Curriculum Vitae: Alexander L. Gaeta

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Education

B. S. (1983), M. S. (1985), and Ph. D. (1991) in Optics, University of Rochester, Rochester, New York; *Doctoral Thesis Title*: Stochastic and deterministic fluctuations in stimulated Brillouin scattering; *Advisor*: Professor R. W. Boyd.

Research Interests

Ultrafast nonlinear optics, quantum photonics, 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.

Director, NSF Center for Nanoscale Systems in Information Technologies, Cornell University, 2007-2012.

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

Associate Director, School of Applied and Engineering Physics, Cornell University, 2006 - 2007.

Director of Graduate Studies, School of Applied and Engineering Physics, Cornell University, 1999 - 2004.

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

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

Postdoctoral Associate, Institute of Optics, University of Rochester, 1990 - 1992.

Commercialization

President, Xscape Photonics (2023-)

Board of Director, Xscape Photonics (2022-)

CEO, Xscape Photonics, Inc. (2022-2023)

Co-founded Xscape Photonics, Inc. (2022).

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

Service

Selected Editorial Roles
Founding Editor-in-Chief, *Optica*, Optical Society of America (2013 - 2019).

Editorial Board, *New Journal of Physics*, 2005 - 2008.

Selected Research Administration and Service
Vice-President, Optica, 2026.

Chair, Strategic Planning Committee, Optica, 2025-26.

Member, Board of Directors, Institute of Photonics Sciences (ICFO), Barcelona, 2024-

Member, Publications Council, Optica, 2023-2025.

Chair, Publications Council, Optica, 2022-2023.

Member, Long-Term Publications Group, Optica, 2010-2012.

Director-at-Large, Board of Directors, Optica, 2008-2010

I. I. Rabi Prize Committee of the American Physical Society, 2007-2010.

Member, Strategic Planning Committee, Optica, 2006-2008.

Chair, Science and Engineering Council Optica, 2004-2006.

Executive Committee, Member-at-Large, Division of Laser Science, American Physical Society, 2004-2005.

Chair, Division of Quantum Electronics, Optica, term 2000-2002.

Selected 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.

Program Chair, Nonlinear Optics Topical Meeting, August 2007, Hawaii.

Program Chair, 2005 Quantum Electronics and Laser Science Conference, Baltimore, MD.

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

Mentorship

PhD Students Supervised

Imad Agha (University of Dayton), Amar Bhagwat (Northwestern), Andrew Bishop (Nokia), Daniel Broaddus, Cecilia Chen (Applied Materials), Prathamesh Donvalkar (Intel), Alessandro Farsi (PsiQuantum), Mark Foster (Johns Hopkins), Saikat Ghosh (IIT-Kanpur), Jared Ginsberg (BofA - Merrill Lynch), Taylor Grow (L-3 Communications), Chris Hensley (Thorlabs), Doug Homoelle (LLNL), Adrea Johnson (Honeywell), Chaitali Joshi (Google), Chaitanya Joshi (Voyant Photonics), Bok Kim (A Priori Investments), Mary Lanzerotti (Air Force Academy), Ryan Lau, Kevin Moll (SciTec), Yoshi Okawachi (Xscape Photonics), Richard Oliver (Google), Dimitre Ouzounov (Cornell), Gauri Patwardhan (Apple, Inc.), Jinendra Ranka (IARPA), Sidarth

Raghunathan (Leidos), Kasturi Saha (IIT-Bombay), Robert Schirmer (Applied Physics Labs), Samuel Schrauth (LLNL), Vivek Venkataraman (IIT-Delhi), Luat Vuong (UC-Riverside), Henry Wen (QuEra), Stephan Wielandy (Lucent-Alcatel), Mengjie Yu (UC-Berkeley), Yun Zhao (Stanford)

