Alexander Zaslavsky

1. Position Professor of Engineering and Physics,
Brown University, Providence, RI 02912

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3. Education

Princeton University, Princeton, NJ	PhD	1991	Electrical Engineering
Dissertation:	*Resonant tunneling in double-barrier heterostructures in three and two dimensions* (advisor: Prof. Daniel C. Tsui).		
Princeton University, Princeton, NJ	ScM	1988	Electrical Engineering
Harvard University, Cambridge, MA	AB	1986	Physics *magna cum laude*

4. Professional appointments

9/20–5/21	Visiting Scientist, Alternative Computing Group, NIST–Gaithersburg, MD.
9/16–7/17	Invited Professor, INP–Grenoble, France.
6/09–8/13	Visiting Senior Chair of Excellence, Nanosciences Foundation, Grenoble, France.
7/07–now	Professor of Engineering and Physics, Brown University, Providence, RI.
10/03–now	Editor, *Solid State Electronics* international journal.
1/07–6/07	Visiting Research Scientist, Minatec, Grenoble, France (sabbatical semester).
7/99–6/07	Associate Professor of Engineering and Physics, Brown University, Providence, RI.
9/00–6/01	Visiting Research Scientist, Dept. of Microelectronics, LETI-CEA, Grenoble, France (sabbatical year).
1/94–6/99	Assistant Professor, Div. of Engineering, Brown University, Providence, RI.
9/91–12/93	Postdoctoral Scientist, Physical Sciences Department, IBM T. J. Watson Research Center, Yorktown Heights, NY.
9/86–8/91	Research and Teaching Assistant, Electrical Engineering Department, Princeton University.

5. Publications and scholarship

Books

a9. S. Luryi, J. Xu, and A. Zaslavsky, eds., *Future Trends in Microelectronics: Journey into the Unknown*, Wiley/IEEE Press, Hoboken, NJ (2016) [ISBN: 978-1-119-06911-9].

a8. S. Luryi, J. Xu, and A. Zaslavsky, eds., *Future Trends in Microelectronics: Frontiers and Innovations*, Wiley/IEEE Press, Hoboken, NJ (2013) [ISBN: 978-1-118-44216-6].

a7. S. Luryi, J. Xu, and A. Zaslavsky, eds., *Future Trends in Microelectronics: From Nanophotonics to Sensors and Energy*, Wiley Interscience, New York (2010).

a6. S. Luryi, J. Xu, and A. Zaslavsky, eds., *Future Trends in Microelectronics: Up the Nano Creek*, Wiley Interscience, New York (2007).

a5. S. Luryi, J. Xu, and A. Zaslavsky, eds., *Future Trends in Microelectronics: The Nano, the Giga, and the Ultra*, Wiley Interscience/IEEE Press, New York (2004).

a4. S. Luryi, J. Xu, and A. Zaslavsky, eds., *Future Trends in Microelectronics: The Nano Millennium*, Wiley Interscience and IEEE Press, New York (2002).

a3. Y.-S. Park, M. S. Shur, S. Luryi, J. Xu, and A. Zaslavsky, eds., *Frontiers in Electronics: From Materials to Systems*, World Scientific, Singapore (2000).

a2. S. Luryi, J. Xu, and A. Zaslavsky, eds., *Future Trends in Microelectronics: Off the Beaten Path*, Wiley Interscience, New York (1999).

a1. S. Luryi, J. Xu, and A. Zaslavsky, eds., *Future Trends in Microelectronics: Reflections on the Road to Nanotechnology*, Kluwer Academic Publishers, Dordrecht (1996).

Book or proceedings chapters

b62. S. Cho, A. Zaslavsky, C. A. Richter, J. M. Majikes, J. A. Liddle, F. Andrieu, S. Barraud, and A. Balijepalli, "High-resolution DNA binding kinetics measurements with double gate FD-SOI transistors", *Tech. Dig. IEDM*, talk 24.2, San Francisco (2022).

b61. X. Y. Chen, J. Liu, K. Xiao, A. Zaslavsky, S. Cristoloveanu, F. Y. Liu, B. Li, and J. Wan, "Unijunction transistor on silicon-on-insulator substrate", *Proc. 15th Intern. Conf. Solid-State Integr. Circ. Technol. (ICSICT-2020)*, Kunming, China (2020).

b60. K. Xiao, J. Liu, J. N. Deng, Y. L. Jiang, W. Z. Bao, A. Zaslavsky, S. Cristoloveanu, X. Gong, and J. Wan, "Novel semiconductor devices based on SOL substrate", *Proc. 2020 China Semicond. Technol. Intern. Conf. (CSTIC-2020)*, Shanghai, China (2020).

b59. M. Arsalan, J. Liu, A. Zaslavsky, S. Cristoloveanu, F. Y. Liu, B. H. Li, B. Li, and J. Wan, "Suppressing crosstalk in the photoelectron *in-situ* sensing device (PISD) by double SOI", presented at *EuroSOI Conf.*, Caen, France (2020).

b58. E. Rezaei, M. Donato, W. R. Patterson, A. Zaslavsky, and R. I. Bahar, "Thermal-noise-induced error simulation framework for subthreshold CMOS SRAM", presented at *IEEE SOI-3D-Subthreshold Conf. (S3S)*, San Jose, CA (October, 2019).

b57. C. Q. Xu, M. Arsalan, A. Zaslavsky, S. Cristoloveanu, and J. Wan, "Optimization of photoelectron *in-situ* sensing device in FD-SOI", presented at *IEEE SOI-3D-Subthreshold Conf. (S3S)*, San Jose, CA (October, 2019).

b56. J. Liu, X. Y. Cao, B. R. Lu, Y. F. Chen, A. Zaslavsky, S. Cristoloveanu, M. Bawedin, and J. Wan, "Z^2-FET: A multifunctional device used for photodetection", *Proc. 2019 China Semicond. Technol. Intern. Conf. (CSTIC-2019)*, Shanghai, China (2019).

b55. J. Liu, X. Y. Cao, A. Zaslavsky, S. Cristoloveanu, and J. Wan, "Photodiode with low dark current built in silicon-on-insulator by electrostatic doping", *Proc. EuroSOI Conf.*, Grenoble, France (2019) [expanded version published in *Solid State Electronics*, journal article c101]

b54. J. Wan, W. Z. Bao, J. N. Deng, Z. X. Guo, X. Y. Cao, B. R. Lu, Y. F. Chen, A. Zaslavsky, S. Cristoloveanu, and M. Bawedin, "ICPD: an SOI-based photodetector with high responsivity and tunable response spectrum", *Proc. 14th Inter. Conf. Solid-State Integr. Circ. Technol. (ICSICT-2018)*, Qindao, China (2018) [invited].

