

# DAVID A. B. MILLER

## CURRICULUM VITAE



### Personal information

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**Full name** David Andrew Barclay Miller

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**Date of Birth** February 19, 1954, Hamilton, U.K.

**Citizenship** United States  
United Kingdom

### Education

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**High School Education** Perth Academy, Perth, U.K.

**University Education** St. Andrews University 1972-76  
B. Sc. with Honours (1st Class)  
Posts of Responsibility: President of University Musical Society  
Other Distinctions: Class Medalist in Physics, 1973, 1974, 1975, and 1976

Heriot-Watt University (1976-79), Ph.D. in Physics  
Thesis Title "Nonlinear Optical Effects in InSb with a cw CO Laser"  
(May 1979)  
Other Distinctions: Carnegie Trust Research Scholar 1976-79

### Employment

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**1997-Present** W. M. Keck Foundation Professor of Electrical Engineering (Emeritus since Oct. 2024), and Professor by courtesy, Applied Physics, Stanford University, Stanford, CA

**2000-2019** Co-Director, Stanford Photonics Research Center

**1997-2009** Director, Solid State and Photonics Laboratory, Stanford University, Stanford, CA

**1997-2006** Director, E. L. Ginzton Laboratory, Stanford University, Stanford, CA

**Aug. - Dec. 1996** Professor of Electrical Engineering, Stanford University, Stanford, CA

**May 1992-Aug. 1996** Head, Advanced Photonics Research Department, AT&T Bell Laboratories, Holmdel, N.J., USA

Sept. 1987-May 1992 Head, Photonics Switching Device Research Department, AT&T Bell Laboratories, Holmdel, NJ USA

June 1981-Sept. 1987 Member of Technical Staff, AT&T Bell Laboratories, Holmdel, NJ, USA

June 1980-June 1981 Lecturer, Department of Physics, Heriot-Watt University, Edinburgh, U.K.

June 1979-June 1980 Research Associate, Department of Physics, Heriot-Watt University, Edinburgh, U.K.

## Academy Memberships and Fellowships

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Member, National Academy of Engineering (2010)  
Member, National Academy of Sciences (2008)  
Fellow of the American Association for the Advancement of Science (2024)  
Fellow of the Electromagnetics Academy (2014)  
Corresponding Fellow, Royal Society of Edinburgh (2002)  
Fellow of the Royal Society of London (1995)  
Fellow, Institute of Electrical and Electronics Engineers (1995) and Life Fellow (2020)  
Fellow of the Optical Society of America (1988)  
Fellow of the American Physical Society (1988)

## Honors

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Carnegie Millennium Professorship (2013)  
Honorary Doctor of Engineering, Heriot-Watt University, Edinburgh (2003)  
Doctor Honoris Causa, Vrije Universiteit, Brussel (1997)

## Prizes and Awards

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Optica Frederic Ives Medal/Jarus W Quinn Prize 2025  
Best paper award, *Photonics Research*, 2013  
IEEE Third Millennium Medal (2000)  
1991 Prize of the International Commission for Optics  
R. W. Wood Prize of the Optical Society of America, 1988 (with D. S. Chemla)  
Adolph Lomb Medal of the Optical Society of America (1986)  
IEEE Lasers and Electro-Optics Society Traveling Lecturer, 1986-87

## Other Distinctions

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2014 Hermann Anton Haus Lecture, MIT  
1993 Walter Schottky Lecturer, Aachen  
Listed by ISI as one of the 254 Highly Cited Authors in Engineering and one of the 315 Highly Cited Authors in Physics. (2009) (Only 9 people worldwide appeared on both these lists.)  
H-index (Nov. 2024) – 115 (Google Scholar)

## Professional Society Appointments and Posts

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President, IEEE Lasers and Electro-Optics Society (1995)  
Elected Member, Board of Directors, Optical Society of America, 2000-2003

Vice President, International Commission for Optics, 1999-2002  
Member, U.S. Advisory Committee for the International Commission for Optics (Jan 1, 2001 through Dec 31, 2002).  
Vice President, Finance and Administration, IEEE Lasers and Electro Optics Society, 1991-1992  
Secretary-Treasurer, IEEE Lasers and Electro-Optics Society, 1990-1991  
Chair, IEEE Lasers and Electro-Optics Society Technical Subcommittee on Optical Switching and Processing, 1990-1991  
Elected Member of the Board of Governors, IEEE Lasers and Electro Optics Society, 1989-91.  
Member of various other professional society committees

## Scientific Journals

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Editorial Board, "Semiconductor Science and Technology," 1987-1990.  
Editorial Board, "Optical and Quantum Electronics," 1988-2017  
Editorial Board, Applied Physics Reviews, 1991-1997

## Other Committees and Councils

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Member of the Defense Sciences Research Council (DARPA) 1991-2005  
Served on over 40 conference program committees, including General Chair, Program Chair, Co-Chair, and Subcommittee Chair duties

## Publications

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Over 300 publications in scientific journals  
Quantum Mechanics for Scientists and Engineers (Cambridge, 2008)  
15 book chapters  
78 U.S. Patents granted

## Presentations

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Over 270 invited talks presented at national and international meetings  
47 short courses on quantum well devices, optical switching, and optical interconnects given at major meetings and schools

## Online Courses

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Open online classes on *Quantum Mechanics for Scientists and Engineers* have been taught since 2013, attracting more than 80,000 student registrations

## Other Interests

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Clarinet and saxophone playing in various orchestras and ensembles  
Director of AT&T Bell Laboratories Jazz Big Band from 1985-89  
Founding Member, Scottish Saxophone Quartet, 1976-81

## REFEREED SCIENTIFIC PUBLICATIONS

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298. Z. Kuang, D. A. B. Miller, and O. D. Miller, "[Bounds on the Coupling Strengths of Communication Channels and their Information Capacities](#)," *IEEE Transactions on Antennas and Propagation* (to be published) 2025, doi: 10.1109/TAP.2025.3533263.
297. D. A. B. Miller, Z. Kuang, and O. D. Miller, "Tunneling escape of waves," *Nat. Photon.*, published online Dec. 3, 2024, DOI: [10.1038/s41566-024-01578-w](#) [Supplementary material](#)
296. C. Roques-Carmes, S. Fan, and D. A. B. Miller, "[Measuring, processing, and generating partially coherent light with self-configuring optics](#)," *Light Sci Appl* **13**, 260 (2024). <https://doi.org/10.1038/s41377-024-01622-y> [Supplementary material](#)
295. Dan Sirbu, Ruslan Belikov, Kevin Fogarty, Carson Valdez, Zhanghao Sun, Annie Kroo, Olav Solgaard, David A. B. Miller, Olivier Guyon, "[AstroPIC: near-infrared photonic integrated circuit coronagraph architecture for the Habitable Worlds Observatory](#)," *Proc. SPIE 13092, Space Telescopes and Instrumentation 2024: Optical, Infrared, and Millimeter Wave, 130921T* (23 August 2024); <https://doi.org/10.1117/12.3020518>
294. S. SeyedinNavadeh, M. Milanizadeh, F. Zanetto, G. Ferrari, M. Sampietro, M. Sorel, D. A. B. Miller, A. Melloni, and F. Morichetti, "[Determining the optimal communication channels of arbitrary optical systems using integrated photonic processors](#)," *Nat. Photon.* **18**, 149-155 (2024) <https://doi.org/10.1038/s41566-023-01330-w> [Supplementary material](#)
293. Zhanghao Sun, Sunil Pai, Carson Valdez, Maziyar Milanizadeh, Andrea Melloni, Francesco Morichetti, David A. B. Miller, and Olav Solgaard, "[Scalable low-latency optical phase sensor array](#)," *Optica* **10**, 1165-1172 (2023) <https://doi.org/10.1364/OPTICA.494612> [Supplementary material](#)
292. S. Pai, Z. Sun, T. W. Hughes, T. Park, B. Bartlett, I. A. D. Williamson, M. Minkov, M. Milanizadeh, N. Abebe, F. Morichetti, A. Melloni, S. Fan, O. Solgaard, D. A. B. Miller, "[Experimentally realized in situ backpropagation for deep learning in photonic neural networks](#)," *Science* **380**, 398-404 (2023). DOI: [10.1126/science.ade8450](#)
291. S. Pai, T. Park, M. Ball, B. Penkovsky, M. Dubrovsky, N. Abebe, M. Milanizadeh, F. Morichetti, A. Melloni, S. Fan, O. Solgaard, and D. A. B. Miller, "[Experimental evaluation of digitally verifiable photonic computing for blockchain and cryptocurrency](#)," *Optica* **10**, 552-560 (2023) <https://doi.org/10.1364/OPTICA.476173> [Supplementary material](#)
290. S. Pai, C. Valdez, T. Park, M. Milanizadeh, F. Morichetti, A. Melloni, S. Fan, O. Solgaard, and D. A. B. Miller., "[Power monitoring in a feedforward photonic network using two output detectors](#)," *Nanophotonics*, Jan. 2023, <https://doi.org/10.1515/nanoph-2022-0527>
289. D. A. B. Miller, "[Why optics needs thickness](#)," *Science* **379**, 41-45 (2023) <https://www.science.org/doi/10.1126/science.ade3395> [Author's final version \(with Supplementary Materials\)](#)
288. K. Y. Yang, C. Shirpurkar, A. D. White, J. Zang, L. Chang, F. Ashtiani, M. A. Guidry, D. M. Lukin, S. V. Pericherla, J. Yang, H. Kwon, J. Lu, G. H. Ahn, K. Van Gasse, Y. Jin, S.-P. Yu, T. C. Briles, J. R. Stone, D. R. Carlson, H. Song, K. Zou, H. Zhou, K. Pang, H. Hao, L. Trask, M. Li, A. Netherton, L. Rechtman, J. S. Stone, J. L. Skarda, L. Su, D. Vercruyse, J.-P. W. MacLean, S. Aghaeimeibodi, M.-J. Li, D. A. B. Miller, D. M. Marom, A. E. Willner, J. E. Bowers, S. B. Papp, P. J. Delfyett, F. Aflatouni, and J. Vučković, "[Multi-dimensional data transmission using inverse-designed silicon photonics and microcombs](#)," *Nat Commun* **13**, 1–9 (2022). <https://doi.org/10.1038/s41467-022-35446-4>

287. A. Ji, J.-H. Song, Q. Li, F. Xu, C.-T. Tsai, R. C. Tiberio, B. Cui, P. Lalanne, P. G. Kik, D. A. B. Miller, and M. L. Brongersma, "[Quantitative phase contrast imaging with a nonlocal angle-selective metasurface](https://doi.org/10.1038/s41467-022-34197-6)," Nat Commun **13**, 7848 (2022). <https://doi.org/10.1038/s41467-022-34197-6>
286. J. Bütow, J. S. Eismann, M. Milanizadeh, F. Morichetti, A. Melloni, D. A. B. Miller, and P. Banzer, "[Spatially resolving amplitude and phase of light with a reconfigurable photonic integrated circuit](https://doi.org/10.1364/OPTICA.458727)," Optica **9**, 939-946 (2022) <https://doi.org/10.1364/OPTICA.458727>
285. M. Milanizadeh, SM. SeyedinNavadeh, F. Zanetto, V. Grimaldi, C. De Vita, C. Klitis, M. Sorel, G. Ferrari, D. A. B. Miller, A. Melloni, and F. Morichetti, "[Separating arbitrary free-space beams with an integrated photonic processor](https://doi.org/10.1038/s41377-022-00884-8)," Light: Science & Applications **11**, 197 (2022) <https://doi.org/10.1038/s41377-022-00884-8>
284. M. Milanizadeh, F. Toso, G. Ferrari, T. Jonuzi, D. A. B. Miller, A. Melloni, and F. Morichetti, "[Coherent self-control of free-space optical beams with integrated silicon photonic meshes](http://dx.doi.org/10.1364/PRJ.428680)," Photonics Research **9**, 2196-2204 (2021) <http://dx.doi.org/10.1364/PRJ.428680>  
Also featured as an Optica "Spotlight on Optics" Highlighted Article at <https://www.osapublishing.org/spotlight/summary.cfm?id=460684>  
and as a Photonics Research Highlight at <https://www.researching.cn/pr/journalnewsdetails/b6d6cf33-b70a-4eec-b61a-70a205f825e6?type=recommendation>
283. G. Wetzstein, A. Ozcan, S. Gigan, Shanhui Fan, D. Englund, M. Soljačić, C. Denz, D. A. B. Miller and D. Psaltis "[Inference in artificial intelligence with deep optics and photonics](https://doi.org/10.1038/s41586-020-2973-6)," Nature **588**, 39-47 (2020) <https://doi.org/10.1038/s41586-020-2973-6> Open access link <https://rdcu.be/cbBRj>
282. W. Bogaerts, D. Pérez, J. Capmany, D. A. B. Miller, J. Poon, D. Englund, F. Morichetti and A. Melloni "[Programmable photonic circuits](https://doi.org/10.1038/s41586-020-2764-0)," Nature **586**, 207-216 (2020). <https://doi.org/10.1038/s41586-020-2764-0> Open access link <https://rdcu.be/b8caY>
281. D. A. B. Miller, "[Analyzing and generating multimode optical fields using self-configuring networks](https://doi.org/10.1364/OPTICA.391592)," Optica **7**, 794-801 (2020) <https://doi.org/10.1364/OPTICA.391592>  
Supplementary material [at this link](#) and at <https://doi.org/10.6084/m9.figshare.12476123>
280. S. Pai, I. A. D. Williamson, T. W. Hughes, M. Minkov, O. Solgaard, S. Fan, and D. A. B. Miller, "[Parallel programming of an arbitrary feedforward photonic network](http://doi.org/10.1109/JSTQE.2020.2997849)," IEEE J. Sel. Top. Quantum Electron. **25**, 6100813 (2020) <http://doi.org/10.1109/JSTQE.2020.2997849>
279. D. Awschalom, K. K. Berggren, H. Bernien, S. Bhave, L. D. Carr, P. Davids, S. E. Economou, D. Englund, A. Faraon, M. Fejer, S. Guha, M. V. Gustafsson, E. Hu, L. Jiang, J. Kim, B. Korzh, P. Kumar, P. G. Kwiat, M. Lončar, M. D. Lukin, D. A. B. Miller, C. Monroe, S. W. Nam, P. Narang, J. S. Orcutt, M. G. Raymer, A. H. Safavi-Naeini, M. Spiropulu, K. Srinivasan, S. Sun, J. Vučković, E. Waks, R. Walsworth, A. M. Weiner, and Z. Zhang, "[Development of Quantum InterConnects for Next-Generation Information Technologies](https://doi.org/10.1103/PRXQuantum.2.017002)," PRX Quantum **2**, 017002 (2021) – Published 24 February 2021 <https://doi.org/10.1103/PRXQuantum.2.017002>  
<https://arxiv.org/abs/1912.06642>
278. K. Choutagunta, I. Roberts, D. A. B. Miller, and J. M. Kahn, "[Adapting Mach-Zehnder Mesh Equalizers in Direct-Detection Mode-Division-Multiplexed Links](https://doi.org/10.1109/JLT.2019.2952060)," IEEE/OSA Journal of Lightwave Technology **38**, 723-735 (2020) <https://doi.org/10.1109/JLT.2019.2952060>
277. S. Pai, B. Bartlett, O. Solgaard, and D. A. B. Miller, "[Matrix Optimization on Universal Unitary Photonic Devices](https://doi.org/10.1103/PhysRevApplied.11.064044)," Phys. Rev. Applied **11**, 064044 (2019) – Published 19 June 2019 <https://doi.org/10.1103/PhysRevApplied.11.064044>