Postdoctoral Associates Supervised

Alessandro Farsi (PsiQ), Stephane Clemmen (Ghent), Mark Foster (Johns Hopkins), Moti Fridman (Bar Ilan), Xiaohui Gao (Shaoxing University), David Geraghty (Stanford), Amiel Ishaaya (Ben Gurion), Mehdi Jadidi (PsiQuantum), Jae Jang (Xscape Photonics), Alexander Klenner, Onur Kuzucu (ASML), Michael Lamont (Cornell), Pablo Londero (Louvre Abu Dhabi), Yoshi Okawachi (Xscape Photonics), Sven Ramelow (Humboldt University-Berlin), Reza Salem (Thorlabs), Jay Sharping (UC–Merced), Bonggu Shim (SUNY – Binghamton), Aaron Slepkov (Trent University), Alexandre Streltsov (Corning, Inc.)

Awards

Arthur L. Schawlow Prize in Laser Science, American Physical Society (2026).

Stephen D. Fantone Distinguished Service Award, Optica (formerly Optical Society of America) (2023).

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

Thomson Reuters Highly Cited Researcher in Physics (2019 -).

Fellow of the Institute for Electrical and Electronics Engineers (IEEE).

Fellow of the American Physical Society (APS).

Fellow of the Optica (formerly Optical Society of America).

College of Engineering Teaching Award, Cornell University, 1997, 2000, 2003, and 2007.

Army Research Office Young Investigator Award, 1995.

Office of Naval Research Young Investigator Award, 1993.

Publications [Total citations: >45,000, *h*-index: 107 (Google Scholar)]

1. S. K. Dacha, Y. Zhao, K. J. McNulty, G. R. Bhatt, M. Lipson, and A. L. Gaeta, "Frequency-stable nanophotonic microcavities via integrated thermometry," *Nat. Photon.* **20**, 71 (2026).
2. A. Gil-Molina, Y. Antman, O. Westreich, X. Ji, M.C. Shin, G.R. Bhatt, I. Datta, B.Y. Kim, Y. Okawachi, A.L. Gaeta, and M. Lipson, "High-power electrically pumped microcombs," Nat. Photon. **19**, 1270 (2025).
3. S. Raghunathan, R. Oliver, Y. Zhao, K. J. McNulty, C. Joshi, M. Lipson, and A. L. Gaeta, "Telecom-to-visible quantum frequency converter on a silicon nitride chip," *Optica Quantum* **3**, 329 (2025).
4. K. J. McNulty, S. Chaitanya, S. Sanyal, A. Gil-Molina, M. Corato-Zanarella, Y. Okawachi, A. L. Gaeta, and M. Lipson, "Overcoming stress limitations in SiN nonlinear photonics via a bilayer waveguide," *Nanophotonics* **14**, 3921 (2025).
5. R. Oliver, M. Blau, C. Joshi, X. Ji, R. Gutiérrez-Jáuregui, A. Asenjo-Garcia, M. Lipson, and A. L. Gaeta, "N-way parametric frequency beamsplitter for quantum photonics," *Phys. Rev. Research* **7**, 023108 (2025).