b53. J. Liu, X. Y. Cao, B. R. Lu, Y. F. Chen, A. Zaslavsky, S. Cristoloveanu, M. Bawedin, and J. Wan, "A new photodetector on SOI", *Proc. IEEE SOI-3D-Subthreshold Conf. (S3S)*, San Francisco, CA (2018), pp. 1–2

b52. M. Arsalan, X. Y. Cao, B. R. Lu, Y. F. Chen, A. Zaslavsky, S. Cristoloveanu, M. Bawedin, and J. Wan, "A highly sensitive photodetector based on deep-depletion effects in SOI transistors", *Proc. IEEE SOI-3D-Subthreshold Conf. (S3S)*, San Francisco, CA (2018), pp. 1–3 [expanded version published as a journal article c99].

b51. J. Wan, J. N. Deng, X. Y. Cao, H. B. Liu, B. R. Lu, Y. F. Chen, A. Zaslavsky, S. Cristoloveanu, and M. Bawedin, "Novel photodetector based on FD-SOI substrate with interface coupling effect", *Proc. 18th Intern. Workshop Junction Technol.*, Shanghai, China (2018), pp. 1–4.

b50. J. N. Deng, J. H. Shao, B. R. Lu, Y. F. Chen, A. Zaslavsky, S. Cristoloveanu, M. Bawedin, and J. Wan, "A novel photodetector based on the interface coupling effect in SOI MOSFETs", *Proc. IEEE SOI-3D-Subthreshold Conf. (S3S)*, San Francisco, CA (2017), pp. 1–3 [expanded version published as a journal article c96].

b49. G. A. Umana-Membreno, Y. Song, N. D. Akhavan, J. Antoszewski, D. C. Paine, A. Zaslavsky, and L. Faraone, "Al_2O_3/HfO_2 gate oxide annealing effects on the electronic transport parameters of IZO for thin-film transistor applications", *Proc. 20th Insulating Films Semicond. (INFOS-2017)*, Potsdam, Germany (2017) [also published as a journal article c91].

b48. A. Zaslavsky, "Tunneling field effect transistors – Is there hope?", *Proc. Intern. Semicond. Dev. Res. Symp. (ISDRS)* (2016), paper TP2-04 [invited].

b47. S. Siontas, A. Zaslavsky, and D. C. Paine, "High-efficiency germanium quantum dot photodetectors: Noise performance and operating temperature effects", *Proc. Intern. Semicond. Dev. Res. Symp. (ISDRS)* (2016), paper TA3-04.

b46. Yang Song, A. Zaslavsky, D. C. Paine, and A. Katsman, "Temporal and voltage stress stability of high-performance indium-zinc-oxide TFTs", *Proc. Intern. Semicond. Dev. Res. Symp. (ISDRS)* (2016), paper WP4-05.

b45. Yang Song, D. C. Paine, and A. Zaslavsky, "Sharp-switching top-gated indium-zinc-oxide thin film transistors using novel *in-situ* dielectric formation process", *Electronic Materials Conf. (EMC)* (2016).

b44. Xijing Han, M. Donato, R. I Bahar, W. R. Patterson, and A. Zaslavsky, "Design of error-resilient logic gates with reinforcement using implications", *Proc. Great Lakes VLSI Symp.* (2016), pp. 191–196.

b43. M. Donato, R. I. Bahar, W. R. Patterson, and A. Zaslavsky, "A fast simulator for the analysis of sub-threshold thermal noise transients", *Design Automation Conf.* (DAC-2016), art. a56.

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b39. S. Cristoloveanu, M. Bawedin, J. Wan, S.-J. Chang, C. Navarro, A. Zaslavsky, C. Le Royer, F. Andrieu, N. Rodriguez, and F. Gamiz, "Innovative capacitorless SOI DRAMs", *IEEE Intern. SOI Conf.*, Napa, CA (2012), art. 6404391.

b38. J. Wan, C. Le Royer, A. Zaslavsky, and S. Cristoloveanu, "Z^2-FET used as a 1-transistor high-speed DRAM", *Proc. European Solid State Dev. Res. Conf. (ESSDERC)*, Bordeaux, France (2012), pp. 197-200.

b37. P. Liu, S. T. Le, S. Lee, D. Paine, A. Zaslavsky, D. Pacifici, S. Cosentino, S. Mirabella, M. Miritello, I. Crupi, and A. Terrasi, "Fast, high-efficiency Ge quantum dot photodetectors", *Proc. Lester Eastman Conf. High Performance Dev. (LEC)*, Providence, RI (2012), art. 6410978.

b36. M. Donato, F. Cremona, W. Jin, I. Bahar, W. Patterson, A. Zaslavsky, and J. Mundy, "A noise-immune sub-threshold circuit design based on selective use of Schmitt-trigger logic", *Proc. Great Lakes VLSI Symp.* (2012), pp. 39–44.

b35. Son T. Le, D. Perea, P. Jannaty, A. Mohite, S. A. Dayeh, A. Zaslavsky, and S. T. Picraux, "Axial Si/Ge hetero-nanowires for tunneling transistors and photovoltaics", *MRS Spring Meeting*, San Francisco (2012).

b34. J. Wan, C. Le Royer, A. Zaslavsky, and S. Cristoloveanu, "Z^2-FET: A zero-slope switching device with gate-controlled hysteresis", *Intern. Symp. VLSI Technol. Syst. Applications* (*VLSI-TSA*), Hsinchu, Taiwan (2012), art. 6210113.

b33. S. Cristoloveanu, M. Bawedin, K.-I. Na, W. van den Daele, K.-H. Park, L. Pham-Nguyen, J. Wan, K. Tacchi, S.-J. Chang, I. Ionica, A. Diab, Y.-H. Bae, J.-A. Chroboczek, A. Ohata, C. Fenouillet-Beranger, T. Ernst, E. Augendre, C. Le Royer, A. Zaslavsky, and H. Iwai, "A selection of SOI puzzles and tentative answers", chapter in: A. Nazarov, J.-P. Colinge, F. Balestra, J.-P. Raskin, F. Gamiz, and V. Lysenko, eds., *Semiconductor-On-Insulator Materials for Nanoelectronics Applications*, Springer, Heidelberg, Germany (2011), pp. 425-441.

b32. Jing Wan, C. Le Royer, S. Cristoloveanu, and A. Zaslavsky, "SOI TFETs: Suppression of ambipolar leakage and low-frequency noise behavior", *Proc. European Solid State Dev. Res. Conf. (ESSDERC)*, Seville, Spain (2010), pp. 341-44.

b31. P. Jannaty, F. C. Sabou, R. I. Bahar, J. Mundy, W. R. Patterson, and A. Zaslavsky, "Numerical queue solution of thermal noise-induced soft errors in subthreshold CMOS devices", *Proc. Great Lakes VLSI Symp.* (2010), pp. 281-85.

b30. W. van den Daele, S. Cristoloveanu, E. Augendre, C. Le Royer, J.-F. Damlencourt, D. Kazazis, and A. Zaslavsky, "Germanium-on-insulator as a platform for end-of-roadmap devices", chapter in: S.