276. D. A. B. Miller, "[Waves, modes, communications, and optics: a tutorial.](https://doi.org/10.1364/AOP.11.000679)" Adv. Opt. Photon. **11**, 679-825 (2019) <https://doi.org/10.1364/AOP.11.000679>
275. A. Dutt, M. Minkov, Q. Lin, L. Yuan, D. A. B. Miller, S. Fan, "[Experimental Demonstration of Dynamical Input Isolation in Nonadiabatically Modulated Photonic Cavities.](https://doi.org/10.1021/acsphotonics.8b01310)" ACS Photonics **6**, 162-169 (2019) <https://doi.org/10.1021/acsphotonics.8b01310>
274. D. A. B. Miller, "[Setting up meshes of interferometers – reversed local light interference method.](https://doi.org/10.1364/OE.25.029233)" Opt. Express **25**, 29233-29248 (2017) <https://doi.org/10.1364/OE.25.029233>
273. D. A. B. Miller, "[Better choices than optical angular momentum multiplexing for communications.](https://doi.org/10.1073/pnas.1712762114)" PNAS **114**, no. 46, E9755–E9756 (2017) <https://doi.org/10.1073/pnas.1712762114>
272. A. Annoni, E. Guglielmi, M. Carminati, G. Ferrari, M. Sampietro, D. A. B. Miller, A. Melloni, and F. Morichetti, "[Unscrambling light – automatically undoing strong mixing between modes.](https://doi.org/10.1038/lisa.2017.110)" Light Science & Applications **6**, e17110 (2017) <https://doi.org/10.1038/lisa.2017.110>
271. D. A. B. Miller, Linxiao Zhu, and Shanhui Fan, "[Universal modal radiation laws for all thermal emitters.](https://doi.org/10.1073/pnas.1701606114)" PNAS **114**, no. 17, 4336-4341 (2017) <https://doi.org/10.1073/pnas.1701606114>
270. D. A. B. Miller, "[Attojoule Optoelectronics for Low-Energy Information Processing and Communications: a Tutorial Review.](https://doi.org/10.1109/JLT.2017.2647779)" IEEE/OSA J. Lightwave Technology **35** (3), 343-393 (2017) <https://doi.org/10.1109/JLT.2017.2647779>; <http://ieeexplore.ieee.org/document/7805240/>
269. C. M. Wilkes, X. Qiang, J. Wang, R. Santagati, S. Paesani, X. Zhou, D. A. B. Miller, G. D. Marshall, M. G. Thompson, and J. L. O'Brien, "[60 dB high-extinction auto-configured Mach-Zehnder interferometer.](http://dx.doi.org/10.1364/OL.41.005318)" Opt. Lett. **41**, 5318-5321 (2016) <http://dx.doi.org/10.1364/OL.41.005318>
268. D. A. B. Miller, "[Perfect optics with imperfect components.](https://doi.org/10.1364/OPTICA.2.000747)" Optica **2**, 747-750 (2015). <https://doi.org/10.1364/OPTICA.2.000747> <https://www.osapublishing.org/optica/abstract.cfm?uri=optica-2-8-747> Supplementary material at [this link](https://doi.org/10.1364/OPTICA.2.000747) and at [https://figshare.com/articles/Supplement 1 Perfect optics with imperfect components/4921961](https://figshare.com/articles/Supplement_1_Perfect_optics_with_imperfect_components/4921961)
267. P. Wahl, T. Tanemura, N. Vermeulen, J. Van Erps, D. A. B. Miller, and H. Thienpont, "[Design of large scale plasmonic nanoslit arrays for arbitrary mode conversion and demultiplexing.](http://www.opticsinfobase.org/oe/abstract.cfm?URI=oe-22-1-646)" Opt. Express **22**, 646-660 (2014) <http://www.opticsinfobase.org/oe/abstract.cfm?URI=oe-22-1-646>
266. P. Wahl, T. Tanemura, C. Debaes, N. Vermeulen, J. Van Erps, D. A. B. Miller, and H. Thienpont, "[Energy-per-Bit Limits in Plasmonic Integrated Photodetectors.](https://doi.org/10.1109/JSTQE.2012.2227687)" IEEE J. Sel. Top. Quantum Electron. **19**, 3800210 (2013). <https://doi.org/10.1109/JSTQE.2012.2227687>
265. T. Tanemura, P. Wahl, S. Fan, and D. A. B. Miller, "[Modal Source Radiator Model for Arbitrary Two-Dimensional Arrays of Subwavelength Apertures on Metal Films.](https://doi.org/10.1109/JSTQE.2012.2229383)" IEEE J. Sel. Top. Quantum Electron. **19**, 4601110, (2013). <https://doi.org/10.1109/JSTQE.2012.2229383>
264. Ross M. Audet, Elizabeth H. Edwards, Krishna C. Balram, Stephanie A. Claussen, Rebecca K. Schaevitz, Emel Tasyurek, Yiwen Rong, Edward I. Fei, Theodore I. Kamins, James S. Harris, and David A. B. Miller, "[Surface-Normal Ge/SiGe Asymmetric Fabry-Perot Optical Modulators Fabricated on Silicon Substrates.](https://doi.org/10.1109/JLT.2013.2253383)" J. Lightwave Technol. **31**, 3995-4003 (2013)
263. D. A. B. Miller, "[Reconfigurable add-drop multiplexer for spatial modes.](http://www.opticsinfobase.org/oe/abstract.cfm?URI=oe-21-17-20220)" Opt. Express **21**, 20220-20229 (2013) <http://www.opticsinfobase.org/oe/abstract.cfm?URI=oe-21-17-20220> <https://doi.org/10.1364/OE.21.020220>

262. D. A. B. Miller, "[Establishing optimal wave communication channels automatically,](https://doi.org/10.1109/JLT.2013.2278809)" J. Lightwave Technol. **31**, 3987 – 3994 (2013) <https://doi.org/10.1109/JLT.2013.2278809>  
<http://ieeexplore.ieee.org/xpl/articleDetails.jsp?arnumber=6581883>
261. K. C. Balram, R. M. Audet, and D. A. B. Miller, "[Nanoscale resonant-cavity-enhanced germanium photodetectors with lithographically defined spectral response for improved performance at telecommunications wavelengths,](http://www.opticsinfobase.org/oe/abstract.cfm?URI=oe-21-8-10228)" Opt. Express **21**, 10228-10233 (2013)  
<http://www.opticsinfobase.org/oe/abstract.cfm?URI=oe-21-8-10228>
260. D. A. B. Miller, "[Self-configuring universal linear optical component,](http://www.opticsinfobase.org/prj/abstract.cfm?URI=prj-1-1-1)" Photon. Res. **1**, 1-15 (2013). **Best paper award for Photonics Research 2013** (Editor-in-Chief Choice award)  
<http://www.opticsinfobase.org/prj/abstract.cfm?URI=prj-1-1-1>  
<http://dx.doi.org/10.1364/PRJ.1.000001>
259. D. A. B. Miller, "[Self-aligning universal beam coupler,](http://www.opticsinfobase.org/oe/abstract.cfm?URI=oe-21-5-6360)" Opt. Express **21**, 6360-6370 (2013)  
<http://www.opticsinfobase.org/oe/abstract.cfm?URI=oe-21-5-6360>  
<https://doi.org/10.1364/OE.21.006360>
258. V. Liu, D. A. B. Miller, and S. H. Fan, "[Highly Tailored Computational Electromagnetics Methods for Nanophotonic Design and Discovery,](https://doi.org/10.1109/JPROC.2012.2207649)" Proc. IEEE **101**, No. 2, 484 – 493 (2013)  
<https://doi.org/10.1109/JPROC.2012.2207649>
257. D. A. B. Miller, "[How complicated must an optical component be?"](http://www.opticsinfobase.org/josaa/abstract.cfm?URI=josaa-30-2-238) J. Opt. Soc. Am. A **30**, 238-251 (2013) <http://www.opticsinfobase.org/josaa/abstract.cfm?URI=josaa-30-2-238>  
<https://doi.org/10.1364/JOSAA.30.000238>
256. E. H. Edwards, L. Lever, E. T. Fei, T. I. Kamins, Z. Ikonik, J. S. Harris, R. W. Kelsall, and D. A. B. Miller, "[Low-voltage broad-band electroabsorption from thin Ge/SiGe quantum wells epitaxially grown on silicon,](http://www.opticsinfobase.org/oe/abstract.cfm?URI=oe-21-1-867)" Opt. Express **21**, 867-876 (2013)  
<http://www.opticsinfobase.org/oe/abstract.cfm?URI=oe-21-1-867>
255. E. H. Edwards, R. M. Audet, E. T. Fei, S. A. Claussen, R. K. Schaevitz, E. Tasyurek, Y. Rong, T. I. Kamins, J. S. Harris, and D. A. B. Miller, "[Ge/SiGe asymmetric Fabry-Perot quantum well electroabsorption modulators,](http://www.opticsinfobase.org/oe/abstract.cfm?URI=oe-20-28-29164)" Opt. Express **20**, 29164-29173 (2012)  
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254. V. Liu, D. A. B. Miller, and S. Fan, "[Ultra-compact photonic crystal waveguide spatial mode converter and its connection to the optical diode effect,](http://www.opticsinfobase.org/oe/abstract.cfm?URI=oe-20-27-28388)" Opt. Express **20**, 28388-28397 (2012)  
<http://www.opticsinfobase.org/oe/abstract.cfm?URI=oe-20-27-28388>
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<https://doi.org/10.1364/OE.20.023985>
252. K. C. Balram and D. A. B. Miller, "[Self-aligned silicon fins in metallic slits as a platform for planar wavelength-selective nanoscale resonant photodetectors,](http://www.opticsinfobase.org/oe/abstract.cfm?URI=oe-20-20-22735)" Opt. Express **20**, 22735-22742 (2012) <http://www.opticsinfobase.org/oe/abstract.cfm?URI=oe-20-20-22735>
251. S. A. Claussen, K. C. Balram, E. T. Fei, T. I. Kamins, J. S. Harris, and D. A. B. Miller, "[Selective area growth of germanium and germanium/silicon-germanium quantum wells in silicon waveguides for on-chip optical interconnect applications,](http://www.opticsinfobase.org/ome/abstract.cfm?URI=ome-2-10-1336)" Opt. Mater. Express **2**, 1336-1342 (2012) <http://www.opticsinfobase.org/ome/abstract.cfm?URI=ome-2-10-1336>
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## CONFERENCE INVITED TALKS - PRESENTER

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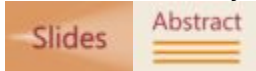
285. D. A. B. Miller, "Separating light in time and space - fully resolving partial coherence," (Invited), 55th Winter Colloquium on the Physics of Quantum Electronics, Snowbird, Utah, January 7, 2025



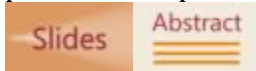
284. D. A. B. Miller, "Optics à la mode - new way of making, using and understanding optics", Purdue University, West Lafayette IN, Oct. 18, 2024



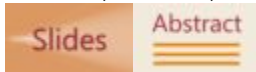
283. D. A. B. Miller, "Optics à la mode - new way of making, using and understanding optics", Harvard University, Cambridge MA, Sept. 20, 2024



282. D. A. B. Miller, "Finding and counting channels with waves," Invited talk at the Metamaterials, Metadevices, and Metasystems 2024 conference at SPIE Nanoscience + Engineering Meeting, part of SPIE Optics and Photonics 2024, San Diego CA, August 18 - 22, 2024 , Paper 13109-75



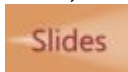
281. D. A. B. Miller, "Finding and counting channels with waves," NanoPlasm 2024, Grand Hotel San Michele, Cetraro, Italy, June 21, 2024



