

Curriculum Vitae: Alexander L. Gaeta

Address

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Education

B. S. (1983), M. S. (1985), and Ph. D. (1991) in Optics, University of Rochester

Research Interests

Ultrafast nonlinear optics, nanophotonics, nonlinear propagation in fibers and bulk media, optical frequency combs, coherent interactions of laser light with matter, application of nonlinear optics to quantum information, stimulated scattering processes.

Professional Positions

Academic

David M. Rickey Professor of Applied Physics and Professor of Electrical Engineering, Columbia University, 2015-.

Samuel B. Eckert Professor of Engineering, School of Applied and Engineering Physics, Cornell University, 2013-2015.

Director, School of Applied and Engineering Physics, Cornell University, 2011 - 2014.

Professor, School of Applied and Engineering Physics, Cornell University, 2004 - 2013.

Associate Professor, School of Applied and Engineering Physics, Cornell University, 1998 - 2004.

Assistant Professor, School of Applied and Engineering Physics, Cornell University, 1992 - 1998.

Commercialization

Co-founded PicoLuz, Inc. (w/ Michal Lipson and Alex Cable), 2010.

Service (Selected)

Editor-in-Chief, *Optica*, Optical Society of America (2013 -).

Director-at-Large, Board of Directors, Optical Society of America, 2008-2010

Chair, Science and Engineering Council Optical Society of America, 2004-2006.

Conference Organization

Program Chair, Nonlinear Photonics Topical Meeting, July, 2014, Barcelona.

General Chair, Nonlinear Optics Topical Meeting, August 2009, Hawaii.

General Chair, 2007 Quantum Electronics and Laser Science Conference, Baltimore.

Chair, Frontiers in Optics 2003: Annual Meeting of the Optical Society of America, Tucson, AZ.

Mentorship: >30 PhD Students Supervised, >20 Postdoctoral Associates Supervised

Awards (Selected)

Charles H. Townes Award, Optical Society of America (2019)

Fellow of the OSA, APS, and IEEE.

Selected Publications [Total citations: >24,000, h-index: 80 (Google Scholar)]

1. S. Ramelow, A. Farsi, Z. Vernon, S. Clemmen, X. Ji, J. E. Sipe, M. Liscidini, M. Lipson, and A. L. Gaeta, "Strong nonlinear coupling in a Si₃N₄ chip," *Phys. Rev. Lett.* **122**, 153906 (2019).
2. A. L. Gaeta, M. Lipson, and T. J. Kippenberg, "Photonic-chip-based frequency combs," *Nat. Photon.* **13**, 158 (2019).
3. J. K. Jang, A. Klenner, X. Ji, Y. Okawachi, M. Lipson, A. L. Gaeta, "Synchronization of coupled optical microresonators," *Nature Phot.* **12**, 688 (2018).
4. B. Stern, X. Ji, Y. Okawachi, A. L. Gaeta, and M. Lipson, "Battery-operated integrated frequency comb generator," *Nature* **561**, 401 (2018).
5. T. J. Kippenberg, A. L. Gaeta, M. Lipson, M. L. Gorodetsky, "Dissipative Kerr solitons in optical microresonators," *Science* **361**, 567 (2018).
6. C. Joshi, A. Farsi, S. Clemmen, S. Ramelow, and A. L. Gaeta, "Frequency multiplexing for quasi-deterministic heralded single-photon sources," *Nature Comm.* **9**, 847 (2018).
7. S. Clemmen, A. Farsi, S. Ramelow, and A. L. Gaeta, "Ramsey interference with single photons," *Phys. Rev. Lett.* **117**, 223601 (2016).
8. M. Yu, Y. Okawachi, A. G. Griffith, M. Lipson, and A. L. Gaeta, "Modelocked mid-infrared frequency combs in a silicon microresonator," *Optica* **3**, 854 (2016).
9. R. Salem, M. A. Foster, and A. L. Gaeta, "The application of space-time duality to ultrahigh speed optical signal processing," *Adv. Opt. Phot.* **5**, 274 (2013).
10. V. Venkataraman, K. Saha, and A. L. Gaeta, "Phase modulation at the few-photon level for weak-nonlinearity-based quantum computing," *Nature Phot.* **7**, 138 (2013).
11. M. Fridman, A. Farsi, Y. Okawachi, and A. L. Gaeta, "Demonstration of temporal cloaking," *Nature* **481**, 62 (2012).
12. V. Venkataraman, K. Saha, P. Londero, and A. L. Gaeta, "Few-photon all-optical modulation in a photonic band-gap fiber," *Phys. Rev. Lett.* **107**, 193902 (2011).
13. Y. Okawachi, K. Saha, J. S. Levy, Y. H. Wen, M. Lipson, and A. L. Gaeta, "Octave-spanning frequency comb generation in a silicon nitride chip," *Opt. Lett.* **36**, 3398 (2011).
14. J. S. Levy, A. Gondarenko, M. A. Foster, A. C. Turner-Foster, A. L. Gaeta, and M. Lipson, "CMOS-compatible multiple-wavelength oscillator for on-chip optical interconnects," *Nature Photonics* **4**, 37 (2010).
15. M. A. Foster, R. Salem, D. F. Geraghty, A. C. Turner-Foster, M. Lipson, and A. L. Gaeta, "Silicon-chip-based ultrafast optical oscilloscope," *Nature* **456**, 81 (2008).
16. M. A. Foster, A. C. Turner, J. E. Sharping, B. S. Schmidt, M. Lipson, and A. L. Gaeta, "Broad-band optical parametric gain on a silicon photonic chip," *Nature* **441**, 960 (2006).

Invited, Keynote, Plenary, and Tutorial Lectures (> 300)

Patents (10)