DAVID A. B. MILLER

CURRICULUM VITAE

Personal information

Full name	David Andrew Barclay Miller
Address	Room 203, Ginzton Laboratory Spilker Building 348 Via Pueblo Mall Stanford University Stanford, CA 94305-4088 USA (650) 723 0111 dabm@stanford.edu http://dabm.stanford.edu
Date of Birth	February 19, 1954, Hamilton, U.K.
Citizenship	United States United Kingdom

Education

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

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

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

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

Prizes and Awards

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

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

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

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

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

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

Presentations

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

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

Other Interests

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

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. Vercruysse, 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," 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," 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," 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,". Photonics Research **9**, 2196-2204 (2021) http://dx.doi.org/10.1364/PRJ.428680

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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," 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," 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," 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," 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," 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," 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," 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," 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," 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," 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," 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," Light Science & Applications **6**, e17110 (2017) https://doi.org/10.1038/lsa.2017.110

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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," 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," 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 and at 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," 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," 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," 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," J. Lightwave Technol. **31**, 3995-4003 (2013)

263. D. A. B. Miller, "Reconfigurable add-drop multiplexer for spatial modes," 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," 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," 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," 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," 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," 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?" 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. Ikonic, 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," 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," Opt. Express **20**, 29164-29173 (2012) http://www.opticsinfobase.org/oe/abstract.cfm?URI=oe-20-28-29164

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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," Opt. Mater. Express **2**, 1336-1342 (2012) http://www.opticsinfobase.org/ome/abstract.cfm?URI=ome-2-10-1336

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249. D.-S. Ly-Gagnon, K. C. Balram, J. S. White, P. Wahl, M. L. Brongersma, and D. A. B. Miller, "Routing and Photodetection in Subwavelength Plasmonic Slot Waveguides," Nanophotonics **1**, 9–16, (2012) https://doi.org/10.1515/nanoph-2012-0002

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247. D. Nam, D. Sukhdeo, A. Roy, K. Balram, S.-L. Cheng, K. C.-Y. Huang, Z. Yuan, M. Brongersma, Y. Nishi, D. A. B. Miller, and K. Saraswat, "Strained germanium thin film membrane on silicon substrate for optoelectronics," Opt. Express **19**, 25866-25872 (2011)

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244. R. K. Schaevitz, D. S. Ly-Gagnon, J. E. Roth, E. H. Edwards, and D. A. B. Miller, "Indirect absorption in germanium quantum wells," AIP Advances **1**, 032164 (2011)

243. R. K. Schaevitz, E. H. Edwards, J. E. Roth, E. T. Fei, Y. Rong, P. Wahl, T. I. Kamins, J. S. Harris, and D. A. B. Miller, "Simple Electroabsorption Calculator for Designing 1310nm and 1550nm Modulators Using Germanium Quantum Wells," IEEE J. Quantum Electron. **48**, 187 – 197 (2012) https://doi.org/10.1109/JQE.2011.2170961

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240. T. Tanemura, K. C. Balram, D.-S. Ly-Gagnon, P. Wahl, J. S. White, M. L. Brongersma, and D. A. B. Miller, "Multiple-Wavelength Focusing of Surface Plasmons with a Nonperiodic Nanoslit Coupler," Nano Lett. 11, 2693–2698 (2011)

239. S. Ren, Y. Rong, T. I. Kamins, J. S. Harris, and D. A.B. Miller, "Selective epitaxial growth of Ge/Si0.15Ge0.85 quantum wells on Si substrate using reduced pressure chemical vapor deposition," Appl. Phys. Lett. **98**, 151108 (2011)

238. V. Liu, Y. Jiao, D. A. B. Miller, and S. Fan, "Design methodology for compact photonic-crystal-based wavelength division multiplexers," Opt. Lett. **36**, 591-593 (2011)

237. S. A. Claussen, E. Tasyurek, J. E. Roth, and D. A. B. Miller, "Measurement and modeling of ultrafast carrier dynamics and transport in germanium/silicon-germanium quantum wells," Opt. Express **18**, 25596-25607 (2010)