280. D. A. B. Miller, "Finding and counting channels with waves: limits and opportunities," Photonics North, Vancouver, BC, Canada, May 28, 2024



279. D. A. B. Miller, "Optics à la mode," (Invited), SUPR 24, Stanford University Photonics Retreat 2024, Asilomar, California, April 27, 2024



278. D. A. B. Miller, "Finding and counting channels with waves," (Invited), 54th Winter Colloquium on the Physics of Quantum Electronics, Snowbird, Utah, January 10, 2024



277. D. A. B. Miller, "Degrees of freedom and communication channels in optics and electromagnetics," Seminar (remote) in the iPhyCom Seminar Series (CentraleSupélec, France), Nov. 16, 2023



276. D. A. B. Miller, "Waves, Modes, and Minimum Thicknesses for Optics," Simons Collaboration Satellite Workshop, City University of New York, October 18, 2023



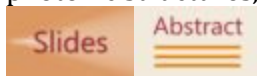
275. D. A. B. Miller, "Why optics needs thickness and how much it needs," Invited talk at Metamaterials 2023, 17th International Congress on Artificial Materials for Novel Wave Phenomena, Crete, Greece, 11-16 September, 2023



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273. D. A. B. Miller, "The new multimode optics - self-configuring circuits and fundamental limits for photonic structures," Tutorial talk at ePIXfab 8 workshop, Gent, July 6, 2023



272. "Understanding and controlling waves – the new multimode optics," Lectures at the Winter College on Optics: Terahertz Optics and Photonics, International Centre for Theoretical Physics, Trieste, Italy, February 13, 2023



271. **"Self-configuring algorithms, topologies and fundamental limits for photonic circuits and structures,"** (Keynote talk), Integrated Optics: Devices, Materials, and Technologies XXVII, SPIE Photonics, Conference 12424, 30 January - 2 February 2023 San Francisco, CA, Paper 12424-18



270. **"Shrinking optics - why optics needs thickness and how much it needs,"** (Invited), 53rd Winter Colloquium on the Physics of Quantum Electronics Snowbird, Utah, January 11, 2023



269. **"Self-configuring photonics - solving problems in real time without calculations,"** (Invited), Coherent Network Computing 2022, Stanford University, Stanford, California, October 26, 2022



268. **"Self-configuring photonics - circuits, architectures, topologies and algorithms,"** (Invited), Metamaterials - 16th International Congress of Artificial Materials for Novel Wave Phenomena, Siena, Italy, 12 - 17 September 2022



267. **"Understanding and exploiting complex and self-configuring photonics,"** Invited webinar, Optica Nanophotonics Technical Group, June 7, 2022



266. **"Self-configuring programmable photonics for processing, communications and sensing,"** Invited Tutorial, Optical Fiber Communication Conference OFC 22, San Diego, CA,

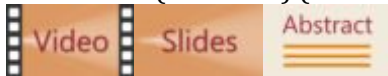
March 7, 2022, Paper M2G.1



265. **"Waves, modes, and self-configuring photonics – understanding and exploiting controllable complexity,"** Stanford University Optics and Electronics Seminar, January 3, 2022



264. **"Self-configuring complex photonic circuits,"** (Invited), 2021 IEEE Group IV Photonics Conference (GFP2021) (virtual conference) Dec. 7, 2021, Paper TuE3



263. **"Degrees of Freedom and Modes in Optics and Electromagnetics,"** (Invited), 2021 IEEE Conference on Antenna Measurements & Applications Antibes Juan-Les-Pins (virtual meeting), Paper WeBT2.2



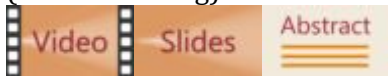
262. **"The New Multimode Optics - Understanding and Exploiting Controllable Complexity,"** Invited Tutorial, Frontiers in Optics 21 (FiO 21), 4 November, 2021 (virtual conference) Paper FTh6C.1 <https://doi.org/10.13140/RG.2.2.12174.89923>



261. **"Optical interconnects to chips - why and how,"** (Invited Tutorial) IEEE Photonics Conference, 18 - 21 October, 2021 (virtual conference) Paper WG4.1



260. **"How to Count Modes and Deduce Limits in Optics,"** 15th International Congress on Artificial Materials for Novel Wave Phenomena, Metamaterials 2021, Special Session: Fundamental Performance Limits in Photonics, New York USA 20 - 25 September, 2021 (virtual meeting)



259. **"Getting to femtojoule optics – what physics and what technology?"** Optical Fibers Conference (OFC) 2021 (a Virtual Conference), Symposium on Emerging Photonic Technologies and Architectures for Femtojoule per Bit Optical Networks, Paper Tu5A.3 (invited), June 8, 2021



258. **"Self-configuring silicon photonic circuits,"** Calgary Optics & Photonics Student Society, University of Calgary, Edmonton, Alberta (virtual seminar), March 24, 2021

257. **"Self-configuring silicon photonics systems and applications,"** SPIE OPTO, Photonics West (online meeting), Silicon Photonics XVI, Proceedings Volume 11691, Silicon Photonics XVI; 116910F (2021), March 5, 2021 <https://doi.org/10.1117/12.2576957>



Talk video also available at <https://youtu.be/0i3w4GrgwCM>

256. **“A new way of making, using and understanding optics,”** Annual Meeting of the International Max Planck Research School - Physics of Light on Oct. 21, 2020, Erlangen, Germany (virtual conference).



Slides also available through

[https://www.researchgate.net/publication/344789918 A new way of making using and understanding optics](https://www.researchgate.net/publication/344789918_A_new_way_of_making_using_and_understanding_optics) .

Talk video available through

<https://www.youtube.com/playlist?list=PLUULX14QByt1qJICxMKJT-oJ6R0IPd6MS>

255. **“Finding the right modes for communicating with optics,”** OSA Frontiers in Optics, 14 – 17 September, 2020 (online meeting), Paper FM1D.1.



Talk slides also available through <https://doi.org/10.13140/RG.2.2.30630.96324> .

Talk video also available at <https://youtu.be/6PMOubyjvpk>

254. **“Self-configuring silicon photonics,”** European Optical Society Annual Meeting (EOSAM), 7 – 11 September 2020 (online meeting), in TOM 1- Silicon Photonics and Guided-Wave Optics, Session 2. .



<https://www.europtics.org/pages/events/eosam2020/program/schedule.html>

Talk slides also available through <https://doi.org/10.13140/RG.2.2.14307.58404> .

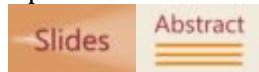
Talk video also available at <https://youtu.be/-qkGellyPR8>

253. **“Photonics to save energy and increase density in information processing,”** OSA Advanced Photonics Congress (virtual event), July 15, 2020, Paper PsW1F.2

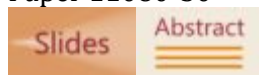


Talk video also available at <https://youtu.be/XUfd45590eA>

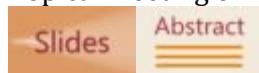
252. **“Saving energy and increasing density in information processing using photonics,”** Optical Fibers Conference (OFC 20), San Diego, March 12, 2020, Paper Th1E.1



251. **“Waves, modes, communications and optics,”** SPIE Optics + Photonics meeting, Metamaterials, Metadevices, and Metasystems conference, San Diego, CA, August 13, 2019, Paper 11080-50



250. **“Self-configuring photonic architectures and algorithms,”** IEEE Photonics Society Summer Topical Meeting on Programmable Photonics, Fort Lauderdale, Florida, July 7, 2019



249. **“Waves, modes, communications and optics”** (Keynote talk) PIERS (Photonics & Electromagnetics Research Symposium, also known as Progress In Electromagnetics Research Symposium) 2019, Rome, Italy, June 17, 2019



248. “Self-configuring optical mesh networks,” (Keynote talk) IWANN 2019 (International Work Conference on Artificial Neural Networks), Workshop on AI in Nanophotonics, Gran Canaria, Spain, June 6, 2019

247. “Self-configuring optical circuits,” 21<sup>st</sup> European Conference on Integrated Optics, Ghent, Belgium, April 24, 2019

246. **“Saving energy and increasing density in information processing using photonics,”** Stanford EE Computer Systems Colloquium, Stanford, CA, April 4, 2019



Video also available at <https://youtu.be/7hWWyuesmhs>

245. “Optically-assisted architectures for information processing,” IEEE IRDS Beyond CMOS Workshop: Emerging Architectures and Devices, Monterey, California, March 30, 2019

244. “Novel Integrated and Self-Configuring Photonics for Sensing, Communications and Processing,” Corning Technology Center, Sunnyvale, CA, December 6, 2018

243. “Saving energy and increasing density in information communications and processing using photonics,” Stanford Photonics Research Center Workshop on Advanced Data Center Architectures and Technologies, Stanford University, December 4, 2018

242. “Self-configuring integrated photonic networks for communications, switching and processing,” OSA Advanced Photonics Congress, Zurich, Switzerland, July 2-5, 2018

241. “Universal and self-configuring linear photonic circuits,” ePIXfab Silicon Photonics Summer School, Ghent University, Ghent, Belgium June 11-15, 2018

240. “Saving energy in information processing and communications using integrated photonics,” ePIXfab Silicon Photonics Summer School, Ghent University, Ghent, Belgium June 11-15, 2018

239. “Arbitrary self-configuring linear transforms - optics that designs itself to do anything,” Workshop on “Optics for information processing in the 21th century,” Villa Finaly, Florence, Italy, May 24, 2018

238. “Arbitrary and self-configuring photonic circuits,” 9th Annual SU2P Symposium, 21st – 22nd May 2018, Technology and Innovation Centre, University of Strathclyde, Glasgow, UK

237. “Reducing energy and increasing capacity – new directions for integrated optics in handling information,” International Day of Light Presentation, Politecnico di Milano, Milan, Italy, May 17, 2018

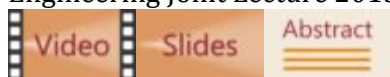
236. “Optics that designs itself to do anything,” Applied Physics Seminar, Harvard University, March 31, 2018

235. “Self-configuring complex optics,” (Keynote invited paper) SPIE Photonics West, San Francisco, CA, January 30, 2018, Paper 10540-43

234. “Arbitrary and self-configuring photonic circuits for sensing and processing,” IEEE Avionics and Vehicle Fiber-Optics and Photonics Conference, New Orleans, LA, Nov. 9, 2017

233. "Saving energy in information processing and communications with optics," ECE Department Distinguished Lecture, George Washington University, Nov. 1, 2017
232. "Arbitrary and Reconfigurable Optics – New Opportunities for Integrated Photonics," OSA Frontiers in Optics, Washington DC, Sept. 19, 2017
231. "Novel integrated and self-configuring photonics for sensing, communications and processing," University of Bristol, UK, Sept. 7, 2017
230. "Arbitrary and reconfigurable optics," Universitat Politècnica de València, Spain, Sept. 4, 2017
229. "Novel integrated and self-configuring photonic architectures for sensing, communications and processing," OSA Topical Meeting on Integrated Photonics Research, Silicon and Nanophotonics, New Orleans, Louisiana, July 27, 2017
228. "Attojoule optoelectronics – saving more energy with optics," (Invited tutorial talk), IEEE Photonics Society Summer Topical Meeting on Low Energy Integrated Nanophotonics, San Juan, Puerto Rico, July 11, 2017
227. "Attojoule optoelectronics – saving more energy with optics," Sandia National Laboratories, Albuquerque, New Mexico, June 25, 2017
226. "Attojoule optoelectronics – saving more energy with optics," (Plenary invited talk), IEEE Photonics Society Optical Interconnects Conference, Santa Fe, New Mexico, June 6, 2017
225. "Arbitrary and reconfigurable optics," Caltech, May 25, 2017
224. "Attojoule optoelectronics, silicon photonics, free-space optics, and the 10 fJ/bit interconnect," OSA Optoelectronics Technical Group meeting, CLEO 2017, San Jose, CA, May 16, 2017
223. "Optics to save energy in information processing and communications," IEEE Photonics Society, Santa Clara Chapter, March 7, 2017
222. "Optics to save energy in information processing and communications," Optics and Electronics Seminar Series, Stanford University, February 13, 2017
221. "Optics to save energy in information processing and communications," Emerging Technologies Summit, Stanford University, January 10, 2017
220. "Silicon photonics and free space - saving energy," 21st Microoptics Conference, MOC'16, University of California at Berkeley, October 12, 2016
219. "Arbitrary self-configuring optics – a new opportunity for silicon photonics," Zepler Institute International Distinguished Lectures Series, University of Southampton, Southampton, UK, July 5, 2016
218. "Arbitrary self-configuring optics," Invited keynote talk, 72<sup>nd</sup> Scottish Universities Summer School in Physics, "Photonic Systems for Sensing and Metrology," Centre for Doctoral Training in Applied Photonics, St. Andrews, UK, June 25, 2016
217. "Arbitrary and self-configuring optics - New opportunities for integrated and nano photonics," Invited tutorial talk, Conference on Lasers and Electro-Optics 2016, San Jose, California, June 6, 2016, Paper FM3B.1
216. "Energy, the Internet, and Quantum Mechanics," Scottish Universities Physics Alliance/Institute of Physics public lecture, Glasgow, UK, May 25, 2016
215. "Arbitrary self-configuring optics," Department of Physics, University of Sydney, Sydney, Australia, April 22, 2016

