Jelena Notaros

Robert J. Shillman (1974) Career Development Assistant Professor
Department of Electrical Engineering and Computer Science
Massachusetts Institute of Technology
Web: www.mit.edu/~notaros/
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APPOINTMENTS

Link: web.mit.edu/notaros/www/team.html

Massachusetts Institute of Technology (MIT)

Robert J. Shillman (1974) Career Development Assistant Professor of Electrical Eng. and Comp. Sci. *2021 – Present*
Assistant Professor of Electrical Engineering and Computer Science *2020 – 2021*

EDUCATION

Link: web.mit.edu/notaros/www/team.html

Massachusetts Institute of Technology (MIT)

Doctor of Philosophy in Electrical Engineering and Computer Science *2017 – 2020*

- 2015 – 2020 National Science Foundation Graduate Research Fellow GPA: 5.0/5.0
- Advisor: Prof. Michael Watts

Massachusetts Institute of Technology (MIT)

Master of Science in Electrical Engineering and Computer Science *2015 – 2017*

- 2015 – 2020 National Science Foundation Graduate Research Fellow GPA: 5.0/5.0
- 2015 MIT Herbert E. (1933) and Dorothy J. Grier Presidential Fellow
- Advisor: Prof. Michael Watts

University of Colorado Boulder (CU Boulder)

Bachelor of Science in Electrical Engineering *2011 – 2015*

- Engineering Honors, Optics Track, and Electromagnetics Track GPA: 4.0/4.0
- Graduated Summa Cum Laude and with Honors Rank: 1st of 75
- 2015 Chancellor's Recognition Award
- 2015 College of Engineering Outstanding Graduate for Academic Achievement
- 2015 Department of Electrical, Computer, and Energy Engineering Distinguished Senior
- Advisor: Prof. Miloš Popović

Poudre High School

International Baccalaureate (IB) Programme Graduate *2007 – 2011*

- IB Diploma with Higher and Standard Level: Math, Physics, History, English, Art, and Spanish GPA: 4.171/4.0

HONORS AND AWARDS

Link: web.mit.edu/notaros/www/awards.html

Research Awards

- 2018 **Top-Three DARPA Riser** and **DARPA D60 Plenary Speaker**: Nominated by DARPA program manager and selected as one of 47 DARPA Risers (early-career scientists, engineers, and faculty identified as top emerging leaders in science and technology) and invited to present a poster to DARPA program managers during a closed-door event at DARPA's 60th Anniversary Symposium. Based on this poster session, selected as one of the Top-Ten Risers and presented a talk to all DARPA program managers and leadership. Based on this Top-Ten presentation, selected by DARPA leadership as one of the Top-Three Risers and invited to give a featured plenary talk to all >2,000 attendees of the symposium (including DARPA personnel, DARPA performers, technology pioneers, industry leaders, government officials, and generals/admirals). Praised by DARPA leaders and government dignitaries as a highlight of the symposium. [DARPAtv] [LinkedIn] [Twitter] [Facebook]
- 2023 NSF CAREER Award [Link]
- 2021 Forbes 30 Under 30 Listee in the Science Category [Link] [Link]
- 2021 MIT Robert J. Shillman (1974) Career Development Chair
- 2020 MIT RLE Early Career Development Award
- 2019 OSA Conference on Lasers and Electro-Optics (CLEO) Chair's Pick Award and Upgraded to Invited Talk
- 2022 OSA Advanced Photonics Congress (APC) Best Student Paper Award [Link]
- 2022 OSA Frontiers in Optics (FiO) Emil Wolf Student Paper Competition Finalist
- 2022 OSA Frontiers in Optics (FiO) Emil Wolf Student Paper Competition Finalist
- 2014 First Place Winner in the 2014 IEEE Region 5 Student Paper Competition
- 2014 First Place Winner in the 2014 IEEE West Area Student Paper Competition
- 2023 MIT Annual Quantum Research Conference (QuARC) Best Pitch Award
- 2023 MIT Annual Quantum Research Conference (QuARC) Best Poster Award
- 2022 MIT Microsystems Annual Research Conference (MARC) Best Poster Award [Link]
- 2021 MIT Microsystems Annual Research Conference (MARC) Best Paper Award
- 2019 MIT Microsystems Annual Research Conference (MARC) Best Overall Award
- 2019 MIT Microsystems Annual Research Conference (MARC) Best Pitch Award
- 2022 MIT GW6 Research Summit Best Presentation Award
- 2018 OSA Incubic Milton Chang Travel Grant [Link]
- 2014 OSA Incubic Milton Chang Travel Grant [Link]
- 2018 MIT EECS Rising Star [Link]
- 2017 MIT Path of Professorship
- 2014 IEEE Student of the Week (IEEE International Level)
- 2014 Sigma Xi Undergraduate Research Award

Fellowships and Scholarships

- 2015 – 2020 National Science Foundation Graduate Research Fellowship Program (NSF GRFP) Fellow [Link]
- 2015 National Defense Science and Engineering Graduate (NDSEG) Fellow (Declined to Accept NSF)
- 2015 MIT Herbert E. (1933) and Dorothy J. Grier Presidential Fellow
- 2015 Tau Beta Pi Fellow [Link]
- 2015 SPIE Optics and Photonics Education Scholarship [Link]
- 2014 – 2019 Society of Women Engineers Ada I. Pressman Memorial Scholarship [Link]
- 2014 Tau Beta Pi Scholarship [Link]

- 2013 – 2014 Howard W. Lacy Engineering Scholarship
- 2013 Society of Women Engineers Goldman, Sachs & Co. Scholarship
- 2013 Society of Women Engineers Rocky Mountain Section Pioneer Scholarship