236. D. A. B. Miller, "Optical interconnects to electronic chips," Appl. Opt. **49**, F59-F70 (2010)

235. H.-Y. Yu, D. Kim, S. Ren, M. Kobayashi, D.A. B. Miller, Y. Nishi, and K. C. Saraswat, "Effect of uniaxial-strain on Ge p-i-n photodiodes integrated on Si," Appl. Phys. Lett. **95**, 161106-3 (2009) https//doi.org/10.1063/1.3254181

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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


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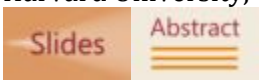

282. D. A. B. Miller, "Finding and counting channels with waves," Invited talk at the Metamaterials, Metadevices, and Metasystems 2024 conference at SPIE Nanoscience + Engineering Meeting, part of SPIE Optics and Photonics 2024, San Diego CA, August 18 - 22, 2024 , Paper 13109-75


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


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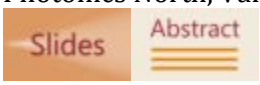
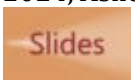
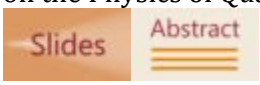
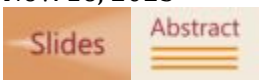
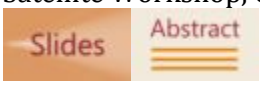


279. D. A. B. Miller, "Optics à la mode," (Invited), SUPR 24, Stanford University Photonics Retreat 2024, Asilomar, California, April 27, 2024


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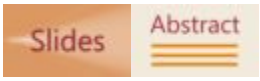
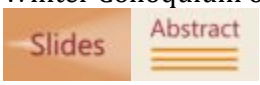
273. D. A. B. Miller, "The new multimode optics - self-configuring circuits and fundamental limits for photonic structures," Tutorial talk at ePIXfab 8 workshop, Gent, July 6, 2023

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

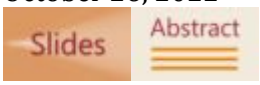
271. "**Self-configuring algorithms, topologies and fundamental limits for photonic circuits and structures**," (Keynote talk), Integrated Optics: Devices, Materials, and Technologies XXVII, SPIE Photonics, Conference 12424, 30 January - 2 February 2023 San Francisco, CA, Paper 12424-18



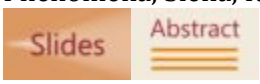
270. "**Shrinking optics - why optics needs thickness and how much it needs**," (Invited), 53rd Winter Colloquium on the Physics of Quantum Electronics Snowbird, Utah, January 11, 2023



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

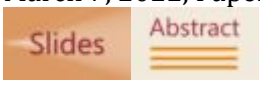


268. "**Self-configuring photonics - circuits, architectures, topologies and algorithms**," (Invited), Metamaterials - 16th International Congress of Artificial Materials for Novel Wave Phenomena, Siena, Italy, 12 - 17 September 2022



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,

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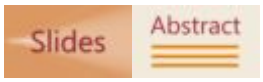
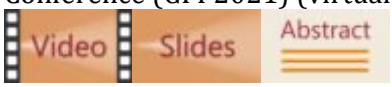


264. "**Self-configuring complex photonic circuits**," (Invited), 2021 IEEE Group IV Photonics Conference (GFP2021) (virtual conference) Dec. 7, 2021, Paper TuE3



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

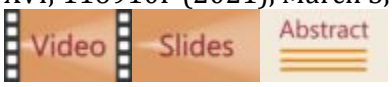
261. "**Optical interconnects to chips - why and how**," (Invited Tutorial) IEEE Photonics Conference, 18 - 21 October, 2021 (virtual conference) Paper WG4.1

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).

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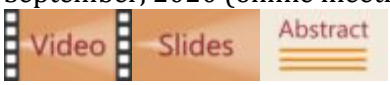
255. "**Finding the right modes for communicating with optics**," OSA Frontiers in Optics, 14 – 17 September, 2020 (online meeting), Paper FM1D.1.