214. "Nanophotonics, energy and the internet," Australian Institute for Nanoscale Science and Technology Opening Symposium, Sydney, Australia, April 21, 2016
213. "Self-configuring optics for sensing, communications and processing," Big Data Photonics Workshop, UCLA, Los Angeles, CA, 25 March, 2016
212. "Attojoule optoelectronics," Invited tutorial, OFC'16, Anaheim CA, 22-24 March 2016, Paper W1D.1
211. "Opportunities and New Directions for Optics in Computing," OSA Optical Computing Incubator, 9 – 11 Dec., 2015
210. "Light, Energy and the Internet," seminar at Nanyang Technological University, Singapore, Nov. 12, 2015
209. "Arbitrary self-configuring optics with silicon photonics," seminar at Nanyang Technological University, Singapore, Nov. 11, 2015
208. "Arbitrary self-configuring optics with silicon photonics," seminar at UC Davis, Nov. 5, 2015
207. "Arbitrary optics – novel nanophotonic and self-adapting optoelectronic systems," (Plenary talk) IEEE Photonics Conference, Reston VA, October 4–8, 2015
206. "Arbitrary self-configuring optics with silicon photonics," 12th International Conference on Group IV Photonics, Vancouver, Canada, August 25-28, 2015
205. "Self-aligning optics for integrated mode separation," IEEE Photonics Society Summer Topical Meeting on On-Chip Optical Interconnects, Nassau, Bahamas, July 13-15, 2015
204. "Sorting out light," Centre for Quantum Photonics Workshop, July 3, 2015, Engineers House, Bristol, UK
203. "Self-configuring arbitrary optics with silicon photonics," Universiteit Gent, June 29, 2015, Gent, Belgium
202. "Sorting out light – space the final frontier," Future Trends in Microelectronics, June 21 – 26, 2015, Mallorca, Spain
201. "**Light, Energy and the Internet**," Royal Society of Edinburgh and Royal Academy of Engineering Joint Lecture 2015, Royal Academy of Edinburgh, Edinburgh, UK, March 17, 2015



Video also available at <https://youtu.be/kzyFoMwKEZM>

200. "Self-configuring universal linear optics," APS March Meeting, San Antonio TX, 2 – 6 March, 2015
199. "How to design any linear optical component ... and how to avoid it," Nanometa 2015, 5<sup>th</sup> International Topical Meeting on Nanophotonics and Metamaterials, Seefeld, Tirol, Austria, 5 – 8 January, 2015
198. "Requirements and opportunities for nanophotonics in information processing," Invited Tutorial, MRS Fall Meeting, Boston, MA, Nov. 30, 2014
197. "How to design any linear optical component and how to avoid it," Electrical Engineering Distinguished Lecture, Columbia University, New York NY, October 15, 2014
196. "Separating and Transforming Arbitrary Orthogonal Beams Automatically – An Adaptive Universal Linear Optical Component," Progress in Electromagnetics Research Symposium, August 25-28, 2014, Guangzhou, China

195. "Low-energy Integrated Photonics for Information Processing," (Plenary talk), Progress in Electromagnetics Research Symposium, August 25-28, 2014, Guangzhou, China
194. "Arbitrary Optical Transformations Without Calculations," in *Imaging and Applied Optics 2014*, OSA Technical Digest (online) (Optical Society of America, 2014), paper IW2C.2.  
<http://www.opticsinfobase.org/abstract.cfm?URI=ISA-2014-IW2C.2> Talk available at [http://www.osa.org/en-us/media-library/imaging\\_and\\_applied\\_optics\\_congress/imaging\\_systems\\_and\\_applications/](http://www.osa.org/en-us/media-library/imaging_and_applied_optics_congress/imaging_systems_and_applications/)
193. "Designing Arbitrary Linear Optical Components Without Calculations," in *Advanced Photonics for Communications*, OSA Technical Digest (online) (Optical Society of America, 2014), paper JM4B.1.  
<http://www.opticsinfobase.org/abstract.cfm?URI=IPRSN-2014-JM4B.1> Talk available at [http://www.osa.org/en-us/media-library/advanced\\_photonics\\_for\\_communications\\_congress/joint\\_sessions/](http://www.osa.org/en-us/media-library/advanced_photonics_for_communications_congress/joint_sessions/)
192. "Nanophotonics and Interconnects – Status and Future Directions," 2014 IEEE International Interconnect Technology Conference, May 21, 2014, San Jose, California
191. "Limits and opportunities of electrical and optical interconnects," OSA Incubator Nanophotonic Devices: Beyond Classical Limits, Washington D.C. May 15, 2014
190. "Low energy optoelectronics for interconnects," The Tenth International Nanotechnology Conference on Communications and Cooperation (INC 10), NIST, Gaithersburg, Maryland, May 15, 2014
189. "How to design any linear optical component ... and how to avoid it," 2014 Hermann Anton Haus Lecture, MIT, Cambridge, Massachusetts, April 30, 2014. A video of the talk is available at <http://techtv.mit.edu/videos/28836-hermann-anton-haus-lecture-series-2014-prof-david-a-b-miller> (After introductions, the talk itself starts at minute 12:28. Initial problems with the microphone are resolved by 14:00 minutes)
188. "Designing arbitrary optical components without calculations," 9<sup>th</sup> National Conference on Laser Technology and Optoelectronics and the International Forum on Laser and Optics Technology, Shanghai, China, March 18, 2014
187. "How to design any linear optical device ... and how to avoid it," (Plenary presentation) CUDOS 13<sup>th</sup> Annual Workshop, 10-13 February 2014, San Remo, Victoria, Australia
186. "Low-energy optoelectronics for interconnects," (Invited tutorial) OSA Frontiers in Optics, Orlando, Florida, October 8, 2013, Paper FM3B.2
185. "Requirements and novel devices for optical interconnects," IEEE Photonics Conference, Bellevue, Washington, Sept. 9, 2013
184. "How to design an arbitrary linear optical device and how to avoid it," International Nano Optoelectronics Workshop (iNOW), Cargèse, Corsica, France, August 22, 2013
183. "Requirements and novel devices for optical interconnects," International Nano Optoelectronics Workshop (iNOW), Cargèse, Corsica, France, August 20, 2013
182. "Attojoule optoelectronics – why and how," (Plenary talk) IEEE Photonics Society Summer Topical Meetings, Micro- and Nano-Cavity Integrated Photonics, Kona, Hawaii, July 9, 2013, Paper TuA2.1
181. "How to design an arbitrary linear optical device ... and how to avoid it!" "Controlling the Propagation of Waves in Complex Media: From Shaping Wave Fields to Designing Smart Materials," Institut Scientifique de Cargèse, May 27 – June 1, 2013

180. "Science, technology and the Internet – keeping up with the demand for information," Strathclyde University Faculty of Science Lecture, Glasgow, UK, May 21, 2013
179. "Attojoule Optoelectronics?" Royal Society e-Futures Kavli Meeting, Royal Society Kavli Centre, Chicheley Hall, Newport Pagnell, UK, May 16, 2013
178. "Why Interconnects Are More Important Than Logic," Royal Society e-Futures Meeting, Royal Society, London, UK, May 14, 2013
177. "How to Design Any Linear Optical Component and How to Avoid It," Glasgow University Electrical Engineering and Physics Departments Seminar, Glasgow, UK, May 2, 2013
176. "How to Design Any Linear Optical Component and How to Avoid It," St. Andrews University Physics Department Seminar, St. Andrews, UK, April 26, 2013
175. "How to Design Any Linear Optical Component and How to Avoid It," Heriot-Watt University Physics Department Seminar, Edinburgh, UK, April 25, 2013
174. "How to Design Any Linear Optical Component and How to Avoid It," Strathclyde University Physics Department Seminar, Glasgow, UK, April 22, 2013
173. "Information, energy, and photonics," Scottish Universities Physics Alliance Annual Meeting, Glasgow, UK, April 19, 2013.
172. "Optical interconnects: opportunities and device challenges," Heriot-Watt University Physics Department Seminar, Edinburgh, UK, April 10, 2013
171. "How to Design Any Linear Optical Component and How to Avoid It," Optics and Electronics Seminar Series (AP483), Stanford University, Feb. 11, 2013
170. "Optical interconnects: the challenges of silicon photonics," CNRS Workshop on Silicon Photonics, Paris, Jan. 7, 2013.
169. "Optical Interconnects to Chips – Reasons and Novel Devices," iNOW 2012, Stanford, CA August 12, 2012
168. "The Heat Death of Information Processing and Why Interconnects Are More Important Than Logic," Future Trends in Microelectronics 2012, Corsica, June 28, 2012
167. "The Roles of Optics in Information Processing," (Plenary talk) OSA Nonlinear Photonics and Integrated Photonics Research conferences, Colorado Springs, Colorado, June 18, 2012
166. "Optical Interconnects to Chips," (Invited Tutorial talk), IEEE International Interconnect Technology Conference, San Jose, June 3, 2012
165. "Optics and Optoelectronics for Dense, Low Energy Interconnects," SU2P Symposium, Heriot-Watt University, April 24, 2012
164. "Optical Interconnects to Chips," (Invited Tutorial talk), European Conference on Integrated Optics, Sitges, Spain, April 19, 2012
163. "The Heat Death of Information Processing Processing and How Optics Will Save the World," Stanford University Photonics Retreat, April 15, 2012
162. "Optical Interconnects – Why We Will Have To Use Them," ISSCC, San Francisco, CA, Feb. 20, 2012, Session ES4
161. "Joining Optics and Electronics – Why and How?" CUDOS Review, Shoal Bay, Australia, January 31, 2012
160. "Device Challenges and Opportunities for Optical Interconnects," (invited tutorial), OSA Frontiers in Optics conference, San Jose, CA, October 18, 2011, Paper FTuV1

159. "Nanometallic concentration for enhanced photodetection," IEEE Photonics conference, Arlington VA, October 13, 2011, Paper ThA1
158. "Optical Interconnects to Chips," MIT Microphotonics Review, Cambridge, MA, October 12, 2011
157. "Nanoscience and nanotechnology for advanced interconnect devices," CIOMP – OSA International Summer Session on Lasers and Their Applications, Changchun, China, July 31 – August 5, 2011
156. "Rationale and devices for optical interconnects to chips," CIOMP – OSA International Summer Session on Lasers and Their Applications, Changchun, China, July 31 – August 5, 2011
155. "Nanoscience and nanotechnology for advanced interconnect devices," Workshop on Silicon Photonics and Applications, Peking University, Beijing, China, July 30, 2011
154. "Rationale and devices for optical interconnects to chips," Workshop on Silicon Photonics and Applications, Peking University, Beijing, China, July 30, 2011
153. "Requirements and Limits for Optical Interconnect Devices," Nanometa 2011, Seefeld, Austria, Jan. 3, 2011
152. "Devices for Optical Interconnects to Chips," Next-Generation Chip-Level Optical Interconnect and Group IV Integrated Photonics Forum, National Tsing Hua University, Taiwan, December 9, 2010
151. "Fundamental Limits to Optical Components," OSA Frontiers in Optics 2010, Rochester NY, October 28, 2010
150. "Device Requirements for Optical Interconnects to CMOS Silicon Chips," OSA Topical Meeting on Photonics in Switching 2010, Monterey, California, July 26, 2010
149. "Device Requirements for Dense Interconnects," IEEE Optical Networks and Devices for Data Centers Topical Meeting, Playa del Carmen, Mexico, July 20, 2010
148. "Limits to Cloaking and Optical Devices," SIAM Conference on Mathematical Aspects of Materials Science, Symposium on Meta Materials and Cloaking, Philadelphia, May 2010, Session MS36
147. "Optical Interconnects," (invited tutorial) Optical Fiber Communication Conference, San Diego, CA, March 2010
146. "Physical Requirements and Opportunities for Dense Optical Interconnects to Chips," APS March Meeting, , Portland, Oregon, March 15, 2010, Paper A5 1
145. "A Career in Science, Technology and Innovation," Open Lecture, Heriot-Watt University Research Staff Symposium, Edinburgh, UK, February 9, 2010
144. "Optical Interconnects to Chips," Danish-Californian Workshop on Photonic Technologies for Access and Interconnects, Stanford University, January 29, 2010
143. "Photonics for Interconnects Inside Machines," IEEE Photonics Society Winter Topical Meeting on Photonics for Routing and Interconnects, Majorca, Spain, January 13, 2010
142. "Limits and Opportunities for Optical Links and Short Distances," Multi Terabit Optical Link Workshop, Corning, New York, December 15, 2009
141. "Devices and Device Requirements for Optical Interconnects to Silicon," IEICE Si Photonics Symposium, University of Tokyo, Tokyo, Japan, November 18, 2009