Academic Awards

- 2019 MIT Kaufman Teaching Certificate [Link]
- 2015 CU Boulder Chancellor's Recognition Award
- 2015 CU Boulder College of Engineering Outstanding Graduate for Academic Achievement [Link]
- 2015 CU Boulder Department of Electrical, Computer & Energy Engineering Distinguished Senior
- 2015 Graduated Summa Cum Laude and with Honors
- 2014 – 2015 IEEE-HKN Outstanding Chapter Award [Link]
- 2011 – 2015 BOLD Gold Academic Performance Medal
- 2011 – 2015 College of Engineering Dean's List
- 2011 Scholastic Art Award for "Portrait of Happiness"
- 2010 International Baccalaureate Diploma Program Spanish Student of the Year

RESEARCH EXPERIENCE

Link: web.mit.edu/notaros/www/research.html

Photonics and Electronics Research Group — Massachusetts Institute of Technology

Principal Investigator [Group Website] — *June 2020 – Present*

By enabling the integration of millions of micro-scale optical components on compact millimeter-scale computer chips, the field of silicon photonics is positioned to enable next-generation optical technologies that facilitate revolutionary advances for numerous fields spanning science and engineering. In the MIT Photonics and Electronics Research Group (PERG), we are developing novel silicon-photonics-based platforms, devices, and systems that enable innovative solutions to high-impact problems in areas including augmented-reality displays, LiDAR sensing for autonomous vehicles, free-space optical communications, biophotonics, 3D printing, and quantum engineering.

Photonic Microsystems Group — Massachusetts Institute of Technology

Research Assistant, PI: Prof. Michael Watts [Group Website] — *March 2016 – May 2020*

Project Leadership and Management: Project lead on three DARPA-sponsored multimillion-dollar multi-institution programs: VIPER, E-PHI, and DODOS (see below for technical discussions); with team sizes of up to 18 people. Set program technical directions, organized collaborations across multi-institution teams, coordinated with fabrication collaborators, interfaced with DARPA personnel, presented at program reviews and PI meetings, managed program budgets and timelines, led project meetings, mentored team members, etc. Based on leadership role and technical achievements (see below for technical discussions), nominated by the DARPA program manager and selected as one of 47 DARPA Risers (early-career scientists, engineers, and faculty identified as top emerging leaders in science and technology) and invited to present to DARPA leadership during a closed-door event at DARPA's 60th Anniversary Symposium; at D60, selected by DARPA leadership as one of the Top-Three Risers and invited to give a featured plenary talk to all >2,000 attendees of the symposium (including DARPA personnel, DARPA performers, technology pioneers, industry leaders, government officials, and generals/admirals).

Integrated-Photonics-Based Holographic Display for Augmented Reality: Project lead (see above for leadership discussion) and technical lead of the DARPA-sponsored Visible Integrated Photonics Enhanced Reality (VIPER) program – a multimillion-dollar collaboration between MIT (Watts), CNSE SUNY, and Kopin Corporation, with the

goal of developing a novel transparent integrated-photonics-based display that generates visible-light holograms for the next generation of augmented-reality head-mounted displays with applications in defense, medicine, engineering, gaming, etc. Developed a novel transparent 300-mm-wafer foundry platform on glass for visible-light integrated photonics, in collaboration with CNSE SUNY. Demonstrated a novel large-scale passive VIPER display that generates a holographic image of a wire-frame cube using 1024 optical-phased-array-based pixels passively encoded to emit light with the appropriate amplitudes and phases. Contributed to the demonstration of the first integrated visible-light liquid-crystal-based phase and amplitude modulators (with device lengths an order of magnitude smaller than traditional inefficient thermo-optic visible-light modulators). Demonstrated the first actively-tunable visible-light integrated OPA (prior visible-light OPAs have been limited to passive demonstrations). Demonstrated a novel compact active OPA-based pixel and cascaded these pixels to demonstrate a multi-pixel active VIPER display. Published results in multiple first-author and co-authored conference papers (journal papers in preparation), won a best paper award, and asked to give invited talks at multiple top conferences.

Beam-Steering Optical Phased Arrays for LiDAR: Project lead (see above for leadership discussion) and technical lead of the DARPA-sponsored Electronic-Photonic Heterogeneous Integration (E-PHI) program – a multimillion-dollar collaboration between MIT (Watts/Kaertner/Ippen), UC Berkeley (Stojanovic), and CNSE SUNY, with the goal of demonstrating silicon-photonics systems heterogeneously integrated with CMOS electronics and monolithically integrated with laser sources – with a focus on developing integrated optical phased arrays to enable low-cost and compact non-mechanical beam steering for applications including LiDAR for autonomous vehicles and free-space optical communications. Demonstrated the first beam-steering integrated optical phased array powered by an on-chip rare-earth-doped laser (the first demonstration of a rare-earth-doped laser monolithically integrated with an active CMOS-compatible silicon-on-insulator photonics system). Contributed to the demonstration of the first beam-steering integrated optical phased arrays heterogeneously integrated with CMOS driving electronics and the first single-chip coherent LiDAR with integrated optical phased arrays and CMOS receiver electronics, both in a novel 3D-integrated electronics-photonics platform, in collaboration with the Berkeley Stojanovic group. Published results in multiple first-author and co-authored journal and conference papers, won a best paper award, and asked to give invited talks at multiple top conferences.

Near-Field Integrated Optical Phased Arrays: As a part of the DARPA E-PHI program (see above for additional program discussion), developed a variety of integrated optical phased arrays with novel components, architectures, and functionalities for optical manipulation in the near field with potential applications including optical trapping for biological characterization, trapped-ion quantum computing, laser-based 3D printing, and short-range LiDAR and data communications. Demonstrated the first near-field-focusing integrated optical phased arrays using both a 1D splitter-tree-based architecture and a 2D pixel-based architecture, the first integrated optical phased arrays for generating quasi-Bessel beams, and a novel integrated-optical-phased-array butterfly architecture for independent amplitude and phase control. Published results in multiple first-author journal and conference papers and asked to give invited talks at multiple top conferences.