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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. .

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

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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," 21st 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 Nano-photonics, 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, 72nd 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 athttps://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, 5th 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/

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/

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," 9th 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 13th 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 DevicesPacific 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, 21st 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, Burlinghame, CA, June 2008 (Paper 12.1)

125. “Challenges and Opportunities for Dense Optical Interconnect Devices,” (Plenary talk) 19th 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," 18th 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 4th 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, Semiconduductor 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," 13th 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 TuO2, 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 TopicalWorkshop 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,” 213th 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 50th Anniversary Celebration of Applied and Engineering Physics entitled Challenges and Opportunities for the 21st 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,” 40th 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 o 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

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,” 4th 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 Transphasor 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, Transphasor Action and Phase Conjugation" XI International Quantum Electronic Conference, Boston, Massachusetts, 1980.

CONTRIBUTED CONFERENCE PAPERS

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," 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," 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," 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," 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," 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," 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

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," OFC 2023, San Diego, March 6, 2023, Paper M3C2 https://opg.optica.org/abstract.cfm?uri=OFC-2023-M3C.2

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," 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," 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," 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

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," 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

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," 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

162. SeyedMohammad SeyedinNavadeh, 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," 2021 IEEE Group IV Photonics Conference (GFP2021) (virtual conference) Dec. 7, 2021, Paper TuE2

161. M. Milanizadeh, S. SeyedinNavadeh, G. Benci, C. Klitis, M. Sorel, F. Zanetto, G. Ferrari, D. A. B. Miller, A. Melloni, and F. Morichetti, "Multimode Free Space Optical link enabled by SiP integrated meshes," ECOC 21, 13-16 September, 2021, Bordeaux, France, Paper Tu2G.1

160. M. Milanizadeh, S. SeyedinNavadeh, F. Toso, G. Ferrari, D. A..B. Miller, A. Melloni, F. Morichetti, C. Klitis, and M. Sorel, "Establishing free-space optical communication channels through a reconfigurable silicon mesh," *2021 IEEE Photonics Society Summer Topicals Meeting Series (SUM)*, 2021, pp. 1-2, https://doi.org/10.1109/SUM48717.2021.9505891

159. S. Pai, N. Abebe, R. L. Hwang, D. A. B. Miller, and O. Solgaard, "MEMS Photonic Networks For Parallelized Matrix Multiplication Using Wavelength-Division Multiplexing," in *Conference on Lasers and Electro-Optics*, J. Kang, S. Tomasulo, I. Ilev, D. Müller, N. Litchinitser, S. Polyakov, V. Podolskiy, J. Nunn, C. Dorrer, T. Fortier, Q. Gan, and C. Saraceno, eds., OSA Technical Digest (Optical Society of America, 2021), paper JTu3A.145. https://doi.org/10.1364/CLEO_AT.2021.JTu3A.145

158. S. Pai, N. Abebe, M. Dubrovsky, R. L. Hwang, M. Karpov, B. Penkovsky, D. A. B. Miller, and O. Solgaard, "Wavelength-Division Multiplexed Optical Cryptocurrency," in *Conference on Lasers and Electro-Optics*, J. Kang, S. Tomasulo, I. Ilev, D. Müller, N. Litchinitser, S. Polyakov, V. Podolskiy, J. Nunn, C. Dorrer, T. Fortier, Q. Gan, and C. Saraceno, eds., OSA Technical Digest (Optical Society of America, 2021), paper JTu3A.124. https://doi.org/10.1364/CLEO_AT.2021.JTu3A.124

157. A. Ji, J. Song, Q. Li, P. G. Kik, D. A. B. Miller, and M. L. Brongersma, "Quantitative Phase Contrast Imaging using Guided-mode Resonator Devices," in *Conference on Lasers and Electro-Optics*, J. Kang, S. Tomasulo, I. Ilev, D. Müller, N. Litchinitser, S. Polyakov, V. Podolskiy, J. Nunn, C. Dorrer, T. Fortier, Q. Gan, and C. Saraceno, eds., OSA Technical Digest (Optical Society of America, 2021), paper STu2F.7. https://doi.org/10.1364/CLEO_SI.2021.STu2F.7