Luryi, J. M. Xu, and A. Zaslavsky, eds., *Future Trends in Microelectronics: From Nanophotonics to Sensors and Energy*, Wiley, New York (2010).

b29. H. Li, J. Mundy, W. R. Patterson, D. Kazazis, A. Zaslavsky, and R. I. Bahar, "Thermally-induced soft errors in nanoscale CMOS circuits", *Proc. Nanoarch. Conf.* (2007).

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b27. K. Nepal, R. I. Bahar, J. Mundy, W. R. Patterson, and A. Zaslavsky, "Techniques for designing noise-tolerant multi-level combinational circuits", *Proc. Design Automation Test Europe* (DATE-2007), pp. 576-581.

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b25. H. Li, J. Mundy, W. R. Patterson, D. Kazazis, A. Zaslavsky, and R. I. Bahar, "A model for soft errors in the subthreshold CMOS inverter", *IEEE Workshop Silicon Errors Logic System Effects* (SELSE-2006).

b24. K. Nepal, R. I. Bahar, J. Mundy, W. R. Patterson, and A. Zaslavsky, "Optimizing noise-immune nanoscale circuits using principles of Markov random fields", *Proc. 16th ACM Great Lakes Symp. VLSI* (2006), pp. 149-152.

b23. K. Nepal, R. I. Bahar, J. Mundy, W. R. Patterson, and A. Zaslavsky, "Designing MRF based error correcting circuits for memory elements", in: *Proc. Design Autom. Test Europe Conf.* (DATE-2006), pp. 792-793.

b22. S. Luryi and A. Zaslavsky, "Quantum well silicon-on-insulator devices: tunneling transistor and intersubband laser", in: H. Iwai, Y. Nishi, M. Shur, and H. Wong, eds., *Frontiers in Electronics: Materials to Systems*, World Scientific, Singapore (2006), pp. 411-420 [also published as a journal article c47]

b21. K. Nepal, R. Iris Bahar, J. Mundy, W. R. Patterson, and A. Zaslavsky, "Designing logic circuits for probabilistic computation in the presence of noise", *Proc. Design Automation Conference* (DAC-2005), paper 29.4, pp. 485-490.

b20. A. Zaslavsky, S. Luryi, C. Aydin, S. Cristoloveanu, D. Mariolle, and S. Deleonibus, "New opportunities for quantum effect devices in silicon-on-insulator technology", in: *Proc. Nanostructures: Physics and Technology Symposium (NANO-2004)*, Ioffe Institute, St. Petersburg (2004), pp. 172-175.

b19. C. Aydin, A. Zaslavsky, A. Ohata, J. Pretet, S. Cristoloveanu, S. Luryi, D. Mariolle, D. Fraboulet, and S. Deleonibus, "Double gate coupling and quantum tunneling in ultrathin SOI MOSFETs", in: S. Luryi, J. M. Xu, and A. Zaslavsky, eds., *Future Trends in Microelectronics: The Nano, the Giga, the Ultra, and the Bio*, Wiley Interscience/IEEE Press, New York (2004), pp. 101-114.

b18. F. Allibert, J. Pretet, A. Zaslavsky, and S. Cristoloveanu, "Future silicon-on insulator MOSFETs: Chopped or genetically modified?", in: S. Luryi, J. M. Xu, and A. Zaslavsky, eds., *Future Trends in Microelectronics: The Nano Millennium*, Wiley Interscience/IEEE Press, New York (2002), pp. 79-86.

b17. A. Zaslavsky, C. Aydin, G. J. Sonek, and J. Goldstein, "Reduction of reflection losses in nonlinear optical crystals by motheye patterning", in: S. Luryi, J. M. Xu, and A. Zaslavsky, eds., *Future Trends in Microelectronics: The Nano Millennium*, Wiley, New York (2002), pp. 285-292.

b16. A. Zaslavsky, D. Mariolle, S. Deleonibus, D. Fraboulet, S. Luryi, J. Liu, C. Aydin, M. Mastrapasqua, C. A. King, and R. Johnson, "Interband tunneling-based ULSI-compatible silicon devices", in: H. R. Huff, L. Fabry, and S. Kishino, eds., *Semiconductor Silicon 2002* Vol. 2 (*Proc. 9th Intern. Symp. Silicon Mater. Sci. Technology*), Electrochemical Society, Pennington NJ (2002), pp. 956-967.

b15. S. Cristoloveanu, F. Allibert, and A. Zaslavsky, "Double-Gate MOSFETs: Performance and technology options", in: *Proc. Intern. Semicond. Dev. Res. Conf.* (2001), pp. 459-460.

b14. F. Allibert, A. Zaslavsky, and S. Cristoloveanu, "Double-Gate SOI MOSFETs with asymmetrical configuration", in: *Proc. 2001 IEEE Intern. SOI Conf.*, Washington, DC (2001), pp. 149-150.

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b12. J. Pretet, S. Cristoloveanu, F. Allibert, C. Raynaud, and A. Zaslavsky, "Channel width, length and thickness effects in LOCOS-isolated SOI MOSFETs", in: *Proc. Electrochemical Society Meeting (ECS-2001)*, Washington D.C. (2001).

b11. B. R. Perkins, Jun Liu, A. Zaslavsky, Z. S. Gribnikov, V. V. Mitin, and M. Shayegan, "Nonlinear transport in ballistic semiconductor diodes with negative effective mass carriers", in: *Proc. 11th Intern. Symp. Space Terahertz Technology*, Ann Arbor, MI (2000).

b10. A. Zaslavsky, Jun Liu, B. R. Perkins, and L. B. Freund, "Spectroscopy of inhomogeneous strain in silicon-based quantum dots", in: *Proc. Nanostructures: Physics and Technology Symposium (NANO-2000)*, Ioffe Institute, St. Petersburg (2000), pp. 447-452.

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b8. C. D. Akyüz, H. T. Johnson, A. Zaslavsky, L. B. Freund, and D. A. Syphers, "Device implications of strain relaxation in semiconductor microstructures", in: S. Luryi, J. Xu, and A. Zaslavsky, eds., *Future Trends in Microelectronics: Off the Beaten Path*, Wiley, New York (1999), pp. 155-164.

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b5. Z. S. Gribnikov, S. Luryi, and A. Zaslavsky, "Increased-functionality VLSI-compatible devices based on backward-diode floating-base Si/SiGe heterojunction bipolar transistors", in: S. Luryi, J. Xu, and A. Zaslavsky, eds., *Future Trends in Microelectronics: Reflections on the Road to Nanotechnology*, Kluwer Academic Publishers, Dordrecht (1996), pp. 365-370.

b4. S. Luryi and A. Zaslavsky, "Quantum well tunneling devices", in: P. Bhattacharya, ed., *Properties of III-V Quantum Wells and Superlattices*, IEE Book Publishing, London (1996), pp. 362-374.

b3. A. Zaslavsky, T. P. Smith III, D. A. Grützmacher, S. Y. Lin, and T. O. Sedgwick, "High-field magnetotunneling spectroscopy of valence band dispersion in strained SiGe quantum wells", in: D. Heiman, ed., *High Magnetic Fields in the Physics of Semiconductors*, World Scientific, Singapore (1995), pp. 554-561.