Integrated Optical Frequency Combs and Synthesis: Project lead (see above for leadership discussion) of the DARPA-sponsored Direct On-Chip Digital Optical Synthesizer (DODOS) program – a multimillion-dollar collaboration between MIT (Watts/Kaertner/Ippen), UC Berkeley (Stojanovic), and CNSE SUNY, with the goal of enabling self-referenced optical frequency combs and precise frequency synthesis in a compact low-cost integrated package with potential applications including spectroscopy, gas sensing, and atomic clocks. Contributed to a number of collaborative results, including the first optical frequency synthesizer using an integrated rare-earth-doped laser, the first monolithically-integrated rare-earth-doped tunable laser, and the first integrated datalink powered by an on-chip rare-earth-doped laser. Published results in multiple co-authored journal and conference papers.

Quantum Photonics Laboratory **Massachusetts Institute of Technology**

Research Assistant, PI: Prof. Dirk Englund [Group Website] *September 2015 – February 2016*

Silicon Photonics Circuits for Quantum Communications: Experimentally demonstrated a large-scale tunable-coupling ring resonator array in a CMOS-compatible silicon photonics platform capable of achieving tunable frequency-dependent group delay. The system is proposed for a phase-encoded quantum-data-locking protocol, dubbed the quantum enigma machine, which enables secure and efficient quantum communications under noisy and lossy conditions. Published results in a first-author journal paper and conference paper.

Nanophotonic Systems Laboratory **University of Colorado Boulder**

Research Assistant, PI: Prof. Miloš Popović [Group Website] *May 2013 – August 2015*

Ultra-Efficient CMOS-Compatible Grating Couplers: Using a novel band structure solver (see below), designed record-performance ultra-high-efficiency unidirectional Gaussian grating couplers compatible for manufacturing in both unmodified bulk and silicon-on-insulator (SOI) CMOS technologies. Experimentally verified record grating coupler devices in the IBM 45nm SOI process and the CNSE 65nm bulk process. Designs used in photonic systems directly integrated with microelectronics to enable advanced CMOS CPU-to-memory interconnects for energy-efficient and high-speed microprocessors. These photonic interconnect systems are a part of the DARPA-sponsored Photonically Optimized Embedded Microprocessors (POEM) project – a multimillion-dollar collaboration between CU Boulder (Popovic), MIT (Ram), UC Berkeley (Stojanovic), and CNSE SUNY. Published results in multiple first-author and co-authored journal and conference papers (including *Nature*) and won multiple research awards.

FDFD Complex-Wavevector Band Structure Solver: Coded a novel numerical two-dimensional finite-difference frequency-domain (FDFD) complex-wavevector Bloch band structure solver with perfectly matched layer (PML) boundary conditions in MATLAB to compute the modal properties and band structures of leaky-wave periodic nanophotonic structures, including photonic crystals, grating couplers, and waveguide crossing arrays. Utilized intricate techniques, including Eigen problems, Yee interleaved discretization grids, linearization matrices, complex coordinate systems, etc. Accepted into and funded by the CU Discovery Learning Apprenticeship program. Published results in a first-author journal paper and three conference papers, won a best paper award, and invited to give talks on research.

Heater Power Control and Optical Measurements: Coded and optimized a sixteen heater feedback power control code in LabVIEW and designed an accompanying voltage amplifier printed circuit board (PCB) system. Used power control code/circuitry and fiber optical lab equipment to obtain active optical measurements of pole-zero microring-resonator filters fabricated in the IBM 45nm SOI CMOS process.

CHILL National Radar Facility **Colorado State University**

NSF REU, PI: Prof. V. Chandrasekar [Facility Website] *May 2012 – August 2012*

Electromagnetic Modeling of Hail: Used MoM and FEM computational electromagnetics codes to analyze scattering from hailstones with inhomogeneous permittivity and complex shape. Accepted into and funded by the National Science Foundation (NSF) Research Experience for Undergraduates (REU). Presented results at two international/national conferences.

Microwave and RF Research Group **University of Colorado Boulder**

Research Assistant, PI: Prof. Zoya Popovic [Group Website] *August 2011 – April 2013*

Antenna Array Design and Fabrication: Designed, fabricated, and measured microstrip patch antennas and arrays using AWR software, milling machine, and anechoic chamber. Researched design, fabrication, and measurement methods for quasi-optical lens antenna arrays. Accepted into and funded by the CU Undergraduate Research Opportunities Program.

Human Tissue Simulation: Used SEMCAD to model, simulate, and analyze various human tissues to infer their electromagnetic properties.

Nanomagnetism Group — Colorado State University

Laboratory Assistant, PI: Prof. Kristen Buchanan [Group Website] — *October 2010 – April 2011*

Hysteresis Measurements: Attained a research position in high school. Worked in a tabletop optics lab to study the hysteresis qualities of lab grown metals. Gained professional lab experience in handling lasers and problem solving skills in eliminating experimental error.

TEACHING EXPERIENCE

Link: web.mit.edu/notaros/www/service.html

Subjects Taught at the Massachusetts Institute of Technology

- Spring 2023: 6.2300 Electromagnetic Waves and Applications
- Fall 2022: 6.S046/6.S976 Silicon Photonics
- Fall 2021: 6.630 Electromagnetics
- Spring 2021: 6.013 Electromagnetic Waves and Applications
- Fall 2020: 6.630 Electromagnetics

Instructor for IPT Active Devices Online Course

Developer and Instructor [Course Website] — *March 2021 – September 2021*

Developed an online course (Integrated Photonics Test: Active Devices) in collaboration with several faculty from other institutions, which has already resulted in ~80 registered participants. Developed and recorded lectures along with associated hands-on lab demos (performed and recorded in research lab), and co-authored an accompanying educational conference paper on this new instructional format for online courses.

Instructor for AIM Photonics Summer Academy

Instructor [Program Website] — *July 2019 & July 2022*

Instructor for the AIM Photonics Academy, a week-long intensive program held at MIT introducing participants from academia and industry to integrated photonics through short courses and a design project. Organized and facilitated the LiDAR design-project breakout sessions where students collaborated on and presented a conceptual design for an application-specific integrated photonic circuit.