156. M. Milanizadeh, E. Damiani, T. Jonuzi, M. J. Mencagli, B. Edwards, D. A.B. Miller, N. Engheta, A. Melloni, and F. Morichetti, "Recursive MZI mesh for integral equation implementation," European Conference on Integrated Optics (ECIO), 22nd edition 2020 in Paris (online conference), Session 10 – Programmable, Reconfigurable Integrated Photonics and Neural Networks, June 24, 2020, https://www.ecio-conference.org/wp-

content/uploads/2020/06/10-Maziyar-Milanizadeh-Recursive-MZI-mesh-for-integral-equation-implementation-ECIO-2020.pdf

155. M. Milanizadeh, P. Borga, F. Morichetti, D. A. B. Miller, and A. Melloni, "Manipulating Free-space Optical Beams with a Silicon Photonic Mesh," 2019 IEEE Photonics Society Summer Topical Meeting Series (SUM), Fort Lauderdale, Florida, 8-10 July 2019, Paper WE1.1 https://doi.org/10.1109/PHOSST.2019.8795053

154. A. Dutt, M. Minkov, Q. Lin, L. Yuan, D. A. B. Miller, and S. Fan, "Observation of classical dynamical isolation in nonadiabatically modulated photonic cavities," APS March Meeting 2019, Volume 64, Number 2, Monday–Friday, March 4–8, 2019; Boston, Massachusetts, Abstract X25.00001

153. D. A. B. Miller, "Perfect linear optical quantum networks automatically," Royal Society discussion meeting "Quantum technology for the 21st century," Royal Society of London, London, UK, May 9 – 10, 2016, Poster 17.

152. D. A. B. Miller, "Establishing optimal optical channels automatically," OSA Frontiers in Optics, Orlando, Florida, October 7, 2013, Paper FM3B.2

151. D. A. B. Miller, "Separating arbitrary overlapping spatial modes losslessly and without calculations," IEEE Photonics Society Summer Topical Meetings, Space Division Multiplexing for Optical Communications, Kona, Hawaii, July 9, 2013, Paper TuC2.3

150. K. C. Balram and D. A.B. Miller, "Nanoscale Integrated Planar Multispectral Image Sensors," in *CLEO: 2013*, OSA Technical Digest (online) (Optical Society of America, 2013), paper CTh4L.3.

149. K. C. Balram and D. A. B. Miller, "Self-aligned germanium fins in metallic slits as a platform for planar wavelength-selective photodetectors at telecommunications wavelengths," Nanometa 2013, Seefeld-in-Tirol, Austria, Jan. 2013, Paper Sat5F39

148. E. Fei, E. Edwards, Y. Huo, X. Chen, S. Claussen, X. Liu, Y. Rong, T. Kamins, D. Miller, and J. Harris, "Low Power SiGe Electroabsorption Modulators for Optical Interconnects," in *Integrated Photonics Research, Silicon and Nanophotonics*, OSA Technical Digest (online) (Optical Society of America, 2012), paper IM4A.3.

147. D. A. B. Miller, "Energy use in optical modulators," 2012 IEEE Optical Interconnects Conference, Santa Fe, NM, May 2012, Paper TUP 7

146. T. Tanemura, P. Wahl, S. Fan, and D. A.B. Miller, "Optical transmission through arbitrarily located subwavelength apertures on metal films," Conference on Lasers and Electro-Optics (CLEO'12), San Jose, CAMay 2012. Paper QTh1F.5

145. K. C. Balram and D. A. B. Miller, "Self-aligned Silicon Fins in Metallic Slits as a Platform for Planar Tunable Nanoscale Resonant Photodetectors," Conference on Lasers and Electro-Optics (CLEO'12), San Jose, May 2012, Paper CTu3I.5