6. M. Corato-Zanarella, X. Ji, A. L. Gaeta, and M. Lipson, "Simultaneous on-chip generation of violet, blue, cyan, green, yellow, orange, and red light from an octave-spanning infrared frequency comb," *Opt. Express* **33**, 14581 (2025).
7. S. Sanyal, Y. Okawachi, Y. Zhao, B. Y. Kim, K. J. McNulty, M. Lipson, and A. L. Gaeta, "Nonlinear dynamics of coupled-resonator Kerr combs," *Phys. Rev. Lett.* **134**, 123801 (2025).
8. S. Wang, Y. Wang, S. Sanyal, R. Parsons, X. Ji, Y. Okawachi, X. Meng, M. Lipson, A. Gaeta, and K. Bergman, "Automated tuning of a ring-assisted MZI-based interleaver for Kerr frequency combs," *Opt. Lett.* **50**, 698 (2025).
9. Y. Antman, A. Gil-Molina, O. Westreich, X. Ji, A. L. Gaeta, and M. Lipson, "High power chip-scale laser," *Opt. Express* **32**, 47306 (2024).
10. R. A. Kögler, G. C. Rickli, R. R. Domeneguetti, X. Ji, A. L. Gaeta, M. Lipson, M. Martinelli, and P. Nussenzveig, "Quantum state tomography in a third-order integrated optical parametric oscillator," *Opt. Lett.* **49**, 3150 (2024).
11. A. Dutt, A. Mohanty, A.L. Gaeta, and M. Lipson, "Nonlinear and quantum photonics using integrated optical materials," *Nature Rev. Mat.* **9**, 321 (2024).
12. C. Y. Chen, S. L. Moore, R. Maiti, J. S. Ginsberg, M. M. Jadidi, B. Li, S. H. Chae, A. Rajendran, G. N. Patwardhan, K. Watanabe, T. Taniguchi, J. Hone, D. N. Basov, A. L. Gaeta, "Unzipping hBN with ultrashort mid-infrared pulses," *Sci. Adv.* **10**, eadi3653 (2024).
13. Y. Zhao, J. K. Jang, K. J. McNulty, X. Ji, Y. Okawachi, M. Lipson, and A. L. Gaeta, "All-optical frequency division on-chip using a single laser," *Nature* **627**, 546 (2024).
14. H. H. Lu, M. Liscidini, A.L. Gaeta, A.M. Weiner, and J.M. Lukens, "Frequency-bin photonic quantum information," *Optica* **10**, 1655 (2023).
15. Y. Okawachi, B.Y. Kim, M. Lipson, and A.L. Gaeta, "Chip-scale frequency combs for data communications in computing systems," *Optica* **10**, 977 (2023).
16. J. S. Ginsberg, M. M. Jadidi, J. Zhang, C. Y. Chen, N. Tancogne-Dejean, S. H. Chae, G. N. Patwardhan, L. Xian, K. Watanabe, T. Taniguchi, J. Hone, A. Rubio, A. L. Gaeta, "Phonon-enhanced nonlinearities in hexagonal boron nitride," *Nature Comm.* **14**, 7685 (2023).
17. B. Y. Kim, Y. Okawachi, J.K. Jang, X. Ji, M. Lipson, and A.L. Gaeta, "Coherent combining for high-power Kerr combs," *Laser Phot. Rev.* **17**, 2200607 (2023).
18. Y. Zhao, J. K. Jang, X. Ji, Y. Okawachi, M. Lipson, and A. L. Gaeta, "Large regenerative parametric amplification on chip at ultra-low pump powers," *Optica* **10**, 819 (2023).
19. A. Rizzo, A. Novick, V. Gopal, B. Y. Kim, X. Ji, S. Daudlin, Y. Okawachi, Q. Cheng, M. Lipson, A. L. Gaeta, and K. Bergman, "Integrated Kerr frequency comb-driven silicon photonic transmitter," *Nature Phot.* **17**, 781 (2023).
20. X. Ji, Y Okawachi, A Gil-Molina, M Corato-Zanarella, S. Roberts, A. L. Gaeta, M. Lipson, "Ultra-low-loss silicon nitride photonics based on deposited films compatible with foundries," *Laser Phot. Rev.*, 2200544 (2023).
21. A. Biswas, R. Maiti, F. Lee, C.Y. Chen, T. Li, A.B. Puthirath, S.A. Iyengar, C. Li, X. Zhang, H. Kannan, T. Gray, M.A.S.R. Saadi, J. Elkins, A.G. Birdwell, M.R. Neupane, P.B. Shah, D.A. Ruzmetov, T.G. Ivanov, R. Vajtai, Y. Zhao, A.L. Gaeta, M. Tripathi, A. Dalton, and P.M. Ajayan, "Unravelling the room temperature growth of two-dimensional h-BN nanosheets for multifunctional applications," *Nanoscale Horiz.* **8**, 641 (2023).
22. M. Yu, D. Barton III, R. Cheng, C. Reimer, P. Kharel, L. He, L. Shao, D. Zhu, Y. Hu, H. R. Grant, L. Johansson, Y. Okawachi, A. L. Gaeta, M. Zhang, M. Lončar, "Integrated femtosecond pulse generator on thin-film lithium niobate," *Nature* **612**, 252 (2022).

