locking [Opt. Express 13, 4539-4553 (2005)]. An extensive numerical investigation of the influence of key parameters of the active sections and the photonic crystal cavity on the laser performance is presented. The results show the possibility of generating stable and high quality pulses in a large parameter region. For optimized dispersion properties of the photonic crystal waveguide cavity, the pulses have sub picosecond widths and are nearly transform limited.

General information
State: Published
Organisations: Nanophotonics Theory and Signal Processing, Department of Photonics Engineering
Contributors: Heuck, M., Blaaberg, S., Mørk, J.
Pages: 18003-18014
Publication date: 2010
Peer-reviewed: Yes

Publication information
Journal: Optics Express
Volume: 18
Issue number: 17
ISSN (Print): 1094-4087
Ratings:
BFI (2018): BFI-level 2
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 2
Scopus rating (2017): CiteScore 3.74 SJR 1.519 SNIP 1.567
Web of Science (2017): Impact factor 3.356
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 2
Scopus rating (2016): CiteScore 3.48 SJR 1.532 SNIP 1.544
Web of Science (2016): Impact factor 3.307
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): CiteScore 3.78 SJR 1.91 SNIP 1.674
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): CiteScore 4.18 SJR 2.313 SNIP 2.124
Web of Science (2014): Impact factor 3.488
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 2
Scopus rating (2013): CiteScore 4.38 SJR 2.337 SNIP 2.196
Web of Science (2013): Impact factor 3.525
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 2
Scopus rating (2012): CiteScore 3.85 SJR 2.562 SNIP 2.108
Web of Science (2012): Impact factor 3.546
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 2
Scopus rating (2011): CiteScore 4.04 SJR 2.58 SNIP 2.572
Web of Science (2011): Impact factor 3.587
ISI indexed (2011): ISI indexed yes
Web of Science (2011): Indexed yes