144. S. Claussen, K. C. Balram, E. Fei, T. Kamins, J. Harris, and D. A. B. Miller, "Selective-Area Growth of Ge and Ge/SiGe Quantum Wells in 3 μm Silicon-on-Insulator Waveguides," Conference on Lasers and Electro-Optics (CLEO'12), San Jose, CA, May 2012, Paper CTu2J.4

143. E. Fei, Y. Huo, G. Shambat, X. Chen, X. Liu, S. Claussen, E. Edwards, T. Kamins, D. A. B. Miller, J. Vuckovic, and J. Harris, "Light Emission in Ge Quantum Wells," Conference on Lasers and Electro-Optics (CLEO'12), San Jose, CA, May 2012, Paper CTu2J.1

142. K. C. Balram, D.-S. Ly-Gagnon, J. White, P. Wahl, M. Brongersma, D. A. B. Miller, "Routing and Detection of Light on Deeply Subwavelength scale in Two-conductor Metallic Slot Waveguides," OFC/NFOEC'12, Los Angeles, CA, March 2012, Paper OW3E.4

141. P. Wahl, D.-S. Ly-Gagnon, C. Debaes, D. A.B. Miller, and H. Thienpont **"**B-CALM: An Open-Source GPU-based 3D-FDTD with Multi-Pole Dispersion for Plasmonics," NUSOD 2011, Rome, Italy, Sept. 2011, Paper MB2

140. S. Ren, Y. Rong, S. Claussen, R. Schaevitz, T. I. Kamins, J. S. Harris, and D. A. B. Miller, "A Ge/SiGe Quantum Well Waveguide Modulator Monolithically Integrated with SOI Waveguides," 8th Int. Conf. Group IV Photonics, London, Sept. 2011, Paper WA3

139. R. K. Schaevitz, E. H. Edwards, S. Ren, D. S. Ly-Gagnon, R. M. Audet, Y. Rong, S. A. Claussen, E. Taşyürek, J. E. Roth, J. S. Harris, and D. A. B. Miller "Simple Electroabsorption Calculator for Germanium Quantum Well Devices," 8th Int. Conf. Group IV Photonics, London, Sept. 2011, Paper P1.29

138. E. H. Edwards, R. M. Audet, E. Fei, G. Shambat, R. K. Schaevitz, Y. Rong, S. A. Claussen, T. I. Kamins, J. Vuckovic, J. S. Harris, and D. A. B. Miller, "Ge Quantum Well Resonator Modulators," 8th Int. Conf. Group IV Photonics, London, Sept. 2011, Paper P1.9

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136. D.-S. Ly-Gagnon, K. C. Balram, J. S. White, P. Wahl, M. L. Brongersma, and D. A. B. Miller, "On-Chip Optical Propagation and Photodetection in Nanometer-Scale Two-Conductor Plasmonic Waveguides," 3rd International Topical Meeting on Nanophotonics and Metamaterials, Seefeld, Austria, January 2011, Paper TUE4f.64

135. E. Tasyurek, S. A. Claussen, J. E. Roth and D. A. B. Miller, "Ultrafast Absorption Recovery in Germanium/Silicon-Germanium Quantum Wells," IEEE Photonics Society Annual Meeting, WW4, Denver, CO (November 2010).

134. E. H. Edwards, R. M. Audet, Y. Rong, S. A. Claussen, R. K. Schaevitz, E. Tasyürek, S. Ren, Ted I. Kamins, O. I. Dosunmu, M. S. Ünlu, J. S. Harris, and D. A. B. Miller, "Si-Ge Surface-normal Asymmetric Fabry-Perot Quantum-confined Stark Effect Electroabsorption Modulator," IEEE Annual Photonics Society Meeting (Nov. 7-11, 2010), Denver, CO, Paper WW2

133. R. K. Schaevitz, E. H. Edwards, R. M. Audet, Y. Rong, S. Ren, S. A. Claussen, E. Taşyürek, J. E. Roth, J. S. Harris, and D. A. B. Miller, "Simple Electroabsorption Model for Germanium Quantum Well Devices", *NUSOD*, ThA3, Atlanta, GA (September 2010).

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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

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

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. 4h 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 an 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.