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Refereed journal articles

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c104. M. Arsalan, J. Liu, A. Zaslavsky, S. Cristoloveanu, and J. Wan, "Deep-depletion effect in SOI substrates and its application in photodetectors with tunable responsivity and detection range", *IEEE Trans. Electron Dev.* **67**, 3256 (2020).

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c100. Wenhao Li, Matthew S.R. Huang, S. K. Yadavalli, D. Lizarazo-Ferro, Y. Zhou, A. Zaslavsky, N. P. Padture, and R. Zia, "Direct characterization of carrier diffusion in halide-perovskite thin films using transient photoluminescence imaging", *ACS Photonics* **6**, 2375 (2019).

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Non-refereed journal articles

d3. S. Luryi, J. M. Xu, and A. Zaslavsky, "Preface to the FTM-2018 special issue", *Solid State Electronics* **155**, 1 (2019).

d2. E. Calleja, S. Cristoloveanu, Y. Kuk, and A. Zaslavsky, "A word from the editors", *Solid State Electronics* **79**, 1 (2013).

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Invited talks

a71. Technical University of Vienna (May 2022)

a70. EuroSOI-ULIS 2021, "If you cannot beat CMOS with TFETs, join it with sensors", Caen, France (September 2021) [plenary talk]

a69. NIST-Gaithersburg, Maryland (December 2020)

a68. NIST-Gaithersburg, Maryland (July 2019)

a67. Aoyama Gakuin University, Yokohama, Tokyo (June 2019)

g66. Nanjing University, Nanjing, China (June 2019)

g65. Fudan University, Shanghai, China (May 2019)

g64. Franco-American Research Workshop (guest lecture), Grenoble, France (June 2017).

g63. Univ. of Bologna (Microelectronics ScM program guest lecture), Bologna, Italy (May 2017).

g62. ISDRS-2016 (Intern. Semiconductor Device Research Conference), Washington, DC (December 2016): "Tunneling field effect transistors – Is there hope?".

g61. Paul Scherrer Institute, Villigen, Switzerland (July 2016).

g60. EPFL, Lausanne, Switzerland (July 2016).

g59. Juelich/Aachen Nanoelectronics Days 2015 international workshop, Juelich, Germany (April 2015).

g58. Worcester Polytechnic (Dept. of Physics colloquium), Worcester, MA (April 2015).

g57. Purdue University (Dept. of Physics colloquium), West Lafayette, IN (Sept. 2014).

g56. Nano and Giga Challenges in Electronics (NGC-2014), Phoenix, AZ (March, 2014): "High-current sharp-switching CMOS-compatible transistors".

g55. Workshop on Frontiers in Electronics (WOFE-2013), Puerto Rico (December, 2013): "High-current sharp-switching CMOS-compatible devices with bipolar gain".

g54. ISDRS-2013 (Intern. Semiconductor Device Research Conference), Washington, DC (December 2013): "Alternative CMOS-compatible devices enabled by SiGe heterojunctions".

g53. Electrochemical Society SOI Symposium, Toronto, Canada (May, 2013): "Sharp-switching high-current tunneling devices".

g52. Rochester Institute of Technology, Annual Microelectronic Engineering Conference, Rochester, NY (May, 2012).

g51. National Institute of Science and Technology (NIST), Gaithersburg, MD (March, 2012).

g50. EUROSOI-12 (European Semiconductor-on-Insulator Conference), Montpelier, France (January, 2012): "Small-switch FETs".

g49. Workshop on Frontiers in Electronics (WOFE-2011), Puerto Rico (December, 2011): "Abrupt switching devices: From tunneling to positive feedback".

g48. Univ. of Connecticut (Dept. of Electrical and Computer Engineering seminar), Storrs, CT (October, 2011).

g47. Korean Institute of Machinery and Minerals, Daejeon, Korea (April, 2011).

g46. Korean International Summer School on Nanoelectronics, Daegu, Korea (April, 2011): "Small-switch field-effect transistors".

g45. SUNY–Buffalo (Dept. of Electrical and Computer Engineering seminar), Buffalo, NY (April, 2011).

g44. Forschungszentrum Juelich, Germany (June, 2010).

g43. Korean International Summer School on Nanoelectronics, Daegu, Korea (April, 2010): "Ultimate CMOS scaling and more–than–Moore devices".

g42. Univ. of Victoria (Dept. of Physics and Astronomy colloquium), Victoria, Canada (March, 2010).

g41. MIGAS 2009 (International Summer School on Advanced Microelectronics), Grenoble, France (2009): "Quantum and tunneling SOI devices".

g40. Lehigh University (Dept. of Physics colloquium), Bethlehem, PA (February, 2009).

g39. Los Alamos National Laboratory (Physics colloquium), Los Alamos, NM (January, 2009): "Electrical transport measurements of inhomogeneous strain relaxation in various Si/SiGe nanopillar geometries".

g38. MRS Fall Meeting, Symposium MM, Boston, MA (2008): "Silicon and germanium tunneling nanotransistors as ultimate switches".

g37. Univ. of Texas-Austin (Dept. of Physics colloquium), Austin, TX (2008).

g36. American Physical Society March Meeting, New Orleans (2008): "Semiconductor-on-epitaxial insulator: Towards ultrathin and nonclassical semiconductor devices".

g35. Workshop on Frontiers in Electronics (WOFE-2007), Cozumel (2007): "Tunneling transistors as ultimate switches".

g34. SiNANO International Workshop (in conjunction with European Solid State Device Research Conference 2006), Geneva Switzerland (2006): "CMOS-compatible tunneling devices: Are they worth it?".

g33. MIGAS 2005 (International Summer School on Advanced Microelectronics), Grenoble, France (2005): "Quantum effects and device possibilities in thin SOI".

g32. Clarkson University (Dept. of Physics and Dept. of Electrical and Computer Engineering joint colloquium), Potsdam, NY (2005).

g31. Univ. of Notre Dame (Dept. of Electrical Engineering), South Bend, IN (2005).

g30. Workshop on Frontiers in Electronics (WOFE-2004), Aruba (2004): "Quantum well silicon-on-insulator devices: tunneling transistors and intersubband laser".

g29. International Symposium on Nanostructures: Physics and Technology, St. Petersburg, Russia (2004): "New opportunities for quantum effect devices in silicon-on-insulator technology".

g28. UCLA (Dept. of Material Science), Los Angeles, CA (2004).

g27. 4th International Workshop on Semiconductor Quantum Structures and Nano-Photonics, Seoul, Korea (2003): "Quantum rings arising from inhomogeneous strain relaxation".

g26. Workshop on Frontiers in Electronics (WOFE-2002), U.S. Virgin Islands (2002): "Interband tunneling-based ULSI-compatible silicon devices".

g25. L2M-CNRS (Laboratory for Microelectronics and Microtechnology), Paris, France (2001).