140. "Nanometallic antennas, waveguides, and enhanced photodetection," DSRC Workshop on Nanoantennas, Arlington, October 2009
139. "Fundamental Limit to Optical Devices," OSA Topical Meeting on Computational Optical Sensing and Imaging,, San Jose, CA, October 2009, Paper CTuC1
138. "Device Requirements for Dense Interconnects," IEEE Photonics Society Annual Meeting, Antalya, Turkey, October 2009
137. "Quantum Mechanics for Engineers," IEEE Photonics Society Annual Meeting, Antalya, Turkey, October 2009
136. "Compact and Low-Energy Devices for Optical Interconnects to Chips," International Nano-Optoelectronics Workshop (iNOW) 2009, Stockholm and Berlin, August, 2009
135. "Germanium quantum wells and nanometallic enhanced detection for interconnects," CLEO'09, Baltimore, MD, June 2009
134. "Limits to Dispersive and Slow Light Devices," Progress in Quantum Electronics, Snowbird UT, January 2009
133. "Ge Quantum Well Modulators on Silicon," Symposium E15 – 23, SiGe, Ge, and Related Compounds: Materials, Processing, and Devices Pacific Rim Meeting on Electrochemical and Solid-State Science (PRIME), Electrochemical Society (ECS), Honolulu, HI, October 2008, Abstract 2469
132. "Novel Devices for Optical Interconnects to Chips," LEOS 2008, 21<sup>st</sup> Annual Lasers and Electro Optics Society Meeting, Newport Beach, CA, November 2008, Paper MN1
131. "Optical Interconnects," Interconnection Networks Workshop 2008 (Institute for Advanced Architectures and Algorithms), San Jose, 2008
130. "Fundamental Limits in Linear One-Dimensional Slow Light Structures," OSA Conference on Slow and Fast Light, Boston, July 2007
129. "Fundamental Limits to Optical Components," ICO-21 2008 Congress, Sydney Australia, July 2008
128. "Devices for Optical Interconnects to Chips," (Invited Tutorial) OECC 08, Sydney, Australia, July 2008
127. "Device requirements for optical interconnects and logic," Workshop on Optical and Electronic Signal Processing, OECC 08, Sydney, Australia, July 2008
126. "Germanium on Silicon Modulators and Nanometallic-Enhanced Detectors for Optical Interconnects," International Interconnect Technology Conference, Burlingame, CA, June 2008 (Paper 12.1)
125. "Challenges and Opportunities for Dense Optical Interconnect Devices," (Plenary talk) 19<sup>th</sup> Annual Workshop on Interconnections Within High Speed Digital Systems, Santa Fe, New Mexico, May 2008
124. "Photonics and Information Processing," Solvay Workshop on "Bits, Quanta and Complex Systems," Brussels, May 2008
123. "Joining Electrons and Photons – Optics to the Silicon Chip?" Photonics – A Celebration, University of St. Andrews, April 2008
122. "Optically-Assisted Analog-to-Digital Conversion," International Solid State Circuits Conference, San Francisco, February 2008

121. "Germanium on Silicon Modulators and Nanometallic-Enhanced Detectors for Optical Interconnects," MRS Fall Meeting, Boston, November 2007, Paper M2.1
120. "Integrated transform-domain spectrometers and tunable sensors," MRS Fall Meeting, Boston, November 2007, Paper N2.1
119. "Moving from industry to academia – out of the frying pan into the fire?" IEEE LEOS Annual Meeting, Lake Buena Vista, Florida, October 2007
118. "Joining optics and electronics for information processing and communication," IEEE LEOS Annual Meeting, Lake Buena Vista, Florida, October 2007, Paper WP2
117. "Device for optical interconnects to chips," (Invited tutorial) OSA Annual Meeting "Frontiers in Optics" 2007, San Jose, CA, Sept. 2007, Paper FThH1
116. "Germanium quantum well devices on silicon," OSA Topical Meeting on Integrated Photonics and Nanophotonics Research and Applications, Salt Lake City, July 10, 2007, Paper ITuE1
115. "Rationale and Devices for Optical Interconnects to Chips," and "Nanoscience and Nanotechnology for Advanced Interconnect Devices," Erasmus Mundus Photonics Masters Summer School, St. Andrews, UK, July 2007
114. "Directions in Photonics," 10th Annual Boston University Photonics Center Symposium, Boston, June 8, 2007
113. "Nanostructured Optics and Optoelectronics for Dense Optical Interconnects," Conference on Lasers and Electro-Optics, Baltimore, Maryland, May 2007
112. "Recent Advances in Germanium Quantum Well Structures -- A New Modulation Mechanism for Silicon-Compatible Optics," Tutorial Invited Talk, Optical Fibers Conference, Anaheim California, March 27, 2007.
111. "Ge/SiGe and Nanophotonic Structures for Optics to the Chip," NSF Workshop on "Very Large Scale Photonic Integration," Arlington, Virginia, March 19, 2007
110. "Silicon Photonics – Optics to the Chip at Last?" Asia-Pacific Optical Communications Conference, Gwangju, Korea, 3 – 7 Sept. 2006
109. "Nanostructured optics and optoelectronics for dense interconnects," (Plenary Talk) IEEE Nano 2006, Cincinnati, Ohio, July 18, 2006
108. "Nanostructured Optics and Optoelectronics for Dense Optical Interconnects," Invited talk at Cornell Nanophotonics Symposium "Nanophotonics – from Discovery to Systems", Cornell University, July 7, 2006
107. "Silicon Photonics – Optics to the Chip at Last?" Future Trends in Microelectronics, 2006, Heraklion, Crete, June 2006
106. "Optical Interconnection to Silicon Electronics," Communications Technology Roadmap 2006 Industry Consortium Spring Meeting, MIT, Cambridge, Massachusetts, May 19, 2006
105. "Integration of Nanophotonics with CMOS," MITRE Nanophotonics Workshop, 14 – 15 Feb. 2006, McLean VA
104. "Novel Optics and Optoelectronics for Future Electronic Chips," DARPA/MTO Electronics Symposium, San Francisco, CA, Jan. 11 – 13 2006
103. "Opportunities for Optics to Silicon Chips," 18<sup>th</sup> Annual Meeting of the IEEE Lasers and Electro-Optics Society, LEOS 2005, 23 – 27 October, 2005, Sydney, Australia

102. D. A. B. Miller, M. Gerken, Yang Jiao, and Shanhui Fan, "Optimized Non-Periodic Photonic Nanostructures as Wavelength and Mode Splitters," International Quantum Electronics Conference, Tokyo, Japan, July 1005
101. "Limits to Photonics for Information," OSA Topical Meeting on Information Photonics, Charlotte, North Carolina, June, 2005
100. "Directions in Photonics – Joining Electronics and Optics?," Scottish Universities Physics Alliance Inaugural Meeting, Heriot-Watt University, Edinburgh, UK, April 2005
99. D. A. B. Miller, A. Bhatnagar, S. Palermo, A. Emami-Neyestanak, and M. A. Horowitz, "Opportunities for Optics in Integrated Circuits Applications," ISSCC 2005, Talk 4.6, San Francisco, Feb. 7, 2005
98. "New Directions in Optics for Networks," Keynote talk, NSF Workshop on "The Future of Optical Communications: Understanding the Choices," Santa Barbara, CA, Feb. 2, 2005.
97. "Directions in Photonics," Plenary talk, 2004 DARPA MTO Photonics Symposium, San Francisco, CA, Nov. 30, 2004
96. "Optics at the Chip Scale," 2004 FiO/LS Meeting (OSA Annual Meeting) Rochester, New York, October 10-14, 2004 (Paper FThM1)
95. "Optical Interconnects and Clock Distribution for CMOS Systems," IEEE LEOS Workshop on Interconnections within High Speed Digital Systems," Santa Fe, New Mexico, May 2 – 5, 2004
94. "Optics Inside Electronic Machines?" (Plenary Talk) Optics in Computing Conference, Engelberg, Switzerland, April 19 – 21, 2004
93. "Integrated Photonics Inside the Computer?" Integrated Photonics Research Conference, Washington DC, June 16 – 19, 2003
92. "Optical Interconnects," AVS 4<sup>th</sup> International Conference on Microelectronics and Interfaces, Santa Clara, California, March 3 - 6, 2003
91. "Dense Integration of Optics, Optoelectronics and Electronics," PhoPack 2002, Stanford, California, July 14-16, 2002
90. "Clock Distribution Based On Free Space Optical Interconnects," Optical Interconnect Workshop, Semiconductor Research Corporation, Seattle, Washington, July 12, 2002
89. "Optical Interconnects to Silicon CMOS," 2002 International Interconnect Technology Conference, San Francisco, June 3-5, 2002 (IEEE Electron Devices Society), Paper 4.5, pp95-96
88. "Ultrafast Optoelectronic Switching for Telecommunications," 13<sup>th</sup> International Conference on Ultrafast Phenomena, May 12-17, 2002, Vancouver, Canada, Paper TuB1, p154 (OSA, Washington, 2002)
87. "Photonic Analog to Digital Converter Using Ultrafast Photoconductors," IEEE LEOS Annual Meeting, La Jolla, California, November 11-15, 2001, Paper Tu02, pp251-252
86. "Optical Interconnects to Silicon CMOS," Device Research Conference, South Bend, Indiana (June 2001)
85. "Ultrafast Technology for Optical Interconnects," OSA Annual Meeting, Providence, Rhode Island, (October 2000)
84. "Optical Interconnects to Silicon Integrated Circuits," SPIE Annual Meeting, San Diego, California (August 2000)

83. "Motivations for Optical Interconnects to Silicon Chips," Optics in Computing, Quebec City, Canada (June 2000)
82. "Optical Interconnects to Silicon Integrated Circuits," Third MEL-ARI OPTO Workshop, Athens, Greece (October 1999).
81. "Optical Interconnects to Silicon Integrated Circuits," (Plenary talk) U.K. Quantum Electronics Conference, Manchester, UK (September 1999)
80. "Optical Interconnects," SRC/MARCO/SEMATECH Workshop in Interconnects for Systems on a Chip – Projected Performance and Technology Requirements, Stanford University (May 1999).
79. "Optics for Interconnection at the Chip Level," DARPA/OIDA Initiative in Information Technology Workshop, Santa Fe (May 1999).
78. "Optics - an Alternative Approach to Interconnection?," MRS Spring Meeting, San Francisco (April 1998).
77. "Dense Two-Dimensional Integration of Optoelectronics and Electronics for Interconnections," presented at the Critical Reviews Conference of SPIE's Symp. on Photonics West, Optoelectronics '98, San Jose, CA (January 24-30, 1998). Published in Heterogeneous Integration: Systems on a Chip: A Critical Review, Eds: M. Fallahi and A. Husain, Vol. CR70, 80-109 (SPIE, 1998).
76. "Optics in Computing", Plenary Talk, International Topical Workshop on Contemporary Photonic Technologies (CPT'98), Tokyo, Japan (January 12-14, 1998)
75. "Optical Interconnect Technologies for Si ULSI," Presented at the IEEE International Electron Devices Meeting, Washington, D. C. (December 7-10, 1997)
74. "Highly Parallel Optical Interconnection to Silicon Integrated Systems," Invited talk at the Second NASA Device Modeling Workshop, Moffett Field, CA (August 7-8, 1997).
73. "How Large a System Can We Build Without Using Optics?" Invited talk at the Eighth Annual Workshop on Interconnections Within High-Speed Digital Systems," IEEE, Santa Fe, New Mexico (May 11-14, 1997).
72. "Quantum Well Optoelectronics: Physics to Applications," Invited talk at the Symposium on Nanostructured Materials: Clusters, Composites, and Thin Films," 213<sup>th</sup> American Chemical Society Meeting, San Francisco (April 13-17, 1997).
71. "Optical Bistability and Optoelectronic Computing" Invited talk at the Royal Society Symposium, Edinburgh (March 27, 1997).
70. "Photonics in Interconnects for Digital Information Processing," Invited talk at the Interuniversity Symposium entitled Photonics in the Information Society, Ghent, Belgium (February 28, 1997).
69. "Advanced Optoelectronics: Physics Enabling Applications," Invited talk at the 50<sup>th</sup> Anniversary Celebration of Applied and Engineering Physics entitled Challenges and Opportunities for the 21<sup>st</sup> Century, Cornell University, Ithaca, NY (September 21, 1997).
68. "Physical and Systems Motivations for Smart Pixels," IEEE LEOS Topical Meeting on Smart Pixels, Keystone, Colorado, August 1996.
67. "Quantum Well Optoelectronics - Physics to Applications," IQEC '96, Sydney, Australia, July 1996 (Plenary talk).

66. "Advanced Optoelectronic Technology - How to Handle Bandwidth," 40<sup>th</sup> International Conference on Electron, Ion and Photon Beams and Nanofabrication, Atlanta, Georgia, May 1996 (Plenary talk).
65. "Hybrid SEED - Massively Parallel Optical Interconnections for Silicon ICs," Second International Conference on Massively Parallel Processing using Optical Interconnections (MPPOI'96), San Antonio, Texas, October 1995.
64. "Optics in Computing," International Workshop on "Future Information Processing Technologies," Porvoo, Finland, September 1995.
63. "Hybrid quantum well diodes on silicon: an emerging technology for dense optical interconnections," Workshop on the Impact of Photonics on Distributed Computing and Multiprocessor Computing, Stanford, March 1995.
62. "Modulation and Switching Devices," American Physical Society March Meeting, San Jose, March 1995.
61. "Future Directions in "Smart" Quantum Well Spatial Light Modulators and Processing Arrays," OSA Topical Meetings on Spatial Light Modulators and Optical Computing, Salt Lake City, Utah, March 1995.
60. "Ultrafast Science, Technology, and Applications," International Workshop on Femtosecond Technology, Tsukuba, Japan, February 1995.
59. "Quantum well smart pixels for optical switching and processing," International Conference on Optical Computing, Edinburgh, August 1994.
58. "Can We Use the Benefits of Photons in Digital Information Processing?" ARPA DSRC Workshop on Fundamental Limits in Optoelectronic Devices, La Jolla, July 1994.
57. "Quantum Well Devices for Parallel Optical Processing," 16th Congress of the International Commission for Optics, Budapest, Hungary, August 1993.
56. "Optical Information Processing Using Quantum Well Optoelectronic Devices," International Conference on Optical Information Processing, St. Petersburg, Russia, August 1993.
55. "Ultrafast Optoelectronic Phenomena with Quantum Wells" Workshop on "Novel Coherent Solid State Effects," Aachen, June 1993.
54. "The Future of Optics in Information Processing," Walter Schottky Lecture, Aachen, June 1993.
53. "Applications and Technology of Quantum Well Self-Electrooptic-Effect Device Arrays," OSA Topical Meeting on Spatial Light Modulators, Palm Springs, March 1993.
52. "Quantum Well Self-Electrooptic Effect Device Arrays and Smart Pixels: Devices and System Requirements," MRS Spring Meeting, April 1992, San Francisco, California.
51. "Quantum Well Optical Switching Devices and Smart Pixels," 22nd Winter Colloquium on Quantum Electronics, Snowbird, Utah, January 1992.
50. "The Evolution from SEEDs to Smart Pixels," Annual Meeting of the Optical Society of America (OSA '91), San Jose, November 1, 1991.
49. "Quantum Well Devices for Digital Optical Processing" Third Annual Photonics Overview, State University of New York, Binghamton, New York, April 1991.
48. "Materials for Optical Switching and Processing" American Physical Society March Meeting, Cincinnati, March 1991.