Kaufman Teaching Certificate Program — Massachusetts Institute of Technology

Program Participant, Instructor: Dr. Dipa Shah [Program Website] — *February 2019 – May 2019*

Completed MIT's Kaufman Teaching Certificate Program (KTCP). Through assigned readings, workshop discussions, assignment-based practice, and lecture- and active-learning-based microteaching sessions, developed critical teaching skills, including designing a course, identifying intended learning outcomes, constructing a syllabus, planning and facilitating class sessions, interactive teaching, facilitating active learning, constructing effective assignments, and inclusive teaching.

T.A. for Introduction to Digital and Analog Electronics — University of Colorado Boulder

Teaching Assistant, Instructor: Prof. Peter Mathys [Course Website] — *January 2013 – May 2013*

Ran two weekly lab sections where students designed and built digital and analog circuitry with a culminating final project of the design and implementation of a digital clock. Graded homework and held review sessions. Accepted into and funded by the Earn-Learn Apprenticeship program.

SERVICE, OUTREACH, AND OTHER ACTIVITIES

Link: web.mit.edu/notaros/www/service.html

Service and Outreach

- 2017 – Present: Reviewer for *Nature, Nature Communications, OSA Optics Express*, *OSA Optics Letters*, *IEEE JSTQE, IEEE Photonics Journal*, etc.
- 2021: Program Co-Chair of the *MIT EECS Rising Stars Workshop* [Link]
- 2023: Program Committee Member of the *OSA Conference on Lasers and Electro-Optics (CLEO)* [Link]
- 2023: Program Committee Member of the *OSA Integrated Photonics Research (IPR) Conference* [Link]
- 2022: Program Committee Member of the *OSA Integrated Photonics Research (IPR) Conference* [Link]
- 2021: Program Committee Member of the *OSA Integrated Photonics Research (IPR) Conference* [Link]
- 2023: Area Co-Chair of the *MIT EECS Graduate Admissions Committee*
- 2022: Committee Member of the *MIT EECS Graduate Admissions Committee*
- 2021: Committee Member of the *MIT EECS Graduate Admissions Committee*
- 2020 – Present: Co-Organizer of the *MIT Optics and Quantum Electronics (OQE)* Seminar Series [Link]
- 2022 – Present: Co-Organizer of the *MIT RLE Hermann Haus Lecture*
- 2021: Chair of the *MIT EE Curriculum Electromagnetics and Photonics Track*
- 2018: Core Committee Member of the *MIT Microsystems Annual Research Conference (MARC)* [Link]
- 2017: Core Committee Member of the *MIT Microsystems Annual Research Conference (MARC)* [Link]
- 2018: Session Chair for the *MIT Microsystems Annual Research Conference (MARC)* [Link]
- 2017: Session Chair for the *MIT Microsystems Annual Research Conference (MARC)* [Link]
- 2021: Session Chair for the *OSA Integrated Photonics Research (IPR) Conference*
- 2020: Session Chair for the *OSA Frontiers in Optics (FiO) Conference* [Link]
- 2014 – 2015: President of the *CU Boulder Eta Kappa Nu (HKN)* Electrical Engineering Honor Society
- 2016 – 2017: Chair of the *MIT EECS Graduate Students Association (GSA)*
- 2020: Keynote Moderator for the *MIT Microsystems Annual Research Conference (MARC)* [Link]
- 2019: Panel Moderator for the *MIT Lam Research Technical Symposium* [Link]
- 2020: Panelist and Mentor for the *UC Berkeley EECS Rising Stars Workshop* [Link]
- 2021: Panelist for the *MIT GW6 Research Summit*
- 2022: Panelist for the *MIT Microsystems Annual Research Conference (MARC)* [Link]
- 2021: Panelist for the *MIT Microsystems Annual Research Conference (MARC)* [Link]
- 2021: Panelist for the *MIT Voltage Student Group Fall Faculty Dinner* [Link]
- 2021: Panelist for the *MIT Voltage Student Group Spring Faculty Dinner* [Link]
- 2023: Panelist for the *MIT EECS Thriving Stars Career Panel*
- 2022: Panelist for the *MIT EECS Undergraduate Women Faculty Breakfast*
- 2021: Panelist for the *MIT EECS Academic Job Search Seminar (6.S899)*
- 2020: Panelist for the *MIT EECS Academic Job Search Seminar (6.S899)*
- 2022: Panelist for the *MIT EECS Faculty Search Seminar*
- 2021: Panelist for the *MIT EECS Faculty Search Seminar*
- 2020: Panelist for the *MIT EECS Faculty Search Seminar* [Link]
- 2021: Panelist for the *MIT EECS New Student Seminar*
- 2021: Panelist for the *MIT EECS Women's Seminar*
- 2018: Panelist for the *MIT EECS Women's Seminar*
- 2022: Volunteer Presenter for the *MIT Women's Technology Program (WTP)* [Link]
- 2022: Volunteer Presenter for the *MIT EECS Graduate Student Orientation*

- 2022: Volunteer Presenter for the *MIT EECS Academic Job Search Seminar (6.S899)*
- 2022: Volunteer Presenter for the *MIT EECS Undergraduate Electromagnetics Class (6.013)*
- 2022: Volunteer Presenter for the *MIT EECS Graduate Electromagnetics Class (6.630)*
- 2022: Volunteer Presenter for the *MIT EECS Undergraduate Advanced Research Class (6.UAR)*
- 2022: Volunteer Presenter for the *MIT CodeIt Program* [Link]
- 2021: Volunteer Presenter for the *MIT CodeIt Program* [Link]
- 2021: Volunteer Presenter for the *MIT EECS Family Week Event*
- 2021: Volunteer Presenter for the *MIT EECS Admitted Student Visit Days*
- 2021: Volunteer Judge for the *MIT iQuHACK (Interdisciplinary Quantum Hackaton)* [Link]
- 2020: Volunteer Judge for the *MIT GW6 Research Summit*
- 2021: Volunteer for the *MIT Summer Research Program (MSRP)*
- 2017: Volunteer for the *MIT EECS Faculty Search Student Committee*
- 2019: Volunteer for the *MIT Women's Technology Program (WTP)* [Link]
- 2019: Volunteer for the *MIT.nano Cambridge Science Festival* [Link]
- 2018: Volunteer for the *MIT Lincoln Labs Girls Who Build (GWB) Program* [Link]
- 2017 – 2018: Volunteer for the *MIT SWE Women in Science and Engineering (WiSE) Program* [Link]
- 2011: Engineer for the *Imagine Boulder Smart Home*