g24. Madrid Polytechnic (DIE-UPM), Madrid, Spain (2001).

g23. 8th International Symposium on Nanostructures: Physics and Technology, St. Petersburg, Russia (2000): "Spectroscopy of inhomogeneous strain in silicon-based quantum dots".

g22. ENSERG (Ecole Nationale Superieure d'Electronique de Grenoble), Grenoble, France (1999).

g21. Workshop on Frontiers of Electronics (WOFE-99), Grenoble, France (1999): "VLSI-compatible novel multiemitter transistors with enhanced logic".

g20. University of Oklahoma, Dept. of Physics, Norman, OK (1998).

g19. CRMC2-CNRS Institute, Univ. of Marseille, France (1998).

g18. Paul Scherrer Institute, Villigen, Switzerland (1998).

g17. Sandia National Laboratories, Albuquerque (1998).

g16. Indiana University, Dept. of Physics, Bloomington (1997).

g15. Wayne State University, Dept. of Electrical Engineering, Detroit (1997).

g14. European-Canadian-American Mesoscopic Initiative (ECAMI) Workshop on Nanostructures and Mesoscopic Systems, Ottawa (1996): "Tunneling dispersion and strain spectroscopy of SiGe quantum wells and dots".

g13. New York University, Dept. of Physics, New York (1996).

g12. University of Toronto, Dept. of Physics, Toronto (1994).

g11. High Magnetic Fields in Semiconductor Physics (SEMI-MAG 94) Conference, Cambridge, MA (1994): "High-field magnetotunneling spectroscopy of valence band dispersion in strained SiGe quantum wells".

g10. Princeton University, Dept. of Electrical Engineering, Princeton (1994).

g9. Texas Instruments, Central Research Laboratories, Dallas (1993).

g8. Brown University, Div. of Engineering, Providence (1993).

g7. SUNY at Stony Brook, Dept. of Physics, Stony Brook (1993).

g6. AT&T Bell Laboratories, Murray Hill (1992).

g5. Yale University, Dept. of Applied Physics, New Haven (1992).

g4. American Physical Society March Meeting, St. Louis (1992): "Two-dimensional resonant tunneling and superlattice devices by cleaved edge overgrowth".

g3. IBM T. J. Watson Research Center, Yorktown Heights (1991).

g2. National Research Council of Canada, Microstructures Institute, Ottawa (1991).

g1. AT&T Bell Laboratories, Murray Hill (1991).

<u>Contributed presentations (if given personally, numerous talks given by students not listed)</u>

h18. Advanced Research Workshop "Future Trends in Microelectronics: Journey Into the Unknown", Mallorca, Spain (2015), poster presentation.

h17. American Physical Society, March Meeting, Denver (2014).

h16. Advanced Research Workshop "Future Trends in Microelectronics: Into the Cross Currents", Corsica, France (2012), poster presentation.

h15. Advanced Research Workshop "Future Trends in Microelectronics: From Nanophotonics, to Sensors and Energy", Sardinia, Italy (2009), poster presentation.

h14. Advanced Research Workshop "Future Trends in Microelectronics: Up the Nano Creek", Crete, Greece (2006), poster presentation.

h13. Advanced Research Workshop "Future Trends in Microelectronics: The Nano, the Ultra, the Giga, and the Bio", Corsica, France (2003), poster presentation.

h12. 9th International Symposium on Silicon Materials, Science and Technology (ECS Meeting), Philadelphia (2002).

h11. Advanced Research Workshop "Future Trends in Microelectronics: The Nano Millennium", Ile de Bendor, France (2001), poster presentation.

h10. Advanced Research Workshop "Future Trends in Microelectronics: Off the Beaten Path", Ile des Embiez, France (1998), poster presentation.

h9. American Physical Society, March Meeting, Los Angeles (1998).

h8. NATO Advanced Study Workshop "Future Trends in Microelectronics", Ile de Bendor, France (1995), poster presentation.

h7. 10th International Conference on Electronic Properties of Two-Dimensional Systems (EP2DS-10) Conference, Newport, RI (1993).

h6. American Physical Society, March Meeting, Seattle (1993).

h5. American Vacuum Society National Symposium, Chicago (1992).

h4. American Physical Society, March Meeting, Cincinnati (1991).

h3. American Physical Society, March Meeting, Anaheim, CA (1990).

h2. Workshop on Compound Semiconductors (WOCSEMMAD-89), Hilton Head, NC (1989).

h1. American Physical Society, March Meeting, St. Louis (1989).

Research in Progress

- Tunneling-based nitride heterostructure devices (collaboration with MIT-Lincoln Laboratory)
- Broadband quantum-dot based photodetectors (collaboration with D. Pacifici at Brown)
- Silicon-on-insulator and germanium-on-insulator tunneling transistors and memory devices (collaboration INP Grenoble; LETI-CEA, Grenoble; and ST Microelectronics Crolles, France).
- Transistor-based biosensoring (collaboration with A. Balijepalli and C. A. Richter, NIST).
- Amorphous oxide and iodide thin film transistors (collaboration with D. C. Paine at Brown).
- Magnetic field sensor integration with CMOS readout circuitry for characterization of quantum spin liquids (collaboration with G. Xiao and other physics faculty at Brown, and Nikolai Zhitenev, J. McClelland and the Alternative Computing Group at NIST)

6. Grants

Current grants

a3. NIST Gaithersburg PREP program, support for a half-month summer research visit, sole-PI: A. Zaslavsky, 2022–2023 [$15,066]

a2. NSF-QII-TAQS: "Spatially and temporally resolved ultrasensitive magnetic sensing of quantum materials", PI: G. Xiao, co-PIs: K. Plumb, J. B. Marston, V. Mitrovic, and A. Zaslavsky, 2020–2023, $2,000,000 [Zaslavsky share $447,474].

a1. NSF-BSF program, "High-mobility amorphous-iodide-based channel materials for p-type thin-film transistors and complementary TFT circuitry", 2019–23, PI: D. Paine, co-PI: A. Zaslavsky, $469,975 [additional $210,000 from Israeli funding agency to Israeli co-PI team led by B. Pokroy of Technion].