47. "Quantum Wells for Optical Logic and Interconnection" SPIE OE/Boston '90, Symposium on Advances in Interconnects and Packaging, Boston, November 1990.
46. "Quantum Well Self-Electro-optic Effect Devices for Information Processing" Topical Meeting on Spatial Light Modulators, Lake Tahoe, Nevada, September 1990.
45. "Physics of Digital Optical Devices" DARPA Workshop on Optical Computing, La Jolla, California, July 1990.
44. "Quantum Well Devices for Digital Optics" Nonlinear Optics: Materials, Phenomena and Devices, Kauai, Hawaii, July 1990.
43. "SEED Devices and the Physics of Optical Communications" Workshop on Interconnections within High Speed Digital Systems, Santa Fe, New Mexico, May 1990.
42. "Device Requirements for Digital Optical Processing" OE-LASE '90, Digital Optical Computing (Critical Reviews), Los Angeles, January 1990.
41. "Devices for Digital Optical Processing" Annual Meeting of the IEEE Lasers and Electro-optics Society (LEOS '89), Orlando, Florida, October 1989.
40. "Progress in Physics of Quantum Well Optical Modulators and Switches" Conference on Lasers and Electro-Optics (CLEO '89) and Conference on Quantum Electronics and Laser Science (QELS '89), Baltimore, Maryland, April 1989.
39. "Quantum Well Devices for Optical Computing and Switching" Topical Meetings on Optical Computing and on Photonic Switching, Salt Lake City, Utah, March 1989.
38. "Physics and Applications of Quantum Wells in Optics" Integrated and Guided Wave Optics, Houston, Texas, February 1989.
37. "Integrated Quantum Well Switching Devices" NATO Workshop on Optical Switching in Low-Dimensional Systems, Marbella, Spain, October 1988.
36. "Quantum Well and Microstructure Optical Devices" 15th International Symposium on Gallium Arsenide and Related Compounds, Atlanta, September 1988.
35. "Self Electro-optic Effect Devices for Optical Processing Applications" XVI International Quantum Electronics Conference (IQEC '88), Tokyo, Japan, July 1988.
34. "Quantum Well Optical Devices" OPTICS-ECOOSA '88, Birmingham, U.K., March 1988.
33. "Quantum Well Self Electro-optic Effect Devices" SPIE O-E LASE '88, Los Angeles, January 1988.
32. "Novel Quantum Well Optoelectronic Devices" Eighth U. K. National Quantum Electronics Conference, St. Andrews, U. K. September 1987.
31. "Novel Quantum Well Optical Devices" Third International Conference on Superlattices, Microstructures and Microdevices, Chicago, August 1987.
30. "Excitonic Electroabsorption in Quantum Wells and Bulk Semiconductors" XV International Quantum Electronics Conference (IQEC'87), Baltimore, Maryland, April 1987.
29. "Non-Linear Optics and Electro-Optics of Quantum Wells" New York State Section, American Physical Society, Spring Meeting, "Thin Films and Microelectronics," Briarcliff Manor, New York, April 1987.
28. "Electroabsorption in Quantum Wells" SPIE Conference on Advances in Semiconductors and Semiconductor Structures, Panama City, Florida, March 1987.
27. "Photonic Switching Devices Based on Multiple Quantum Well Structures" Optical Society of America Topical Meeting on Photonic Switching, Lake Tahoe, Nevada, March 1987.

26. "Electric Field Dependence of Optical Absorption in Quantum Wells" American Physical Society March Meeting, New York, March 1987.
25. "Optical Nonlinearities in Multiple Quantum Well Structures" Institute of Physics Solid State Physics Conference, Imperial College, London, December 1986.
24. "Ultrathin Semiconductors" 24th Annual Briefing, "New Horizons in Science," Council for the Advancement of Science Writing, Inc., College Station, Texas, November 1986.
23. "Quantum Well Self-Electrooptic Effect Devices" Optical Society of America Annual Meeting, Seattle, Washington, October 1986.
22. "Optical Nonlinearities in Low-Dimensional Structures" Nato Advanced Research Workshop on Optical Properties of Narrow Gap Low Dimensional Structures, St. Andrews, UK, July 1986.
21. "Electro-optic Effects in Multiple Quantum Well Structures" Ettore Majorana Centre for Scientific Culture, International School of Materials Science and Technology, 11th Course: Electro-optic and Photorefractive Materials, Erice, Sicily, July 1986.
20. "Physics and Applications of Quantum Wells in Optics" 30th International Symposium on Electron, Ion and Photon Beams (plenary paper), Boston, Massachusetts, May 1986.
19. "Recent Developments in Quantum Well Electroabsorption" NSF Workshop on Optical Nonlinearities, Fast Phenomena and Signal Processing, Tucson, Arizona, May 1986.
18. "Physics and Applications of Electroabsorption in Quantum Wells" Symposium on "Digital Optics - The Logical Choice for the Future," The Rank Prize Funds, Malvern, UK, April 1986.
17. "Physics and Applications of Electroabsorption in Quantum Wells" Symposium on Heterostructures and New III-V Devices, American Vacuum Society, Princeton, New Jersey, March 1986.
16. "Physics and Applications of Room-Temperature Excitonic Electroabsorption in Quantum Wells" Annual Meeting of the Optical Society of America, Washington, D. C., October 1985.
15. "Novel Optical Modulators and Bistable Devices Using the Self Electro-optic Effect in Semiconductor Quantum Wells" Second International Conference on Modulated Semiconductor Structures and Sixth Conference of the Electronic Properties of Two Dimensional Systems (plenary joint session), Kyoto, Japan, September 1985.
14. "Room Temperature Excitons-Physics and Applications" Gordon Conference on Nonlinear Optics and Lasers, Wolfeboro, New Hampshire, July-August 1985.
13. "Quantum-Confined Stark Effect and Applications to Self-Electrooptic Effect Devices" Conference on Lasers and Electrooptics, Baltimore, Maryland, May 1985.
12. "Optical Logic and the Self Electro-Optic Effect Device (SEED)" GLOBECOM '84, IEEE Global Telecommunications Conference, Atlanta, Georgia, November 1984.
11. "Band Edge Electroabsorption in GaAs/AlGaAs Multiple Quantum Well Structures for Fields Parallel and Perpendicular to the Layers" with D. S. Chemla, T. C. Damen, A. C. Gossard, W. Wiegmann, T. H. Wood and C. A. Burrus, International Conference on Superlattices, Microstructures and Microdevices, Champaign, Illinois, August 1984.
10. "Multiple Quantum Well Nonlinearities for Optical Processing Applications" Conference on Lasers and Electro-Optics, Anaheim, California, 1984.
9. "Optical Bistability" Gordon Conference on "Holography and Optical Information Processing," Plymouth, New Hampshire, 1984.

8. "Multiple Quantum Well Nonlinearities and Applications" Royal Society Meeting for Discussion on "Optical Bistability, Dynamical Nonlinearity and Photonic Logic," London, UK, 1983.
7. "Room Temperature Optical Nonlinearities in GaAs Multiple Quantum Wells" with D. S. Chemla, A. C. Gossard and P. W. Smith, Topical Meeting on Optical Bistability, Rochester, New York, 1983.
6. "Resonant Room-Temperature Nonlinear Optical Processes in GaAs-GaAlAs Multiple Quantum Well Structures" with D. S. Chemla, P. W. Smith and A. C. Gossard Conference on Laser and Electrooptics, Baltimore, Maryland, 1983.
5. "Bistable Optical Devices: Physical Processes and Practical Applications" Conference on Lasers and Electrooptics, Phoenix, Arizona, 1982.
4. "Optical Bistability in Semiconductors" Fifth National Quantum Electronics Conference, Hull, UK, 1981.
3. "Optical Bistability" Fifth General Conference of the European Physical Society, Istanbul, Turkey, 1981.
2. "Phase Conjugation" Topical Meeting on Phase Conjugation, London, UK 1980.
1. "Optical Bistability and Multistability in the Semiconductor InSb," with S. D. Smith and C. T. Seaton Optical Bistability Conference, Asheville, USA, 1980.

Note: This list of invited talks does not include all seminars at Universities, which were not generally tracked in early years.

## CONFERENCE INVITED TALKS - CO-AUTHOR

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17. S. SeyedinNavadeh, A. I. M. Rojas, A. di Tria, E. Sacchi, F. Zanetto, G. Ferrari, M. Sampietro, D. A. B. Miller, A. Melloni, and F. Morichetti, "[Integrated Photonic Processors for Optical Free-Space Links](https://doi.org/10.1364/OFC.2024.M4J.3)," in *Optical Fiber Communication Conference (OFC) 2024*, Technical Digest Series (Optica Publishing Group, 2024), paper M4J.3 <https://doi.org/10.1364/OFC.2024.M4J.3>
16. A. Melloni, A. Martinez, G. Cavicchioli, S. Seyedinnavadeh, F. Zanetto, D.A.B. Miller and F. Morichetti, "[Programmable photonics for free space optics communications and computing](https://doi.org/10.1109/IPC57732.2023.10360776)," 2023 IEEE Photonics Conference (IPC), Orlando, FL, USA, 2023, pp. 1-2, doi: 10.1109/IPC57732.2023.10360776
15. M. Milanizadeh, T. Jonuzi, P. Borga, F. Toso, G. Ferrari, M. Sampietro, D.A.B. Miller, A. Melloni, and F. Morichetti, "Control of programmable photonic integrated meshes for free-space optics applications," OSA Advanced Photonics Congress (virtual event), July 14, 2020, Paper PsM2F.1 <https://doi.org/10.1364/PSC.2020.PsM2F.1>
14. F. Morichetti, F. Toso, F. Zanetto, G. Ferrari, M. Sampietro, A. Melloni, and D. A. B. Miller "Dynamically controlling optical beams with programmable silicon photonic meshes (Conference Presentation)", Proc. SPIE 11283, Integrated Optics: Devices, Materials, and Technologies XXIV, 1128310 (10 March 2020); <https://doi.org/10.1117/12.2550397>
13. S. E. Claussen, Ross Audet, Elizabeth Edwards, Shen Ren, Rebecca Schaevitz, Emel Tasyurek, Yiwen Rong, J. Roth, O. Fidaner, Yu-Hsuan Kuo, T. Kamins, J. Harris, and D. A.B. Miller, "High Performance Ge Quantum Well Modulators," Optoelectronic Interconnects and Component Integration X, Conference 7607, SPIE Photonics West, San Francisco, CA, January 25, 2010, Paper 7607-05
12. J. E. Roth, O. Fidaner, R. K. Schaevitz, E. H. Edwards, Y.-H. Kuo, T. I. Kamins, J. S. Harris, Jr., and D. A. B. Miller, "The Quantum Confined Stark Effect in Ge/SiGe Quantum Wells: An efficient electroabsorption mechanism for silicon-based photonics," 4<sup>th</sup> International Conference on Group IV Photonics, Tokyo, Japan, September 2007, Paper ThA1
11. J. S. Harris, Y.-H. Kuo, and D. A. B. Miller, "Ge/SiGe Quantum Confined Stark Effect Modulators on Silicon," SiGe Technology and Device Meeting, 2006, Princeton, NJ, 15 -17 May 2006, Paper 3.1
10. A. Bhatnagar, and D. A. B. Miller, "Optical Interconnection and Clocking for Electronic Chips", Silicon Microphotonics Invited Session (0000128), The 8th World Multiconference on Systemics, Cybernetics and Informatics, Orlando, FL, July 19th, 2004 (Invited Conference Paper and Talk)
9. M. Gerken and D. A. B. Miller, "Multilayer thin-film coatings for optical communication systems," OSA Topical Meeting on Optical Interference Coatings 2004, Tucson, AZ (June 27-July 02, 2004). Invited Paper ThD2. Poster ThF2.
8. A. Bhatnagar, C. Debaes, H. Thienpont, and D. A. B. Miller, "Receiverless detection schemes for optical clock distribution," Quantum Sensing and Nanophotonic Devices, 25-29 Jan. 2004, San Jose, CA, USA
7. "Quantum Wells to Quantum Dots: Physics and Prospects" D. S. Chemla, D. A. B. Miller and S. Schmitt-Rink, Conference on Lasers and Electro-optics, Anaheim, April 1988.
6. P. W. Smith, D. A. B. Miller and D. J. Eilenberger, "Passive Mode Locking of Semiconductor Laser Diodes" XIII International Quantum Electronics Conference, Anaheim, California, 1984.

5. D. S. Chemla, D. A. B. Miller and P. W. Smith, "Nonlinear Optics in Multiple Quantum Well Materials Grown by MBE" Gordon Research Conference on Nonlinear Optics and Lasers, Wolfeboro, New Hampshire, 1983.
4. D. S. Chemla, D. A. B. Miller, P. W. Smith and A. C. Gossard, "Optical Nonlinearities of Room Temperature Excitons in GaAs/GaAlAs Multiple Quantum Well Structures" Annual Meeting of the Optical Society of America, New Orleans, Louisiana, 1983.
3. A. Miller and D. A. B. Miller, "Dynamic Nonlinear Optics in Semiconductors" XII International Quantum Electronics Conference, Munich, West Germany, 1982.
2. S. D. Smith and D. A. B. Miller, "Optical Bistability and Transphaser Action Using Semiconductor Materials" XV International Conference on the Physics of Semiconductors, Kyoto, Japan, 1980.
1. S. D. Smith and D. A. B. Miller, "Giant Third-Order Nonlinearities in Semiconductors and Application in Bistability, Transphaser Action and Phase Conjugation" XI International Quantum Electronic Conference, Boston, Massachusetts, 1980.