23. A. Rizzo, S. Daudlin, A. Novick, A. James, V. Gopal, G. Leake, V. Murthy, Q. Cheng, B. Y. Kim, X. Ji, Y. Okawachi, M. van Niekerk, V. Deenadayalan, G. Leake, M. Fanto, S. Preble, M. Lipson, A. L. Gaeta, and K. Bergman, "Petabit-scale silicon photonic interconnects with integrated Kerr frequency combs," *IEEE J. Sel. Topics Quantum Electron.* (2022).

24. Y. Okawachi, B. Y. Kim, Y. Zhao, J. K. Jang, X. Ji, M. Lipson, and A. L. Gaeta, "Active tuning of dispersive waves in Kerr soliton combs," *Opt. Lett.* **47**, 2234 (2022).

25. C. Joshi, B. Sparkes, A. Farsi, T. Gerrits, V. Verma, S. Ramelow, S. W. Nam, A. L. Gaeta, "Picosecond-resolution single-photon time lens for temporal mode quantum processing," *Optica* **9**, 364 (2022).

26. E. Shim, A. Gil-Molina, O. Westreich, Y. Dikmelik, K. Lascola, A. L. Gaeta, and M. Lipson, "Tunable narrow linewidth chip-scale mid-IR laser," *Commun. Phys.* **4**, 268 (2021).

27. Y. Zhao, J. K. Jang, Y. Okawachi, A. L. Gaeta, "Theory of $\chi^{(2)}$-microresonator-based frequency conversion," *Opt. Lett.* **46**, 5393 (2021).

28. Y. Okawachi, B. Y. Kim, Y. Zhao, X. Ji, M. Lipson, and A. L. Gaeta, "Dynamic control of photon lifetime for quantum random number generation," *Optica* **8**, 1458 (2021).

29. B. Y. Kim, J. K. Jang, Y. Okawachi, X. Ji, M. Lipson, and A. L. Gaeta, "Synchronization of non-solitonic Kerr combs," *Sci. Adv.* **7**, eabi4362 (2021).

30. X. Ji, D. Mojahed, Y. Okawachi, A. L. Gaeta, C. P. Hendon, and M. Lipson, "Millimeter-scale chip–based supercontinuum generation for optical coherence tomography," *Sci. Adv.* **7**, eabg8869 (2021).

31. R. Oliver, Y. Okawachi, X. Ji, A. R. Johnson, A. Klenner, M. Lipson, and A. L. Gaeta, "Soliton-effect compression of picosecond pulses on a photonic chip," *Opt. Lett.* **46**, 4706 (2021).

32. J. K. Jang, Y. Okawachi, Y. Zhao, X. Ji, C. Joshi, M. Lipson, and A. L. Gaeta, "Conversion efficiency of soliton Kerr combs," *Opt. Lett.* **46**, 3657 (2021).

33. G. N. Patwardhan, J. S. Ginsberg, C. Y. Chen, M. M. Jadidi, and A. L. Gaeta, "Nonlinear refractive index of solids in mid-infrared," *Opt. Lett.* **46**, 1824 (2021).

34. R. R. Domeneguetti, Y. Zhao, X. Ji, M. Martinelli, M. Lipson, A. L. Gaeta, and P. Nussenzveig, "Parametric sideband generation in CMOS-compatible oscillators from visible to telecom wavelengths," *Optica* **8**, 316 (2021).