Honors and Professional Society Affiliations

- 2011 – 2015: Member of the *CU Boulder Engineering Honors Program*
- 2014 – Present: Member of the *Eta Kappa Nu (HKN)* Electrical Engineering Honor Society
- 2014 – Present: Member of the *Tau Beta Pi (TBP)* Engineering Honor Society
- 2013 – Present: Member of the *Institute of Electrical and Electronics Engineers (IEEE)*
- 2014 – Present: Member of the *Optical Society (OSA)*
- 2015 – Present: Member of the *International Society for Optics and Photonics (SPIE)*
- 2011 – Present: Member of the *Society of Women Engineers (SWE)*
- 2013 – Present: Member of the *IEEE Women in Engineering (WIE)*
- 2015 – 2020: Member of the *MIT EECS Graduate Students Association (GSA)*
- 2015 – 2020: Member of the *MIT Graduate Women in Course 6*
- 2014 – 2015: Member of the *Sigma Xi* Scientific Research Society

Chair of EECS Rising Stars Workshop — Massachusetts Institute of Technology

General Co-Chair [Workshop Website] — *March 2021 – October 2021*

Served as the general co-chair of the EECS Rising Stars workshop hosted at MIT that brought together ~80 graduate students and postdocs with female and other historically underrepresented gender identities who are interested in pursuing academic careers in EECS. Reviewed over 200 applications, invited 34 faculty panelists and speakers, and curated and executed a program consisting of 13 events over 2 full days.

President of HKN Electrical Engineering Honor Society — University of Colorado Boulder

President of the CU Boulder Chapter [Chapter Website] — *May 2014 – May 2015*

Elected president of Eta Kappa Nu (HKN), the electrical engineering honor society. Lead organization of events and activities including renovating the department's Student Resource Center and undergraduate circuits lab, building a binary clock and autonomous vehicle, volunteering with community organizations, and holding soldering seminars for underclassmen. Chapter recognized with the 2014–2015 IEEE-HKN Outstanding Chapter Award [Link].

Chair of EECS Graduate Students Association **Massachusetts Institute of Technology**

Visit Days Chair and Coffee Hour Chair [Group Website] *January 2016 – December 2017*

Held Visit Days & Orientation Chair and Coffee Hour Chair positions in the MIT Electrical Engineering and Computer Science Graduate Students Association. Organized weekly coffee socials regularly attended by ~70 graduate students, the department's incoming student visit days, and the department's new student orientations.

Core Committee and Session Chair of MIT MARC **Massachusetts Institute of Technology**

Core Committee Member and Session Chair [Conference Website] *September 2016 – February 2018*

Held the Photonics & Optoelectronics Session Chair position and member of the core organizing committee for the 2017 and 2018 MIT Microsystems Technology Laboratories' (MTL) Microsystems Annual Research Conference (MARC) held in Bretton Woods, New Hampshire. Organized session review committees, solicited abstract submissions, organized feature talks, chaired conference sessions, and assisted day-of operations.

PUBLICATIONS AND PRESENTATIONS

Link: web.mit.edu/notaros/www/publications.html

Journal Papers

[1] M. Notaros, T. Dyer, A. Garcia Coleto, A. Hattori, K. Fealey, S. Kruger, and J. Notaros, "Flexible Wafer-Scale Silicon-Photonics Fabrication Platform," under review.

[2] A. Hattori*, T. Sneh*, M. Notaros, S. Corsetti, P. T. Callahan, D. Kharas, T. Mahony, R. McConnell, J. Chiaverini, and J. Notaros, "Integrated Visible-Light Polarization Rotators and Splitters for Atomic Quantum Systems," under review. (*Equal Contributors)

[3] S. Corsetti, M. Notaros, T. Sneh, A. Stafford, Z. Page, and J. Notaros, "Silicon-Photonics-Enabled Chip-Based 3D Printer," under review.

[4] M. Notaros, A. Garcia Coleto, M. Raval, and J. Notaros, "Integrated Liquid-Crystal-Based Variable-Tap Device for Visible-Light Amplitude Modulation," under review.

[5] M. Notaros, T. Dyer, M. Raval, C. Baiocco, J. Notaros, and M. R. Watts, "Integrated-Photonics-Based Holographic Display for Augmented Reality," under review.

[6] T. Sneh, S. Corsetti, M. Notaros, K. Kikkeri, J. Voldman, and J. Notaros, "Optical Tweezing of Microparticles and Cells Using Silicon-Photonics-Based Optical Phased Arrays," under review.

[7] L. Neim, A. Yovanovich, J. Bartholomew, V. Deenadayalan, M. Ciminelli, T. Palone, M. van Niekerk, M. Song, A. Nauriyal, J. Notaros, S. Serna Otálvaro, J. Cardenas, T. Brown, A. M. Agarwal, S. Saini, and S. F. Preble, "Hands-On Photonic Education (HOPE) Kits: Empowering the Integrated Photonics Workforce through Practical Training," *Applied Optics* **62**(31), H24–H32 (2023). [Optics InfoBase]

[8] M. Notaros, D. DeSantis, M. Raval, and J. Notaros, "Liquid-Crystal-Based Visible-Light Integrated Optical Phased Arrays and Application to Underwater Communications," *Optics Letters* **48**(20), 5269–5272 (2023). [Optics InfoBase]

[9] M. de Cea, Z. Li, M. Notaros, J. Notaros, and R. J. Ram, "Single-Mode Waveguide-Coupled Light Emitting Diodes in Unmodified Silicon Photonics Fabrication Processes," *APL Photonics* **8**(8), 081301 (2023). [AIP Publishing]