## CONTRIBUTED CONFERENCE PAPERS

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174. Dan Sirbu, Ruslan Belikov, Kevin Fogarty, Carson Valdez, Zhanghao Sun, Annie Kroo, Olav Solgaard, David A. B. Miller, Olivier Guyon, "[AstroPIC: near-infrared photonic integrated circuit coronagraph architecture for the Habitable Worlds Observatory](https://doi.org/10.1117/12.3020518)," Proc. SPIE 13092, Space Telescopes and Instrumentation 2024: Optical, Infrared, and Millimeter Wave, 130921T (23 August 2024); <https://doi.org/10.1117/12.3020518>
173. Charles Roques-Carmes, Shanhui Fan, and David A. B. Miller, "[Measuring and processing partially coherent light with self-configuring optics](https://doi.org/10.1364/CLEO.2024.Th4Q.5)," CLEO 2024, Charlotte, North Carolina, USA, May 2024, paper STh4Q.5
172. G. Cavicchioli, D. A. B. Miller, N. Engheta, A. Melloni, and F. Morichetti, "[Programmable integrated photonic circuit for matrix inversion](https://doi.org/10.1364/OFC.2024.Th1A.2)," in Optical Fiber Communication Conference (OFC) 2024, San Diego, March 2024, Technical Digest Series (Optica Publishing Group, 2024), paper Th1A.2. <https://doi.org/10.1364/OFC.2024.Th1A.2>
171. G. Cavicchioli, A. Melloni, D. A. B. Miller, N. Engheta, and F. Morichetti, "[Programmable Photonic Architecture Solving Systems of Ordinary Differential Equations](https://doi.org/10.1109/PSC57974.2023.10297288)," in *2023 International Conference on Photonics in Switching and Computing (PSC)*, Sep. 2023, pp. 1-3. <https://doi.org/10.1109/PSC57974.2023.10297288>.
170. G. Gradoni, D. A. B. Miller, and S. C. Creagh, "[Electromagnetic Information Theory in Phase-Space: A Quantum Tunnelling Approach](https://doi.org/10.1109/VTC2023-Spring57618.2023.10200598)," in *2023 IEEE 97th Vehicular Technology Conference (VTC2023-Spring)* (2023), Florence, Italy, 20-23 June 2023, pp. 1-2. <https://doi.org/10.1109/VTC2023-Spring57618.2023.10200598>
169. A. Boldin, R. E. Alsaigh, M. Milanizadeh, C. Klitis, F. Toso, N. Fontaine, A. Melloni, G. Ferrari, M. Sorel, D. A. Miller, F. Morichetti, and M. P. J. Lavery, "[Robust High-Order Free-Space Mode Sorting Enabled by a Software Defined Photonic Mesh](https://doi.org/10.1364/CLEOPR.2022.CWP13A_01)," in *Proceedings of the 2022 Conference on Lasers and Electro-Optics Pacific Rim*, Technical Digest Series (Optica Publishing Group, 2022), paper CWP13A\_01. [https://doi.org/10.1364/CLEOPR.2022.CWP13A\\_01](https://doi.org/10.1364/CLEOPR.2022.CWP13A_01)
168. SeyedMohammad SeyedinNavadeh, Maziyar Milanizadeh, Francesco Zanetto, Vittorio Grimaldi, Christian De Vita, Giorgio Ferrari, David A.B. Miller, Andrea Melloni, Francesco Morichetti, "[Automatic setting of multiple FSO orthogonal communication channels between photonic chips](https://opg.optica.org/abstract.cfm?uri=OFC-2023-M3C2)," OFC 2023, San Diego, March 6, 2023, Paper M3C2 <https://opg.optica.org/abstract.cfm?uri=OFC-2023-M3C2>
167. M. Milanizadeh, S. SeyedinNavadeh, F. Zanetto, V. Grimaldi, C. De Vita, G. Ferrari, D. A. B. Miller, A. Melloni, and F. Morichetti, "[Establishing Multiple Chip-to-Chip Orthogonal Free-Space Optical Channels using Programmable Silicon Photonics Meshes](https://doi.org/10.1109/SUM53465.2022.9858129)," in *2022 IEEE Photonics Society Summer Topicals Meeting Series (SUM)* (2022), 11-13 July 2022, Cabo San Lucas, Mexico, pp. 1-2. <https://doi.org/10.1109/SUM53465.2022.9858129>.
166. SeyedMohammad SeyedinNavadeh, Maziyar Milanizadeh, Francesco Zanetto, Vittorio Grimaldi, Christian De Vita, Giorgio Ferrari, David A. B. Miller, Andrea Melloni, and Francesco Morichetti, "[Multi-channel free-space optical communication between self-configuring silicon photonics meshes](https://www.ecio-conference.org/2022-proceedings/)," 23rd European Conference on Integrated Optics, Milano, Italy, 4 - 6 May 2022 (<https://www.ecio-conference.org/2022-proceedings/>), Paper F.E.2
165. S. Pai, T. Park, B. Penkovsky, M. Milanizadeh, M. Ball, M. Dubrovsky, N. Abebe, F. Morichetti, A. Melloni, O. Solgaard, and D. A. B. Miller, "[LightHash: Experimental Evaluation of a Photonic Cryptocurrency](https://doi.org/10.1364/CLEO_SI.2022.SF2K.2)," in *Conference on Lasers and Electro-Optics*, Technical Digest Series (Optica Publishing Group, 2022), paper SF2K.2. [https://doi.org/10.1364/CLEO\\_SI.2022.SF2K.2](https://doi.org/10.1364/CLEO_SI.2022.SF2K.2)

164. S. Pai, T. W. Hughes, T. Park, B. Bartlett, I. Williamson, M. Minkov, M. Milanizadeh, N. Abebe, F. Morichetti, A. Melloni, O. Solgaard, S. Fan, and D. A. B. Miller, "[Inference and Gradient Measurement for Backpropagation in Photonic Neural Networks](https://doi.org/10.1364/CLEO_SI.2022.STh5G.2)," in *Conference on Lasers and Electro-Optics*, Technical Digest Series (Optica Publishing Group, 2022), paper STh5G.2. [https://doi.org/10.1364/CLEO\\_SI.2022.STh5G.2](https://doi.org/10.1364/CLEO_SI.2022.STh5G.2)
163. K. Y. Yang, A. D. White, F. Ashtiani, C. Shirpurkar, S. V. Pericherla, L. Chang, H. Song, K. Zou, H. Zhou, K. Pang, J. Yang, M. A. Guidry, D. M. Lukin, H. Hao, L. Trask, G. H. Ahn, A. Netherton, T. C. Briles, J. R. Stone, L. Rechtman, J. S. Stone, K. Van Gasse, J. L. Skarda, L. Su, D. Vercruysse, J. P. W. MacLean, S. Aghaeimeibodi, M. - Li, D. A. B. Miller, D. M. Marom, S. B. Papp, A. E. Willner, J. E. Bowers, P. J. Delfyett, F. Aflatouni, and J. Vučković, "[Inverse-designed multi-wavelength, multi-mode optical interconnects using soliton microcombs](https://doi.org/10.1364/CLEO_SI.2022.STh4F.2)," in *Conference on Lasers and Electro-Optics*, Technical Digest Series (Optica Publishing Group, 2022), paper STh4F.2. [https://doi.org/10.1364/CLEO\\_SI.2022.STh4F.2](https://doi.org/10.1364/CLEO_SI.2022.STh4F.2)
162. Seyed Mohammad Seyedin Navadeh, Maziyar Milanizadeh, Giorgia Benci, Christian De Vita, Charalambos Klitis, Marc Sorel, Francesco Zanetto, Giorgio Ferrari, David A.B. Miller, Andrea Melloni, and Francesco Morichetti, "[Self-Configuring Silicon-Photonic Receiver for Multimode Free Space Channels](https://doi.org/10.1109/SUM48717.2021.9505891)," 2021 IEEE Group IV Photonics Conference (GFP2021) (virtual conference) Dec. 7, 2021, Paper TuE2
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51. [Patent #6,097,519](#) "Fiber optic network using space and wavelength multiplexed data channel arrays," Joseph E. Ford, Wayne H. Knox, Ashok V. Krishnamoorthy, David A. B. Miller, Martin C. Nuss (August 1, 2000)
50. [Patent #6,023,361](#) "Fiber optic network using space and wavelength multiplexed data channel arrays," Joseph E. Ford, Wayne H. Knox, Ashok V. Krishnamoorthy, David A. B. Miller, Martin C. Nuss (February 8, 2000)
49. [Patent #5,912,751](#) "Fiber optic network using space and wavelength multiplexed data channel arrays," Joseph E. Ford, Wayne H. Knox, Ashok V. Krishnamoorthy, David A. B. Miller, Martin C. Nuss (June 15, 1999)
48. [Patent #5,822,106](#) "Synchronization of Digital Systems Using Optical Pulses and Modulators," W. H. Knox and D. A. B. Miller (October 13, 1998).
47. [Patent #5,777,318](#) "Smart Pixel Array Using Single Diode for Detection and Modulation," A. V. Krishnamoorthy and D. A. B. Miller (July 7, 1998).
46. [Patent #5,757,992](#) "Fiber Optic Communication System and Method," D. A. B. Miller (May 26, 1998).
45. [Patent# 5,745,512](#) "Tunable lasers based on absorbers in standing waves," D. A. B. Miller (April 28, 1998)
44. [Patent #5,745,271](#) "Attenuation Device for Wavelength Multiplexed Optical Fiber Communications," J. E. Ford, D. A. B. Miller, M. C. Nuss, and J. A. Walker (April 28, 1998).

43. [Patent #5,726,787](#) "Apparatus and method for improving signal-to-noise ratio in wavelength division multiplexing soliton transmission systems," Hermann A. Haus, Wayne H. Knox, David A. B. Miller (March 10, 1998)
42. [Patent #5,646,395](#) "Differential Self-Electro-Optic Effect Device," David A. B. Miller (July 8, 1997).
41. [Patent #5,625,733](#) "Arrangement for interconnecting an optical fiber to an optical component," Nicholas J. Frigo, Keith W. Goossen, David A. B. Miller, James A. Walker (April 29, 1997)
40. [Patent #5,605,856](#) "Method for designing an electronic integrated circuit with optical inputs and outputs," Keith W. Goosen, Fouad E. Kiamilev, Ashok V. Krishnamoorthy, David A. B. Miller, James Walker, (February 25, 1997)
39. [Patent #5,526,155](#) "High-Density Optical Wavelength Division Multiplexing," Wayne H. Knox, David A. B. Miller, and Martin C. Nuss. (June 11, 1996).
38. [Patent #5,508,508](#) "Apparatus for Converting Optical Bipolar Signals to Optical Unipolar Signals," David A. B. Miller (April 16, 1996).
37. [Patent #5,498,863](#) "Wavelength-Sensitive Detectors Based on Absorbers in Standing Waves," David A. B. Miller (March 12, 1996).
36. [Patent #5,483,375](#) "Optical Ratio Amplifier," David A. B. Miller (January 9, 1996).
35. [Patent #5,483,186](#) "Push-Pull Optical Modulator Driver Circuit," David A. B. Miller and Ted K. Woodward (January 9, 1996).
34. [Patent #5,473,467](#) "Linear Optical Amplifier," David A. B. Miller (December 5, 1995).
33. [Patent #5,448,393](#) "Apparatus and Method for Referencing an Optical Receiver," Anthony L. Lentine and David A. B. Miller (September 5, 1995).
32. [Patent #5,389,779](#) "Method and Apparatus for Near-Field, Scanning, Optical Microscopy by Reflective, Optical Feedback," Robert E. Betzig, Igal M. Brener, Stephen G. Grubb, and David A. B. Miller (February 14, 1995).
31. [Patent #5,353,155](#) "Methods and Apparatus for Combining Arrays of Light Beams," David A. B. Miller (October 4, 1994).
30. [Patent #5,311,008](#) "Self-Electrooptic Effect Device For Providing Integer Gain to Input Optical Signals Having Series Connected Quantum Well Diodes," David A. B. Miller (May 10, 1994).
29. [Patent #5,288,990](#) "Differential Self-Electrooptic Effect Device," David A. B. Miller (February 22, 1994).
28. [Patent #5,237,577](#) "Monolithically Integrated Fabry-Perot Saturable Absorber," Ursula Keller and David A. B. Miller (August 17, 1993).
27. [Patent #5,233,184](#) "Matrix Addressed S-Seed Optical Modulator Array," Leo M. F. Chirovsky, Anthony L. Lentine, and David A. B. Miller (August 3, 1993).
26. [Patent #5,155,623](#) "Arrangement for Imaging Multiple Arrays of Light Beams," David A. B. Miller and Michael E. Prise (October 13, 1992).
25. [Patent #5,077,483](#) "Network Topology for Reduced Blocking and Photonic System Implementation Thereof," Thomas J. Cloonan, Stephen J. Hinterlong, Harvard S. Hinton, Frank K. Hwang, Jurgen Jahns, Jack L. Jewell, Anthony

