Łukasz Sterczewski

From: OSA Journals <osa@osacommunications.org>
Sent: Friday, 11 june 2021 15:03
To: Lukasz Sterczewski
Subject: Frequency Combs: A Collection of Top-Downloaded Articles from Optica

Explore This Collection of Standout Frequency Combs Papers from *Optica*

Optica, OSA's Open-Access publication for high-impact results, publishes pioneering work across the spectrum of optics and photonics.

One of the Journal's most popular topic areas is **Frequency Combs**. To help you keep up with the latest research in this field, this curated collection showcases some of the top-downloaded papers in this topic area over the last two years. Article summaries and links to each article are listed below. We hope that you find this content useful and interesting.

You can also access several resources if you are interested in publishing your work in *Optica*, becoming a reviewer, or staying up to date on all of the influential research published in the Journal.

Top Downloaded Frequency Combs Papers

Architecture for the photonic integration of an optical atomic clock

Zachary L. Newman, Vincent Maurice, Tara Drake, Jordan R. Stone, Travis C. Briles, Daryl T. Spencer, Connor Fredrick, Qing Li, Daron Westly, B. R. Ilic, Boqiang Shen, Myoung-Gyun Suh, Ki Youl Yang, Cort Johnson, David M. S. Johnson, Leo Hollberg, Kerry J. Vahala, Kartik Srinivasan, Scott A. Diddams, John Kitching, Scott B. Papp, and Matthew T. Hummon

Optica 6(5) 680-685 (2019)

By leveraging nonlinear silicon-based photonics, the authors demonstrate an architecture for chip-level integration of optical atomic clocks. The high precision afforded by optical clocks has clear potential for

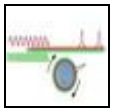
applications outside the research lab including in telecommunications, electric power grids, satellite navigation and secure communications that currently rely on microwave atomic clocks for timekeeping.

Visible nonlinear photonics via high-order-mode dispersion engineering

Yun Zhao, Xingchen Ji, Bok Young Kim, Prathamesh S. Donvalkar, Jae K. Jang, Chaitanya Joshi, Mengjie Yu, Chaitali Joshi, Renato R. Domeneguetti, Felippe A. S. Barbosa, Paulo Nussenzveig, Yoshitomo Okawachi, Michal Lipson, and Alexander L. Gaeta

Optica 7(2) 135-141 (2020)

The development of nonlinear photonics at visible wavelengths is limited by large intrinsic material dispersion. The authors show that this can be overcome using high-order waveguide modes. They demonstrate a visible Kerr frequency comb and a visible photon-pair source, which have a wide range of applications including metrology, bio-imaging, and quantum information processing.



Sub-milliwatt-level microresonator solitons with extended access range using an auxiliary laser

Shuangyou Zhang, Jonathan M. Silver, Leonardo Del Bino, Francois Copie, Michael T. M. Woodley, George N. Ghalanos, Andreas Ø. Svela, Niall Moroney, and Pascal Del'Haye

Optica 6(2) 206-212 (2019)

Chip-scale optical frequency combs have the potential to influence a wide range of technologies, including telecommunication systems, optical ranging, and precision spectroscopy. This article describes a record for the power requirements to generate soliton frequency combs in tiny microresonators. Together with a 100-fold increased stability range of the combs, this represents a step towards low cost and battery powered optical frequency comb generators.

Mid-infrared frequency comb from a ring quantum cascade laser

Bo Meng, Matthew Singleton, Mehran Shahmohammadi, Filippos Kapsalidis, Ruijun Wang, Mattias Beck, and Jérôme Faist

Optica 7(2) 162-167 (2020)

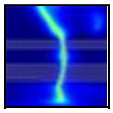
The authors utilize the strong intrinsic nonlinearity of a gain medium and ring geometry to directly generate a frequency comb with a strong amplitude-modulated temporal profile from a ring quantum cascade laser. The demonstrated platform may enable the realization of ultrashort pulses or solitons, which are important for mid-infrared spectroscopy and communication.

Terahertz hyperspectral imaging with dual chip-scale combs

Lukasz A. Sterczewski, Jonas Westberg, Yang Yang, David Burghoff, John Reno, Qing Hu, and Gerard Wysocki

Optica 6(6) 766-771 (2019)

By leveraging the capabilities of fast dual-comb spectroscopy and imaging in the challenging terahertz spectral region, the authors demonstrate chemically selective hyperspectral imaging of solid samples. The proof-of-concept system, using compact and scalable semiconductor laser frequency combs, can identify sections of a solid sample made from different drug excipients, which could enable potential applications of terahertz radiation in biomedicine, chemical sensing and pharmaceutical quality control.



Monolithic frequency comb platform based on interband cascade lasers and detectors

Benedikt Schwarz, Johannes Hillbrand, Maximilian Beiser, Aaron Maxwell Andrews, Gottfried Strasser, Hermann Detz, Anne Schade, Robert Weih, and Sven Höfling

Optica 6(7) 890-895 (2019)