[10] Z. Zhang, M. Notaros, Z. Gao, U. Chakraborty, J. Notaros, and D. S. Boning, "Impact of Process Variations on Splitter-Tree-Based Integrated Optical Phased Arrays," *Optics Express* **31**(8), 12912–12921 (2023). [Optics InfoBase]

[11] M. Notaros, T. Dyer, M. Raval, C. Baiocco, J. Notaros, and M. R. Watts, "Integrated Visible-Light Liquid-Crystal-Based Phase Modulators," *Optics Express* **30**(8), 13790–13801 (2022). [Optics InfoBase]

[12] U. Chakraborty, J. Carolan, G. Clark, D. Bunandar, G. Gilbert, J. Notaros, M. R. Watts, and D. R. Englund, "Cryogenic operation of silicon-photonics modulators based on the DC Kerr effect," *Optica* **7**(10), 1385–1390 (2020). [Optics InfoBase]

[13] N. Li, M. Xin, Z. Su, E. S. Magden, N. Singh, J. Notaros, E. Timurdogan, Purnawirman, J. D. B. Bradley, and M. R. Watts, "A Silicon Photonic Data Link with a Monolithic Erbium-Doped Laser," *Scientific Reports* **10**, 1114 (2020). [Nature]

[14] M. Xin*, N. Li*, N. Singh, A. Ruocco, Z. Su, E. S. Magden, J. Notaros, D. Vermeulen, E. Ippen, M. R. Watts, and F. Kärtner, "Optical frequency synthesizer with an integrated erbium tunable laser," *Light: Science and Applications* **8**, 122 (2019). (*Equal Contributors) [Nature]

[15] J. Notaros*, N. Li*, C. V. Poulton, Z. Su, M. J. Byrd, E. S. Magden, E. Timurdogan, C. Baiocco, N. M. Fahrenkopf, and M. R. Watts, "CMOS-Compatible Optical Phased Array Powered by a Monolithically-Integrated Erbium Laser," *Journal of Lightwave Technology* **37**(24), 5982–5987 (2019). (*Equal Contributors) [IEEE Xplore]

[16] T. Kim*, P. Bhargava*, C. V. Poulton*, J. Notaros, A. Yaacobi, E. Timurdogan, C. Baiocco, N. Fahrenkopf, S. Kruger, T. Ngai, Y. Timalsina, M. R. Watts, and V. Stojanovic, "A Single-Chip Optical Phased Array in a Wafer-Scale Silicon Photonics / CMOS 3D-Integration Platform," *IEEE Journal of Solid-State Circuits* **54**(11), 3061–3074 (2019). (*Equal Contributors) [IEEE Xplore] **(Invited Paper)**

[17] J. Notaros, C. V. Poulton, M. Raval, and M. R. Watts, "Near-field-focusing integrated optical phased arrays," *Journal of Lightwave Technology* **36**(24), 5912–5920 (2018). [IEEE Xplore]

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Conference Papers

[1] Z. Zhang, M. Notaros, Z. Gao, U. Chakraborty, J. Notaros, and D. Boning, "Impact of Spatial Variations on Splitter-Tree-Based Integrated Optical Phased Arrays," in *Proceedings of Optical Fiber Communication Conference (OFC)* (OSA, 2023), paper W2A.35.

[2] J. Notaros, "Silicon Photonics for Augmented Reality and Beyond," in *Proceedings of IEEE International Solid-State Circuits Conference (ISSCC)* (IEEE, 2023), paper F4.04. **(Invited Forum Talk)**

[3] J. Notaros, "Integrated optical phased arrays: augmented reality, LiDAR, and beyond," in *Proceedings of Photonics West* (SPIE, 2023), paper 12438-64. **(Invited Talk)**

[4] Z. Zhang, M. Notaros, Z. Gao, U. Chakraborty, J. Notaros, and D. S. Boning, "Impact of Spatial Variations on Integrated Optical Phased Arrays," in *Proceedings of MIT MTL's Microsystems Annual Research Conference (MARC)* (MIT MTL, 2023), paper 7.6.

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[19] T. Sneh, S. Corsetti, M. Notaros, and J. Notaros, "Focusing Integrated Optical Phased Arrays for Chip-Based Optical Trapping," in *Proceedings of Conference on Lasers and Electro-Optics (CLEO)* (OSA, 2022), paper STh4G.4. [Optics InfoBase]

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[38] M. Notaros, J. Notaros, M. Raval, and M. R. Watts, "Integrated Visible-Light Liquid-Crystal Variable-Tap Amplitude Modulator," in *Proceedings of Integrated Photonics Research, Silicon, and Nanophotonics (IPR)* (OSA, 2019), paper ITh2C.6. [Optics InfoBase]

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[41] J. Notaros, M. Raval, M. Notaros, and M. R. Watts, "Integrated-Phased-Array-Based Visible-Light Near-Eye Holographic Projector," in *Proceedings of Conference on Lasers and Electro-Optics (CLEO)* (OSA, 2019), paper STu3O.4. [Optics InfoBase] **(Chair's Pick Award) (Upgraded to Invited Talk)**

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[55] J. Notaros, "Integrated Optical Phased Array Architectures and Applications," presented at the *2018 Boston Photonics Conference*, Boston, Massachusetts (2018). [BPC] **(Plenary Talk)**

[56] J. Notaros, C. V. Poulton, M. J. Byrd, M. Raval, and M. R. Watts, "Quasi-Bessel-Beam Generation Using Integrated Optical Phased Arrays," in *Proceedings of MIT MTL's Microsystems Annual Research Conference (MARC)* (MIT MTL, 2018), paper 4.11. [MIT MTL]

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[67] M. A. Popovic, M. T. Wade, J. S. Orcutt, J. M. Shainline, C. Sun, M. Georgas, B. Moss, R. Kumar, L. Alloatti, F. Pavanello, Y. H. Chen, K. Nammari, J. Notaros, A. Atabaki, J. C. Leu, V. Stojanovic, and R. J. Ram, "Monolithic Silicon Photonics in a Sub-100nm SOI CMOS Microprocessor Foundry: Progress from Devices to Systems," in *Proceedings of Photonics West* (SPIE, 2015). [SPIE] **(Invited Talk)**