- L. Lentine, Frederick B. McCormick, David A. B. Miller, Miles J. Murdocca, Michael E. Prise, and Gaylord W. Richards (December 31, 1991).
24. [Patent #5,047,810](#) "Optically Controlled Resonant Tunneling Electronic Devices," Daniel S. Chemla, David A. B. Miller, and Stephan Schmitt-Rink (September 10, 1991).
  23. [Patent #5,036,512](#) "Optical Apparatus for Combining Light Beam Arrays Having Different Wavelengths," Thomas J. Cloonan, Jack L. Jewell, Frederick B. McCormick, David A. B. Miller, and Michael E. Prise (July 30, 1991).
  22. [Patent #4,978,910](#) "Electrooptic Apparatus for the Measurement of Ultrashort Electrical Signals," Wayne H. Knox and David A. B. Miller (December 18, 1990).
  21. [Patent #4,978,842](#) "Programmable Optical Logic Device with Complementary Inputs," Harvard S. Hinton, Anthony L. Lentine, and David A. B. Miller (December 18, 1990).
  20. [Patent #4,967,068](#) "Single-Ended Optical Logic Arrangement," Anthony L. Lentine and David A. B. Miller (October 30, 1990).
  19. [Patent #4,959,534](#) "Differential Optical Logic Arrangement," Anthony L. Lentine and David A. B. Miller (September 25, 1990).
  18. [Patent #4,952,791](#) "Monolithic Apparatus Comprising Optically Interconnected Quantum Well Devices," Harvard S. Hinton, Anthony L. Lentine, and D. A. B. Miller (August 28, 1990).
  17. [Patent #4,914,286](#) "Method and Apparatus for Increasing the Processing Capacity of Optical Digital Processing Systems Having Optically Bistable Devices," Leo M. F. Chirovsky, Anthony L. Lentine, and David A. B. Miller (April 3, 1990).
  16. [Patent #4,904,859](#) "Self Electrooptic Effect Device Employing Asymmetric Quantum Wells," Keith W. Goossen and David A. B. Miller (February 27, 1990).
  15. [Patent #4,884,119](#) "Integrated Multiple Quantum Well Photonic and Electronic Devices," David A. B. Miller (November 28, 1989).
  14. [Patent #4,860,296](#) "Laser Controlled by a Multiple Layer Heterostructure," Daniel S. Chemla, David A. B. Miller, and Peter W. Smith (August 22, 1989).
  13. [Patent #4,822,992](#) "Wavelength Conversion Using Self Electrooptic Effect Devices," Israel Bar-Joseph, Daniel S. Chemla, and David A. B. Miller (April 18, 1989).
  12. [Patent #Re. 32,893](#) "Nonlinear and Bistable Optical Device," David A. B. Miller (March 21, 1989).
  11. [Patent #4,764,889](#) "Optical Logic Arrangement With Self Electro-Optic Effect Devices," Harvard S. Hinton and David A. B. Miller (August 16, 1988).
  10. [Patent #4,761,620](#) "Optical Reading of Quantum Well Device," Israel Bar-Joseph, Tao-Yuan Chang, Daniel S. Chemla and David A. B. Miller (August 2, 1988).
  9. [Patent #4,754,132](#) "Symmetric Optical Device with Quantum Well Absorption," Harvard S. Hinton, Anthony L. Lentine, and David A. B. Miller (June 28, 1988).
  8. [Patent #4,751,378](#) "Optical Device with Quantum Well Absorption," Harvard S. Hinton, Anthony L. Lentine and David A. B. Miller (June 14, 1988).

7. [Patent #4,749,850](#) “High Speed Quantum Well Optical Detector,” Daniel S. Chemla, David A. B. Miller, and Stefan N. Schmitt-Rink (June 7, 1988).
6. [Patent #4,716,449](#) “Nonlinear and Bistable Optical Device,” David A. B. Miller (December 29, 1987).
5. [Patent #4,711,997](#) “Optical Interconnection of Devices on Chips,” David A. B. Miller (December 8, 1987).
4. [Patent #4,597,638](#) “Nonlinear Optical Apparatus,” Daniel S. Chemla, David A. B. Miller and Peter W. Smith (July 1, 1986).
3. [Patent #4,546,244](#) “Nonlinear and Bistable Optical Device,” David A. B. Miller (October 8, 1985).
2. [Patent #4,528,464](#) “Degenerate Four-Wave Mixer Using Multiple Quantum Well Structures,” Daniel S. Chemla, David A. B. Miller, and Peter W. Smith (July 9, 1985).
1. [Patent #4,525,687](#) “High-Speed Light Modulator Using Multiple Quantum Well Structures,” Daniel S. Chemla, Theodoor C. Damen, Arthur C. Gossard, David A. B. Miller, and Thomas H. Wood (June 25, 1985).

## SHORT COURSES

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47. "Quantum Well Devices for Optics and Optoelectronics," CLEO '10, San Jose, May 2010  

46. "Quantum Well Devices for Optics and Optoelectronics," CLEO '09, Baltimore, May 2009
45. "Quantum Well Devices for Optics and Optoelectronics," CLEO '08, San Jose, May 2008
44. "Quantum Well Devices for Optics and Optoelectronics," CLEO '07, Baltimore, May 2007
43. "Quantum Well Devices for Optics and Optoelectronics," CLEO '06, Long Beach, May 2006
42. "Quantum Well Devices for Optics and Optoelectronics," CLEO '05, Baltimore, May 2005
41. "Quantum Well Devices for Optics and Optoelectronics," CLEO '03, Baltimore, June 2003
40. "Prospects for Ultrafast Digital Processing," Scottish Universities Summer School in Physics, St. Andrews, September 2002
39. "Quantum Well Devices for Optics and Optoelectronics," CLEO '02, Long Beach, May 2002
38. "Quantum Well Devices for Optics and Optoelectronics," CLEO '01, Baltimore, May 2001
36. "Quantum Well Devices for Optics and Optoelectronics," CLEO '00, San Francisco, May 2000
35. "Optical Interconnects", International Interconnects Technology Conference, San Francisco, May 1999
37. "Optical Interconnects," SPIE Photonics West, San Jose, January 2001
34. "Quantum Well Devices for Optics and Optoelectronics," CLEO '99, Baltimore, May 1999
33. "Optical Interconnects", International Interconnects Technology Conference, San Francisco, June 1998
32. "Optics for Digital Information Processing", Scottish Universities Summer School in Physics, St. Andrews, June 1998
31. "Quantum Well Devices for Optics and Optoelectronics," CLEO '98, San Francisco, May 1998
30. "Quantum Well Devices for Optics and Optoelectronics," CLEO '97, Baltimore, May 1997
29. "Quantum Well Devices for Optics and Optoelectronics," CLEO '96, Anaheim, May 1996.
28. "Hybrid SEED Workshop," George Mason University, Virginia, July 1995 (Syllabus Coordinator and Instructor).
27. "Quantum Well Devices for Optics and Optoelectronics," CLEO '95, Baltimore, May 1995
26. "Optical Physics of Quantum Wells," Scottish Universities Summer School in Physics "Quantum Dynamics of Simple Systems," Stirling, August 1994.
25. "Quantum Well Devices for Optics and Optoelectronics," CLEO '94, Anaheim, May 1994.
24. "Quantum Well Structures for Optical Switching and Processing," NATO ASI's (two schools) on "Nonlinear Optical Materials and Devices for Applications in Information Technology" and "Confined Electrons and Photons: New Physics and Applications," Erice, Sicily, July 1993.
23. "FET-SEED Workshop," Newark, New Jersey, June 1993 (Syllabus Coordinator and Instructor).
22. "Optical Switching," Nonlinear Optics Summer School, Rochester, New York, June 1993.

21. "Quantum Well Devices for Optics and Optoelectronics" CLEO '93, Baltimore, May 1993.
20. "Quantum Well Devices for Optics and Optoelectronics" OPTCON '92, Boston, November 1992.
19. "Quantum Well Devices for Optics and Optoelectronics" OSA Annual Meeting, Albuquerque, September 1992.
18. "Optical Switching" Nonlinear Optics Summer School, Rochester, July 1992.
17. "Quantum Well Devices for Optics and Optoelectronics" IQEC ' 92, Vienna, June 1992.
16. "Quantum Well Devices for Optics" CLEO '92, Anaheim, May 1992.
15. "Nonlinear Optics and Electro-optics of Quantum Wells: Physics and Applications" III Escola J. A. Swieca on Nonlinear and Quantum Optics, Recife, Brazil, February 1992.
14. "Quantum Well Devices for Optical Switching and Processing" OPTCON '91, San Jose, November 1991.
13. "Optical Switching," Nonlinear Optics Summer School, Rochester, New York, June 1991.
12. "Quantum Well Devices for Optical Switching and Processing" CLEO '91, Baltimore, May 1991.
11. "Quantum Well Devices for Optical Switching and Processing" LEOS '90, Boston, November 1990.
10. "Optical Switching," Nonlinear Optics Summer School, Rochester, New York, June 1990.
9. "Quantum Well Devices for Optics and Optoelectronics," Conference on Lasers and Electro-Optics, Anaheim, California, May 1990.
8. "Device Requirements for Digital Optical Processing," 1990 International Topical Meeting on Optical Computing, Kobe, Japan, April 1990.
7. "Quantum Well Optical Devices," Annual Meeting of the Optical Society of America (OSA '89), Orlando, Florida, October 1989.
6. "Optical Bistability and Nonlinear Optical Switching," Summer School on Nonlinear Optics, Rochester, New York, June 1989.
5. "Quantum Well Devices for Optics and Optoelectronics," Conference on Lasers and Electrooptics (CLEO '89), Baltimore, Maryland, April 1989.
4. "Quantum Well Optical Devices" Conference on Optical Fiber Communications (OFC '89), Houston, Texas, February 1989.
3. "Quantum Well Devices for Optics and Optoelectronics" OSA Annual Meeting, Santa Clara, October 1988.
2. "Optical Switching Devices: Some Basic Concepts" and "Quantum Well Electroabsorptive Devices: Physics and Applications: Summer School on "Optical Computing;, Heriot-Watt University, Edinburgh, U.K., August 1988.
1. "Quantum Well Devices for Optical Communications" OOFc '88, Conference on Optical Fiber Communication, New Orleans, January 1988.

## OPEN ONLINE COURSES

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The open online course "Quantum Mechanics for Scientists and Engineers" has been given every year from 2013 and the follow-on class "Quantum Mechanics for Scientists and Engineers 2" has been given every year since 2015. These have been hosted on Stanford Online

platform, using the OpenEdX platform, and more recently on the edX platform. These course have attracted more than 80,000 student registrations.

## CONFERENCE COMMITTEES

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44. IEEE Photonics Society Programmable Photonics Summer Topical Meeting, Fort Lauderdale, July 2019 **Conference Co-Chair**
43. IEEE Photonics Society Optical Interconnect Conference, Santa Fe, May 2012 **Program Co-Chair**
42. Information Photonics '05
41. Workshop on Interconnections within High Speed Digital Systems, Santa Fe '05
40. CLEO Europe '05
39. LEOS Summer Topical Meeting on Optical Interconnects and VLSI Photonics '04
38. Optics in Computing '04
37. CLEO '04
36. CLEO Europe '03
35. CLEO '03
34. CLEO '02
33. Nonlinear Optics '00, Kauai, August 2000
32. Optics in Computing '98, Brugge, June 1998, **General Chair**
31. CLEO Europe '98
30. Optical Computing '97, Lake Tahoe, March 1997
29. CLEO '96, Anaheim, June 1996, **General Co-Chair**.
28. Optical Computing '96, Sendai, Japan, April 1996.
27. Topical Meeting on Optical Computing, Salt Lake City, March 1995.
26. Topical Meeting on Nonlinear Optics, Hawaii, July 1994.
25. Optical Computing '94, Edinburgh, August 1994.
24. CLEO '94, Anaheim, May 1994, **Program Co-Chair**.
23. International Conference on Solid State Devices and Materials, Chiba, Japan, August 1993.
22. QELS '93, Baltimore, May 1993, Program Subcommittee Chair.
21. Topical Meeting on Smart Pixels, Santa Barbara, California, August 1992 (**Co-Chair**).
20. 22nd Winter Colloquium on Quantum Electronics, Snowbird, Utah, January 1992.
19. Topical Meeting on Nonlinear Optics, Maui, August 1992.
18. Sixth International Conference on Superlattices, Microstructures and Microdevices, Xi'an, China, August 1992.
17. Topical Meeting on Photonic Switching, Minsk, Byelorussia, June 1992.
16. Conference on Lasers and Electro-optics, Baltimore, May 1991.
15. Topical Meeting on Quantum Optoelectronics - Quantum Wells and Confined Semiconductor Structures for Optics and Electronics (**General Chair**), Salt Lake City, March 1991.
14. International Conference on Electronic Materials, Newark, September 1990.

13. Physics of Electro-Optic Microstructures and Microdevices, Crete, August 1990.
12. International Topical Meeting on Optical Computing (OC'90) Kobe, Japan, April 1990.
11. Conference on Lasers and Electrooptics, Anaheim, May 1990.
10. Topical Meeting on Quantum Wells for Optics and Optoelectronic (**Program Chair**), Salt Lake City, Utah, March, 1989.
9. Topical Meeting on Photonic Switching, Salt Lake City, March 1989.
8. Topical Meeting on Optical Computing, Salt Lake City, March 1989.
7. 4th International Conference on Superlattices, Microstructures and Microdevices, Trieste, Italy, August 1988.
6. "Optical Bistability 4," Aussois, France, March 1988.
5. Conference on Lasers and Electro-optics, Baltimore, April 1987 (**Subcommittee Chairperson**).
4. Conference on Lasers and Electro-optics, San Francisco, June 1986.
3. Symposium on Nonlinear Optical Materials (**Co-Chairman**), Materials Research Society, Boston, December 1985.
2. "Optical Bistability 3," Tucson, Arizona, December 1985.
1. Royal Society Discussion Meeting, "Optical bistability, dynamic nonlinearity and photonic logic" London, March 1984.