Completed grants

b38. NIST Gaithersburg PREP program, support for a one-month summer research visit, sole-PI: A. Zaslavsky, 2021–2022 [$28,609]

b37. NIST Gaithersburg PREP program, salary support for sabbatical at NIST at 25% of academic year salary, PI: A. Zaslavsky, 2020–2021 [$61,376]

b36. NSF-MRI program, "MRI: Acquisition of a maskless lithography tool for the Brown nano-fabrication central facility", 2018–20, PI: A. Zaslavsky, co-PIs: D. Pacifici, B. Rubenstein, A. Shukla, and D. Stein, $430,000 (including 30% Brown matching funds).

b35. NSF–CISE/CCF: "SMALL: Effects of noise in ultimate CMOS: Simulation frameworks, noise-immune circuit designs, and experimental validation", 2015–2020, PI: R. I. Bahar, co-PIs: W. R. Patterson and A. Zaslavsky, $360,000.

b34. NSF–DMR: "Conducting/dielectric metal-oxide heterostructures: A platform for high-current RF devices on arbitrary substrates", 2014–18 (including no-cost extension), PI: D. Paine, co-PI: A. Zaslavsky, $300,000.

b33. Brown OVPR seed award: "Nanoimprinted nanowire solar cells", 2015–17 (including no-cost extension), PI: A. Zaslavsky, co-PI: D. Pacifici, $60,000.

b32. NSF–ECCS "Future Trends in Microelectronics Workshop 2015", 2015–16, PI: A. Zaslavsky, $10,000 (conference support).

b31. NSF–DMR: "Germanium nanostructures for efficient silicon-compatible optoelectronics", 2012–16, PI: D. Pacifici, co-PI: A. Zaslavsky, $400,000.

b30. NSF–ECCS, "Strained axial heteronanowire devices: From tunneling transistors to optical emitters", 2011–16, sole PI: A. Zaslavsky, $360,000.

b29. DTRA, "Design science for radiation-effects rate prediction and development of error-immune circuitry", 2010–13, PI: R. I. Bahar, Brown co-PI's: J. Mundy, W. R. Patterson, A. Zaslavsky, also co-PI's at Vanderbilt (R. Schrimpf and 4 others) and MIT–Lincoln Laboratory (P. Gauker and J. Kedzierski), $1,050,000, Brown share ~$650,000; extended for 1 option year, with the same Brown and Vanderbilt PI's, 2013–14, $350,000, Brown share ~$243,000.

b28. NSF–MRI, "Acquisition of a high magnetic field and cryogen-free physical property measurement system", 2012–13, PI: G. Xiao, co-PI's: S. Sun, V. Mitrovic, J. Valles, and A. Zaslavsky, equipment grant of $279,000.

b27. European Office of Aerospace Research and Development/ONR-Global, "Future Trends in Microelectronics Workshop 2012", 2012–13, PI: A. Zaslavsky, $15,000 (conference support).

b26. NSF–ECCS "Future Trends in Microelectronics Workshop 2012", 2012–13, PI: A. Zaslavsky, $15,000 (conference support).

b25. KIMM-Brown collaboration, "Flexible metallic interconnects", 2010-12, PI: K. S. Kim, many Brown co-PI's including A. Zaslavsky, total Brown budget in the $1M range.

b24. NSF–MRI, "Acquisition of conformal-oxide processing module for Microfabrication Central User Facility", 2010–11, PI: R. Zia, co-PI's: R. Beresford, A. Nurmikko, D. Stein, A. Zaslavsky, equipment grant of $450,000 before university matching funds.

b23. NSF–ECS, "Germanium-on-insulator tunneling transistors" GOALI proposal, 2007–11, PI: A. Zaslavsky, co-PI: S. Guha (IBM Research), total $300,000.

b22. NSF–CCF, "Fault-tolerant, probabilistic computing with Markov random field architectures and CMOS nanodevices" NIRT award, 2005–10, PI: R. I. Bahar, co-PI's: J. Mundy, W. R. Patterson, A. Zaslavsky, total $314,000.

b21. Office of Naval Research–Global, ""Future Trends in Microelectronics Workshop 2009", 2009–10, PI: A. Zaslavsky, $15,000 (conference support).

b20. European Office of Aerospace Research and Development, "Future Trends in Microelectronics Workshop 2009", 2009–10, PI: A. Zaslavsky, $10,000 (conference support).

b19. DHS–DNDO, "Semiconductor high-energy radiation detector with excellent isotope identification and directional capability" subcontract award from SUNY–Stony Brook, PI: S. Luryi (SUNY-Stony Brook), Brown subcontract sole PI: A. Zaslavsky, $78,955 for 2008–9.

b18. NSF–DMR, "Coulomb blockade and few-electron energy spectra of quantum rings", 2003–07, sole PI: A. Zaslavsky, $302,000.

b17. European Office of Army Research and Development, "Future trends in microelectronics workshop 2006", 2006–07, PI: A. Zaslavsky, $15,000 (conference support).

b16. NASA, "5th international future trends in microelectronics advanced research workshop", 2006, PI: A. Zaslavsky, $6,000 (conference support).

b15. NSF–CCF, "Exploring nanodevices for probabilistic computing architectures" NER award, 2004–6, PI: A. Zaslavsky, co-PI's: R. I. Bahar, J. Chen, J. Mundy, total $100,000.

b14. NSF-ECS, "Spintronics in Y-junction carbon nanotubes", 2002–06, PI: J. M. Xu, co-PI: A. Zaslavsky, total $300,000.

b13. NSF–ECS program, "Terahertz microwave generation in dc-biased heterostructure ballistic devices" subcontract award from Wayne State University, 2001–04, PI: V. V. Mitin (Wayne State); Brown subcontract sole PI: A. Zaslavsky, Brown share approximately $130,000.

b12. Air Force Office of Sponsored Research–MURI program, "Phonon enhancement of optoelectronic and electronic devices", 2000-05, PI: A. V. Nurmikko, co-PI's: H. J. Maris and A. Zaslavsky (Brown); G. Belenky, V. J. Goldman, and S. Luryi (SUNY-Stony Brook); Q. Hu (MIT); S. S. Pei (Univ. of Houston), Zaslavsky's share approximately $276,000 (of $4M+ total).

b11. NSF–MRSEC program, "Micro- and nano-mechanics of electronic and structural materials", 2000–05, PI's: C. Briant and W. Curtin, co-PI's: 15 Brown faculty including A. Zaslavsky, Zaslavsky's share approximately $250,000 (of $7,5M+ total).

b10. Air Force Office of Sponsored Research–STTR program, "Improving laser damage threshold in $ZnGeP_2$ using motheye antireflection surface relief structures" subcontract award from Holographic Lithography Systems, Inc., 1999–2000, PI: G. Sonek (HLS, Inc.), Brown subcontract sole PI: A. Zaslavsky, Brown share approximately $30,000.

b9. NSF–CISE program, "Terahertz generation in ballistic semiconductor diodes" subcontract award from Wayne State University, 1999–2001, PI: V. V. Mitin (Wayne State), Brown subcontract sole PI: A. Zaslavsky, Brown share approximately $48,000.

b8. NASA Director's fund, "Quantum well ballistic devices for generation of terahertz radiation" subcontract award, 1999–2000, PI: B. Karasik (Jet Propulsion Laboratories); subcontract co-PI's: A. Zaslavsky (Brown), V. V. Mitin and O. Korshak (Wayne State University), Brown share approximately $65,000.

b7. Semiconductor Research Corporation, "Increased functionality devices based on multiemitter Si/SiGe heterojunction bipolar transistors" subcontract award from SUNY–Stony Brook, 1998–2002, PI: S. Luryi (SUNY-Stony Brook), Brown subcontract sole PI: A. Zaslavsky, $95,000.