[68] J. Notaros and M. A. Popovic, "Analysis of Leaky-Wave Microphotonic Structures with a Complex-Wavevector Photonic Band Structure Solver," in *Proceedings of Frontiers in Optics (FiO)* (OSA, 2014), paper FTh4D.3. [Optics InfoBase]

[69] J. Notaros and M. A. Popovic, "Finite-Difference Complex Wavevector Band Structure Solver for Nanophotonics Applications," in *Proceedings of Integrated Photonics Research, Silicon, and Nanophotonics (IPR)* (OSA, 2014), paper IT1A.3. [Optics InfoBase]

[70] J. Notaros, "Complex Wavevector Bloch Solver For Nanophotonic Device Applications," presented at the *2014 IEEE Region 5 Meeting*, Corpus Christi, Texas (2014). **(Best Paper Award)**

[71] J. Notaros, E. Chobanyan, V. Chandrasekar, and B. M. Notaros, "Accurate and Efficient Full-Wave Electromagnetic Analysis of Scattering from Hailstones," in *Proceedings of the IEEE Antennas and Propagation Society International Symposium (APS)* (IEEE, 2013), pp 1976–1977. [IEEE Xplore]

[72] E. Chobanyan, J. Notaros, V. Chandrasekar, and B. Notaros, "Accurate Electromagnetic Modeling of Melting Hail," in *Proceedings of the USNC-URSI National Radio Science Meeting* (IEEE, 2013). [IEEE Xplore]

Other Publications and Presentations

[1] *Invited Seminar:* J. Notaros, "Silicon Photonics for LiDAR, Augmented Reality, and Beyond," presented at the *EECS Department Seminar*, UC Berkeley (2023).

[2] *Invited Seminar:* J. Notaros, "Silicon Photonics for LiDAR, Augmented Reality, and Beyond," presented at the *Army Research Laboratory Colloquium* (2023).

[3] *Invited Seminar:* J. Notaros, "Silicon Photonics: LiDAR, Augmented Reality, and Beyond," presented at the *MIT.nano Membership Advisory Panel (MAP) Meeting* (2023).

[4] *Invited Seminar:* J. Notaros, "Silicon Photonics at MTL," presented at the *MIT MTL Industrial Advisory Board (IAB) Meeting* (2023).

[5] *Invited Seminar:* J. Notaros, "Silicon Photonics: LiDAR, Augmented Reality, and Beyond," presented at the *MIT EECS Graduate Electromagnetics Course (6.630)* (2022).

[6] *Invited Seminar:* J. Notaros, "Silicon Photonics: LiDAR, Augmented Reality, and Beyond," presented at the *PIC1: Fabless Design of Photonic Integrated Circuits Course* (2022). [Link]

[7] *Invited Seminar:* J. Notaros, "Silicon Photonics for LiDAR, Augmented Reality, and Beyond," presented at the *MIT ILP Research and Development Conference* (2022). [Link]

[8] *Invited Seminar:* J. Notaros, "Integrated Photonics for Biophotonics and Beyond," presented at the *SoE Analog Devices Symposium*, MIT (2022).

[9] *Invited Seminar:* J. Notaros, "Integrated Photonics for Trapped-Ion Systems and Beyond," presented at the *Quantum Nanofabrication Workshop*, CU Boulder (2022). [Link]

[10] *Invited Seminar:* J. Notaros, "Silicon Photonics for LiDAR, Augmented Reality, and Beyond," presented at the *Electron Devices Society Seminar*, Cornell University (2022). [Link]

[11] *Invited Seminar:* J. Notaros, "Silicon Photonics for LiDAR, Augmented Reality, and Beyond," presented at the *Integrated Photonic Systems Roadmap (IPSR) International Spring Meeting* (2022).

[12] *Invited Seminar:* J. Notaros, "Integrated Optical Phased Arrays: LiDAR, Augmented Reality, and Beyond," presented at the *iMAPS New England Symposium* (2022).

[13] *Invited Seminar:* J. Notaros, "Silicon Photonics: LiDAR, Augmented Reality, and Beyond," presented at the *MIT EECS Undergraduate Electromagnetics Course (6.013)* (2022).

[14] *Report:* S. Corsetti, M. Notaros, T. Sneh, A. Stafford, Z. Page, and J. Notaros, "Silicon Photonics for Chip-Based 3D Printing," *MTL 2022 Annual Research Report* (MIT MTL, 2022), pp 106. [Link]

[15] *Report:* M. Notaros, T. Dyer, M. Raval, C. Baiocco, E. P. Ippen, M. R. Watts, and J. Notaros, "Integrated-Photonics-Based Visible-Light Holographic Augmented-Reality Display," *MTL 2022 Annual Research Report* (MIT MTL, 2022), pp 110. [Link]

[16] *Report:* T. Sneh, S. Corsetti, M. Notaros, and J. Notaros, "CMOS-Compatible Focusing Optical Phased Arrays for Steerable Chip-Based Optical Trapping," *MTL 2022 Annual Research Report* (MIT MTL, 2022), pp 112. [Link]

[17] *Invited Seminar:* J. Notaros, "Silicon Photonics for LiDAR, Augmented Reality, and Beyond," presented at the *Stanford Center for Image System Engineering (SCIEN) Seminar* (2022). [Link]

[18] *Invited Seminar:* J. Notaros, "Silicon Photonics for LiDAR, Augmented Reality, and Beyond," presented at the *MIT ILP Research and Development Conference* (2021). [Link]

[19] *Invited Seminar:* J. Notaros, "Integrated Optical Phased Arrays: LiDAR, Augmented Reality, and Beyond," presented at the *IEEE Photonics Society Boston Chapter Seminar* (2021). [Link]

[20] *News Article:* "EECS announces new hires for 2021," *MIT News* (2021). [Link]

[21] *Poster Session:* M. Notaros, T. Dyer, M. Raval, C. Baiocco, E. P. Ippen, M. R. Watts, and J. Notaros, "Silicon Photonics for Augmented Reality and Beyond," presented at the *MIT ILP-MRL Microphotonics Everywhere Symposium*, MIT (2020). [Link]

[22] *Invited Seminar:* J. Notaros, "Integrated Optical Phased Arrays: LiDAR, Augmented Reality, and Beyond," presented at the *Division 8 Seminar*, MIT Lincoln Laboratory (2020).