35. M. M. Jadidi, M. Kargarian, M. Mittendorff, Y. Aytac, B. Shen, J. C. König-Otto, S. Winnerl, N. Ni, A. L. Gaeta, T. E. Murphy, and H. D. Drew, "Nonlinear optical control of chiral charge pumping in a topological Weyl semimetal," *Phys. Rev. B* **102**, 245123 (2020).

36. X. Ji, J. K. Jang, U. D. Dave, M. Corato-Zanarella, C. Joshi, A. L. Gaeta, and M. Lipson, "Exploiting ultralow loss multimode waveguides for broadband frequency combs," *Laser Photonics Rev.* 2000353 (2020).

37. M. Glick, N. C. Abrams, Q. Cheng, M. Y. Teh, Y.-H. Hung, O. Jimenez, S. Liu, Y. Okawachi, L. Johannson, M. Ghobadi, L. Dennison, G. Michelogiannakis, J. Shalf, A. Liu, J. Bowers, A. L. Gaeta, M. Lipson, and K. Bergman, "PINE: Photonic integrated networked energy efficient datacenters (Enlightened program) [Invited]," *J. Opt. Commun. Netw*. **12**, 443 (2020).

38. J. S. Ginsberg, A. C. Overvig, M. M. Jadidi, S. C. Malek, G. N. Patwardhan, N. Swenson, N. Yu, A. L. Gaeta, "Enhanced harmonic generation in gases using an all-dielectric metasurface," *Nanophotonics* **10**, 733 (2020).

39. Y. Okawachi, M. Yu, J. K. Jang, X. Ji, Y. Zhao, B. Y. Kim, M. Lipson, and A. L. Gaeta, "Demonstration of chip-based coupled degenerate optical parametric oscillators for realizing a nanophotonic spin-glass," *Nat. Commun.* **11**, 4119 (2020).

40. Y. Okawachi, M. Yu, B. Desiatov, B. Y. Kim, T. Hansson, M. Lončar, A. L. Gaeta, "Chip-based self-referencing using integrated lithium niobate waveguides," *Optica* **7**, 707 (2020).

41. Y. Zhao, Y. Okawachi, J. K. Jang, X. Ji, M. Lipson, and A. L. Gaeta, "Near-degenerate quadrature-squeezed vacuum generation on a silicon-nitride chip," *Phys. Rev. Lett.* **124**, 193601 (2020).

42. L. M. Krüger, A. S. Mayer, Y. Okawachi, X. Ji, A. Klenner, A. R. Johnson, C. Langrock, M. M. Fejer, M. Lipson, A. L. Gaeta, V. J. Wittwer, T. Südmeyer, C. R. Phillips, and U. Keller, "Performance scaling of a 10-GHz solid-state laser enabling self-referenced CEO frequency detection without amplification," *Opt. Express* **28**, 12755 (2020).

43. C. Joshi, A. Farsi, A. Dutt, B. Y. Kim, X. Ji, Y. Zhao, A. M. Bishop, M. Lipson, A. L. Gaeta, "Frequency-domain quantum interference with correlated photons from an integrated microresonator," *Phys. Rev. Lett.* **124**, 143601 (2020).

44. Y. Zhao, X. Ji, B. Kim, P. Donvalkar, J. Jang, C. Joshi, M. Yu, C. Joshi, R. Domeneguetti, F. Barbosa, P. Nussenzveig, Y. Okawachi, M. Lipson, and A. Gaeta, "Visible nonlinear photonics via high-order-mode dispersion engineering," *Optica* **7**, 135 (2020).

45. M. Yu, Y. Okawachi, R. Cheng, C. Wang, M. Zhang, A. L. Gaeta, and M. Lončar, "Raman lasing and soliton modelocking in lithium-niobate microresonators," *Light Sci. Appl.* **9**, 9 (2020).