b6. NSF–Career program, "Strain effects in semiconductor nanostructures", 1997–2001, sole PI: A. Zaslavsky, $304,500.

b5. NSF-MRSEC program, "Strain effects in semiconductor nanostructures produced by epitaxial regrowth" seed project, 1997–99, Brown MRSEC PI: R. Clifton, seed project co-PI's: R. Beresford and A. Zaslavsky, $80,000.

b4. NSF-Equipment for Materials Research, "Acquisition of a dilution refrigerator", 1995–96, PI: G. Xiao, co-PI's: A. Zaslavsky, P. Timbie, C. Elbaum, equipment grant of $80,000 before university matching funds.

b3. NSF-National Facilities and Instrumentation, "Development and construction of an in-situ processing extension for existing molecular beam epitaxy system", (1995–1997), PI: A. Zaslavsky, co-PI's: R. Beresford, A. V. Nurmikko, equipment grant of $125,000 before university matching funds.

b2. Office of Naval Research Young Investigator program, "Tunneling transport in laterally-gated silicon-based nanostructures", 1995–98, sole PI: A. Zaslavsky, $265,750.

b1. Alfred P. Sloan Foundation, Sloan fellowship, 1995–99, sole PI: A. Zaslavsky, $30,000.

Grants under review

c6. Brown OVPR category 1 seed funding proposal, "Double-gate transistor platform for scalable biosensing", 2023–24, PI: A. Zaslavsky, $50,000 (collaboration with A. Balijepalli of NIST).

c5. NSF MRI Track 1, "Acquisition of a magnetic properties measurement System for materials research", 2023–25, PI: K. Plumb, co-PI A. Zaslavsky (one of many), $844K equipment only.

c4. NSF NRT-QISE, "Identification and control of fundamental properties of quantum matter and devices for enabling quantum leap and workforce development - Track 1", 2023–26, PI: V. Mitrovic, co-PI: A. Zaslavsky (one of four co-PIs), $1,999,999 but almost entirely a student training grant.

c3. NSF Type 2 Quantum Engine proposal, one of the scientific projects from Brown University that should receive 2 years of seed funding at $120K per year in the unlikely event the Harvard-led Quantum Engine proposal is funded, 2023–2032, PI: R. Westervelt (Harvard); Brown PI: G. Xiao, Brown co-PI A. Zaslavsky (one of many).

c2. NSF-EPMD, "Polarization-doped collimated-current-injection nitride unipolar transistors", 2023–26, PI: A. Zaslavsky, $497,639 (including a $75K subaward to MIT-Lincoln Laboratory)

c1. NSF-CMOS+X program, "Hybrid integration of Ge quantum dot broadband photodetectors with low-power mixed-mode CMOS", 2023–26, PI: D. Pacifici, co-PI: A. Zaslavsky, $515,360 (there is a parallel collaborative proposal from Tufts with PI M. Donato, with a separate NSF budget).

7. Service

University

Engineering/Physics interdisciplinary program concentration advisor, 1995–now.

Electrical Engineering concentration advisor, 2010–now (as well as 1996–2000).

Freshman and sophomore advising, 1994–now.

Director of Undergraduate Programs in Engineering, 2019–2020 (as well as 2007–08 and 2003–4).

ABET accreditation coordinator for School of Engineering 2019–21.

Grievance committee, 2018–2020.

Concentration committee chair, School of Engineering, 2015–2019.

Director of Microelectronics Central Facility, 1996–2000; 2001–2007; 2016–19.

University Tenure and Promotions committee (TPAC), 2012–15.

Search committees: School of Engineering Dean search 2021; Photonics junior faculty search 2017–18; Physics department faculty junior faculty searches, 2012–13, 2013–14, 2016–17 and 2017–18; Neuroengineering junior faculty search, 2014–15; Engineering Hiring Initiative

committee (co-chair), 4+ faculty positions, 2010–11; MRI physics position in Brown Brain Science Program, 2008; Computer Engineering junior faculty position, 2005.

Internal promotion committees: ESCE junior faculty promotions to tenure committee member, 2013–14 and 2015–16; tenured faculty promotion to full professor committee chair 2016, 2018 and 2019.

Engineering Division Executive committee, fall 2010 (as well as 2007–8 and 2001–4).

Standing committee on Academic Code, 2009–11.

Freshman and sophomore advising, 1994–now.

ABET accreditation coordinator for Electrical Engineering ScB, 2008.

Committee on Faculty Equity and Diversity (CFED), 2008–9.

Faculty Affairs Committee (FAC), 2007–8.

Electrical Sciences progress review committee 1995–7 and 2001–6.

Engineering Division study abroad advisor, 2003–05 and fall of 2008.

Awards and Benefits committee (ABC), 2002.

Committee on Admissions and Financial Aid (CAFA), 1999–2000.

Electrical Sciences seminar organizer 1995–1997.

Honors committee, 1995–1997.

Profession

Editor (one of four) of the *Solid State Electronics* international journal (published in the U.K. by Elsevier), 2003–now.

Reviewer of NSF proposals in the Engineering Directorate, Division of Materials Research, and the SBIR Program, 1996–now.

Reviewer of a Research Council of Norway major proposal (2021).

Reviewer of a Villum Foundation research proposal (Denmark, 2018).

Reviewer of book proposals for Wiley Publishing, 1999–now, Oxford University Press, 2008–now, Elsevier 2020–now.

Reviewer for *Physical Review B*, *Physical Review Letters*, *Applied Physics Letters*, *IEEE Transactions on Electronic Devices*, *Solid State Electronics*, 1990–now.

Member of the Organizing Committee (treasurer and publicity) for Future Trends in Microelectronics (FTM) international workshops, including "FTM: Ving Ans Après", Sardinia, Italy (2018); "FTM: Journey in the Unknown", Mallorca, Spain (2015); "FTM: Into the Cross Currents", Corsica, France (2012); "FTM: Unmapped Roads", Sardinia, Italy (2009); "FTM: Up the Nano Creek", Crete, Greece (2006); "FTM: The Nano, the Ultra, the Giga, and the Bio", Corsica, France (2003); "FTM: The Nano Millennium", Bendor, France (2001); "FTM: Off the Beaten Path", Ile des Embiez, France (1998).

Technical program committee member, 14th Ultimate Integration on Silicon conference (ULIS-2013), Ireland; 15th Ultimate Integration on Silicon conference (ULIS-2014), Sweden; joint

EUROSOI–ULIS conference 2015 (Italy), 2016 (Austria), 2017 (Greece), 2018 (France), 2020 (France), 2021 (France), 2022 (Italy), 2023 (Spain).

External reviewer of PhD dissertations at INP–Grenoble, France: S. Athanasiou (2017), L. Czornomaz (2016), L. Pirro (2015), A. Villalon (2014), Y. Solaro (2014), K. Tachi (2011), K.-I. Na (2009), L. Pham Nguyen (2009), C. Gallon (2009), F. Mayer (2008), M. Bawedin (2007), K. Akarvardar (2006), F. Allibert (2003), T. Ernst (2001).