[23] *Invited Seminar:* J. Notaros, "Integrated Optical Phased Arrays: LiDAR, Augmented Reality, and Beyond," presented at the *MTL Symposium*, MIT (2020). [Link]

[24] *Invited Seminar:* M. Notaros, J. Notaros, M. Raval, and M. R. Watts, "Liquid-crystal-based integrated optical phased arrays for augmented reality," presented at the *MIT Nano Explorations Webinar Series*, MIT (2020). [Link]

[25] *Thesis:* J. Notaros, "Integrated Optical Phased Arrays: Augmented Reality, LiDAR, and Beyond," Doctoral Dissertation, MIT (2020). [Link]

[26] *Invited Seminar:* J. Notaros, "Integrated Optical Phased Arrays: LiDAR, Augmented Reality, and Beyond," presented at the *ECE Department Seminar*, Cornell University (2020). [Link]

[27] *Invited Seminar:* J. Notaros, "Integrated Optical Phased Arrays: LiDAR, Augmented Reality, and Beyond," presented at the *EE Department Seminar*, Harvard University (2020). [Link]

[28] *Invited Seminar:* J. Notaros, "Integrated Optical Phased Arrays: LiDAR, Augmented Reality, and Beyond," presented at the *ESE Department Seminar*, University of Pennsylvania (2020). [Link]

[29] *Invited Seminar:* J. Notaros, "Integrated Optical Phased Arrays: LiDAR, Augmented Reality, and Beyond," presented at the *EECS Department Seminar*, UC Berkeley (2020). [Link]

[30] *Invited Seminar:* J. Notaros, "Integrated Optical Phased Arrays: LiDAR, Augmented Reality, and Beyond," presented at the *ECE Department Seminar*, UT Austin (2020). [Link]

[31] *Invited Seminar:* J. Notaros, "Integrated Optical Phased Arrays: LiDAR, Augmented Reality, and Beyond," presented at the *EE Department Seminar*, Princeton University (2020). [Link]

[32] *Invited Seminar:* J. Notaros, "Integrated Optical Phased Arrays: LiDAR, Augmented Reality, and Beyond," presented at the *EECS Department Seminar*, MIT (2020). [Link]

[33] *Invited Seminar:* J. Notaros, "Integrated Optical Phased Arrays: LiDAR, Augmented Reality, and Beyond," presented at the *ECEE Department Seminar*, CU Boulder (2020).

[34] *Invited Seminar:* J. Notaros, "Integrated Optical Phased Arrays: LiDAR, Augmented Reality, and Beyond," presented at the *ECE Department Seminar*, UC San Diego (2020).

[35] *Invited Seminar:* J. Notaros, "Integrated Optical Phased Arrays: LiDAR, Augmented Reality, and Beyond," presented at the *Solid State Technology and Devices Seminar*, UC Berkeley (2019). [Link]

[36] *Invited Seminar:* J. Notaros, "Integrated Optical Phased Arrays: LiDAR, Augmented Reality, and Beyond," presented at the *Electronic Materials Research Group Meeting*, MIT (2019).

[37] *Poster Session:* J. Notaros, "Integrated Optical Phased Arrays: Architectures and Applications," presented at the *EECS Rising Stars Workshop*, MIT (2018). [Link]

[38] *Poster Session:* J. Notaros, "Integrated Optical Phased Arrays: Architectures and Applications," presented at the *MIT.nano LAUNCH.nano Symposium*, MIT (2018).

[39] *Report:* J. Notaros, C. V. Poulton, M. J. Byrd, M. Raval, and M. R. Watts, "Quasi-Bessel-Beam Generation Using Integrated Optical Phased Arrays," *MTL 2018 Annual Research Report* (MIT MTL, 2018), pp 52. [Link]

[40] *News Article:* "Electronics and photonics united," *Nature* (2018). [Link]

[41] *News Article:* "Integrating optical components into existing chip designs," *MIT News* (2018). [Link]

[42] *News Article:* "Researchers illuminate the path to a new era of microelectronics," *BU News* (2018). [Link]

[43] *Patent:* J. C. Mower, J. Notaros, M. Heuck, D. R. Englund, C. Lupo, and S. Lloyd, "Apparatus and methods for locked quantum communication using photonic integrated circuits," U.S. Patent No. 10126506 (2018). [Link]

[44] *Poster Session:* J. Notaros, "Ultra-Efficient Grating Couplers," presented at the *2015 ECEE Senior Design Expo*, CU Boulder (2015).

[45] *Magazine Article:* J. Notaros, "Utilizing Computational Electromagnetics for the Advancement of Photonic Processor Communications," *IEEE-HKN's The Bridge* (IEEE, 2014), pp 11–14. [Link]

[46] *News Article:* "Undergrad excited to be taking part in cutting-edge nanophotonics research," *CU Boulder News* (2014). [Link]

[47] *Invited Presentation:* J. Notaros, "Complex Wavevector Bloch Solver for Nanophotonic Device Applications," presented at the *2014 IEEE Denver Section Executive Committee Meeting*, Denver, Colorado (2014).

[48] *Invited Presentation:* J. Notaros, "Complex Wavevector Bloch Solver for Nanophotonic Device Design Applications," presented at the *2014 Engineering Advisory Council Meeting*, CU Boulder (2014).

[49] *Poster Session:* J. Notaros, "Complex Wavevector Band Structure Solver for Nanophotonic Device Design Applications," presented at the *2014 Discovery Learning Research Symposium*, CU Boulder (2014).