46. J. K. Jang, X. Ji, C. Joshi, Y. Okawachi, M. Lipson, and A. L. Gaeta, "Observation of Arnold tongues in coupled soliton Kerr frequency combs," *Phys. Rev. Lett.* **123**, 153901 (2019).

47. B. Y. Kim, Y. Okawachi, J. K. Jang, M. Yu, X. Ji, Y. Zhao, C. Joshi, M. Lipson, and A. L. Gaeta, "Turn-key, high-efficiency Kerr comb source," *Opt. Lett.* **44**, 4475 (2019).

48. M. Yu, Y. Okawachi, A. Griffith, M. Lipson, and A. L. Gaeta, "Microfluidic mid-infrared spectroscopy via microresonator-based dual-comb source," *Opt. Lett.* 44, 4259 (2019).

49. A. Shams-Ansari, P. Latawiec, Y. Okawachi, V. Venkataraman, M. Yu, B. Desiatov, H. Atikian, G. L. Harris, N. Picqué, A. L. Gaeta, and M. Lončar, "Supercontinuum generation in angle-etched diamond waveguides," *Opt. Lett.* **44**, 4056 (2019).

50. X. Ji, X. Yao, A. Klenner, Y. Gan, A. L. Gaeta, C. P. Hendon, and M. Lipson, "Chip-based frequency comb sources for optical coherence tomography," *Opt. Express* **27**, 19896 (2019).

51. 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 Si_3N_4 chip," *Phys. Rev. Lett.* **122**, 153906 (2019).

52. G. Patwardhan, X. Gao, A. Sagiv, A. Dutt, J. Ginsberg, A. Ditkowski, G. Fibich, and A. L. Gaeta, "Loss of polarization in collapsing beams," *Phys. Rev. A* **99**, 033824 (2019).

53. A. L. Gaeta, M. Lipson, and T. J. Kippenberg, "Photonic-chip-based frequency combs," *Nat. Photon.* **13**, 158 (2019).

54. M. Yu, B. Desiatov, Y. Okawachi, A. L. Gaeta, and M. Lončar, "Coherent two-octave-spanning supercontinuum generation in lithium-niobate waveguides," *Opt. Lett.* **44**, 1222 (2019).

55. D. Waldburger, A. S. Mayer, C. G. E. Alfieri, J. Nürnberg, A. R. Johnson, X. Ji, A. Klenner, Y. Okawachi, M. Lipson, A. L. Gaeta, and U. Keller, "Tightly locked optical frequency comb from a semiconductor disk laser," *Opt. Express* **27**, 1786 (2019).

56. L. Koehler, P. Chevalier, E. Shim, B. Desiatov, A. Shams-Ansari, M. Piccardo, Y. Okawachi, M. Yu, M. Loncar, M. Lipson, A. Gaeta, and F. Capasso, "Direct thermo-optical tuning of silicon microresonators for the mid-infrared," *Opt. Express* **26**, 34965 (2018).

57. J. K. Jang, A. Klenner, X. Ji, Y. Okawachi, M. Lipson, and A. L. Gaeta, "Synchronization of coupled optical microresonators," *Nature Phot.* **12**, 688 (2018).

58. B. Stern, X. Ji, Y. Okawachi, A. L. Gaeta, and M. Lipson, "Battery-operated integrated frequency comb generator," *Nature* **561**, 401 (2018).

59. Y. Okawachi, M. Yu, J. Cardenas, X. Ji, A. Klenner, M. Lipson, A. L. Gaeta, "Carrier envelope offset detection via simultaneous supercontinuum and second harmonic generation in a silicon-nitride waveguide," *Opt. Lett.* **43**, 4627 (2018).

60. T. J. Kippenberg, A. L. Gaeta, M. Lipson, M. L. Gorodetsky, "Dissipative Kerr solitons in optical microresonators," *Science* **361**, 567 (2018).