Member of a junior faculty promotion committee (habilitation) at INP–Grenoble: 2015 and 2017.

Member of a search committee for a junior faculty (maître des conferences) position at INP–Grenoble: 2014.

Co-supervised PhD dissertation at INP–Grenoble, France: Jing Wan (defended July, 2012).

Technical program committee member, "Emerging Technologies" session, 35th European Solid-State Device Research Conference (ESSDERC-2005), France.

Member of the Organizing Committee (treasurer) for NATO Advanced Studies Workshop on "Future Trends in Microelectronics", Ile de Bendor, France (1995).

8. Honors

7. Invited Professorship, INP-Grenoble, 2016–17 academic year.
6. Editorship of *Solid State Electronics*, 2003–now.
5. Senior Visiting Chair of Excellence, Nanosciences Foundation, Grenoble, France, 2009–13.
4. NSF Career Award, 1997.
3. ONR Young Investigator Award, 1995.
2. Alfred P. Sloan Fellowship, 1995.
1. IBM Graduate Fellowship, 1988 (at Princeton University).

9. Teaching

Courses (through last 3 full academic years)

2021–22:	fall	ENGN0510: *Electricity & Magnetism*, 65 students [co-taught with J. Lee] ENGN2980: *Reading, Research, and Design*, supervising 1 student PHYS2980: *Research in Physics*, supervising 1 student
2020–21:	fall	sabbatical, no classroom teaching PHYS2980: *Research in Physics*, supervising 1 student
	spring	sabbatical, no classroom teaching PHYS2980: *Research in Physics*, supervising 1 student
2019–20:	fall	ENGN1590: *Introduction to Semiconductors*, 7 students ENGN2980: *Reading, Research, and Design*, supervising 1 student PHYS2980: *Research in Physics*, supervising 2 students

	spring	ENGN2660: *Semiconductor Heterostructures*, 6 students
		ENGN2980: *Reading, Research, and Design*, supervising 1 student
		PHYS2981: *Research in Physics*, supervising 1 student
2018–19:	fall	ENGN1590: *Introduction to Semiconductors*, 3 students
		ENGN2980: *Reading, Research, and Design*, supervising 1 students
		PHYS2980: *Research in Physics*, supervising 2 students
	spring	ENGN2610: *Semiconductor Devices*, 7 students
		ENGN2980: *Reading, Research, and Design*, supervising 1 student
		PHYS2981: *Research in Physics*, supervising 1 student

Curriculum development

3. Upgrading of the semester-long ENGN1680 *Design and Fabrication of Semiconductor Devices* course to a full CMOS process (from bare Si wafer to a CMOS test site) in 1996. Change of focus of ENGN1680 to a transistor-based microfluidic sensor in 2009.

2. Introduction of a 3-4 clean-room session laboratory to ENGN1590 *Introduction to Semiconductors*, with hands-on diffused *pn* junction diode fabrication (first taught in 2004, subsequently taught be either me or Rod Beresford, not taught in the fall of 2012 due to change in faculty, revived in fall of 2013 and again in the fall of 2016).

1. New graduate course ENGN2660, *Physics and Technology of Semiconductor Heterostructures*, introduced as a special topics course (1994), taught biannually 2001–2016.

Post-doc supervision

1. Elahe Rezaei, 2018-19 (co-advised with R. I. Bahar and W. R. Patterson)

Graduate student supervision (terminal degree at Brown University, unless noted otherwise)

19. Yitao Xu, ScM in Electrical Engineering (anticipated May, 2022) (co-supervised with W. Patterson).
18. Haobei Wang, PhD in Physics (anticipated May, 2022) (co-supervised with D. Paine).
17. Jeff Daulton, PhD in Electrical Engineering (anticipated December, 2022).
16. Sue Shi, ScM in Electrical Engineering (May, 2021) (co-supervised with D. Pacifici).
15. Stylianos Siontas, PhD in Electrical Engineering: *Silicon/Germanium and Perovskite Opto-electronic Devices for Photodetection and Photovoltaics* (August, 2018) (co-supervised with D. Pacifici).
15. Aravind Anchala, ScM in Materials Engineering (May, 2018)
14. Yang Song, PhD in Physics: *Characteristics and Stability of High Performance Indium Zinc Oxide Thin Film Transistors* (December, 2017) (co-supervised with D. C. Paine).
13. Peng Zheng, PhD in Physics: *Nanowire Solar Cell Arrays and Tunneling Transistors with Negative Transconductance and High Current Drive* (July, 2016).
12. Xiaoxiao Hou, ScM in Electrical Engineering (January, 2015).
11. Son T. Le, PhD in Physics: *Germanium and SiGe Nanowires for Tunneling Transistors and Solar Cells* (August, 2013).
10. Jing Wan, PhD in Electrical Engineering at INP-Grenoble (co-supervised with S. Cristoloveanu): *Innovative Sharp Switching Devices: From TFET to Z^2-FET* (July, 2012).
9. Pooya Jannaty, PhD in Electrical Engineering: *Low-Voltage End-of-Roadmap Transistors and their Reliability in the Presence of Noise* (May, 2012).
8. Dimitrios Kazazis, PhD in Electrical Engineering, *Ultrathin Germanium/High-k Dielectric Structures for End-of-Roadmap Devices and Other Applications* (May, 2009).
7. Dapeng Wang, PhD in Physics: *Electronic Transport and Potential Applications of 1D and 2D Granular Nanotubes and Metals* (May, 2007).
6. Guohua Wang, PhD in Physics: *The Physics of Strain-Induced Quantum Confinements in Si/SiGe Vertical Quantum Dots* (May, 2006).
5. Brian R. Perkins, PhD in Electrical Engineering: *Ballistic Transport in Short Diodes and Nanotubes* (May, 2005).
4. Cagri Aydin, PhD in Physics: *Silicon Based Tunneling Devices Combined with Silicon-on-Insulator for Ultra-Large-Scale Integration* (August, 2004)
3. Jun Liu, PhD in Physics: *Strain-Induced Quantization in Si/SiGe Vertical Quantum Dots and Rings* (August, 2002).
2. C. Deniz Akyüz, PhD in Physics: *Resonant Tunneling Measurements of Size-Induced Strain Relaxation* (May, 1999).
1. Brian Ferland, ScM in Electrical Engineering (1997).

Undergraduate honors thesis supervision

8. Joseph Faucher, Electrical Engineering (May, 2011).
7. Daniel Soltman, Electrical Engineering (May, 2004) – chosen by Brown University for publication as the outstanding senior honors thesis in the sciences for 2004.
6. David Greci, Electrical Engineering (May, 2004).
5. James Perkins, Electrical Engineering (May, 2000).
4. Ravi Pillarisetty, Engineering Physics (May, 1999).
3. Dan Wasserman, Engineering Physics (May, 1998).
2. Marong Phadoongsidhi, Electrical Engineering (May, 1997).
1. Brian Perkins, Engineering Physics (May, 1996).