61. M. Yu, Y. Okawachi, C. Joshi, X. Ji, M. Lipson, A. L. Gaeta, "Gas-phase microresonator-based comb spectroscopy without an external pump laser," *ACS Photonics* **5**, 2780 (2018).

62. X. Gao, G. Patwardhan, B. Shim, T. Popmintchev, H. C. Kapteyn, M. M. Murnane, and A. L. Gaeta, "Ionization-assisted spatiotemporal localization in gas-filled capillaries," *Opt. Lett.* **43**, 3112 (2018).

63. M. Yu, Y. Okawachi, A. G. Griffith, N. Picqué, M. Lipson, A. L. Gaeta, "Silicon-chip-based mid-infrared dual-comb spectroscopy," *Nature Comm.* **9**, 1869. (2018).

64. A. Dutt, C. Joshi, X. Ji, J. Cardenas, Y. Okawachi, K. Luke, A. L. Gaeta, and M. Lipson, "On-chip dual comb source for spectroscopy," *Science Adv.* **4**, e1701858 (2018).

65. 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).

66. D. A. Romanov, X. Gao, A. L. Gaeta, and R. J. Levis, "Intrapulse impact processes in dense-gas femtosecond laser filamentation," *Phys. Rev. A* **97**, 063411 (2018).

67. S. Clemmen, A. Farsi, S. Ramelow, A. L. Gaeta, "All-optically tunable buffer for single photons," *Opt. Lett.* **43**, 2138 (2018).

68. C. Joshi, A. Klenner, Y. Okawachi, M. Yu, K. Luke, X. Ji, M. Lipson, and A. L. Gaeta, "Counter-rotating cavity solitons in a silicon nitride microresonator," *Opt. Lett.* **43**, 547 (2018).

69. Y. Okawachi, M. Yu, J. Cardenas, X. Ji, M. Lipson, and A. L. Gaeta, "Coherent, directional supercontinuum via cascaded dispersive wave generation," *Opt. Lett.* **42**, 4466 (2017).

70. M. Yu, Y. Okawachi, A. G. Griffith, M. Lipson, and A. L. Gaeta, "Microresonator-based high resolution gas spectroscopy," *Opt. Lett.* **42**, 4442 (2017).

71. Y. Okawachi, M. Yu, V. Venkataraman, P. M. Latawiec, A. G. Griffith, M. Lipson, M. Loncar, and A. L. Gaeta, "Competition between Raman and Kerr effects in microresonator comb generation, *Opt. Lett.* **42**, 2086 (2017).

72. S. A. Miller, M. Yu, X. Ji, A. G. Griffith, J. Cardenas, A. L. Gaeta, and M. Lipson, "Low-loss silicon platform for broadband mid-infrared photonics," *Optica* **4**, 707 (2017).

73. X. Ji, F. A. S. Barbosa, S. P. Roberts, A. Dutt, J. Cardenas, Y. Okawachi, A. Bryant, A. L. Gaeta, and M. Lipson, "Ultra-low-loss on-chip resonators with sub-milliwatt parametric oscillation threshold," *Optica* **4**, 619 (2017).

74. M. Yu, J. K. Jang, Y. Okawachi, A. G. Griffith, K. Luke, S. A. Miller, X. Ji, M. Lipson, and A. L. Gaeta, "Breather soliton dynamics in microresonators," *Nature Comm.,* **8**, 14569 (2017).

75. X. Gao, G. Patwardhan, S. Schrauth, D. Zhu, T. Popmintchev, H. C. Kapteyn, M. M. Murnane, D. A. Romanov, R. J. Levis, and A. L. Gaeta, "Picosecond ionization dynamics in femtosecond filaments at high pressures," *Phys. Rev. A* **95**, 013412 (2017).

76. S. Clemmen, A. Farsi, S. Ramelow, and A. L. Gaeta, "Ramsey interference with single photons," *Phys. Rev. Lett.* **117**, 223601 (2016).

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