# Curriculum Vitae

Alexander J. Rimberg

## Address

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## Professional Preparation

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| A. B. | **Harvard College**, *summa cum laude* in Physics, June 1986 |
| Ph.D. | **Harvard University**, Physics, September 1992<br>Thesis: *Magnetotransport in Uniform and Modulated Electron Gases in Wide Parabolic Quantum Wells*<br>Advisor: Prof. R. M. Westervelt |
| 1992-1996 | Postdoctoral Researcher, Physics Department, **University of California, Berkeley** and Materials Science Division, Lawrence Berkeley National Laboratory.<br>Advisor: Prof. John Clarke |

## Appointments

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| 2012–present | Full Professor, Department of Physics and Astronomy, **Dartmouth College**. |
| 2004–2012 | Associate Professor, Department of Physics and Astronomy, **Dartmouth College**. |
| 2000–2004 | Assistant Professor (joint appointment), Department of Electrical and Computer Engineering, **Rice University**. |
| 1997-2004 | Assistant Professor, Physics Department and Center for Nanoscale Science and Technology, **Rice University**. |
| 1992-1996 | Postdoctoral Researcher, Physics Department, **University of California, Berkeley** and Materials Science Division, Lawrence Berkeley National Laboratory.<br>Advisor: Prof. John Clarke |

## Honors

Friedman Family Fellow, Dartmouth College, 2008–2009

Alfred P. Sloan Research Fellow, 1998–2002

Robbins Prize, Harvard University, 1990

National Science Foundation Fellowship, 1986–1989

Phi Beta Kappa, Junior Twelve, Harvard College 1985

John Harvard Scholarship, Harvard College, 1984–1985

## Research Interests

My research is concerned with experimental studies of electrical transport in nanoscale structures, such as ultrasmall Josephson junctions, single-electron transistors and nanomechanical resonators. Of particular interest are the importance of quantum mechanical effects such as size quantization and phase in transport, the dynamical and high-frequency properties of nanostructures, quantum sensing, and the border between quantum and classical behavior.

## Research Grants

National Science Foundation (2018–2021), "Quantum from Classical: Approaching the Single-Quantum Strong Coupling Regime," $597,610. Principal Investigator.

Google Faculty Research Award (2020–2021), "Selective Identification and Suppression of Frequency Noise in Hybrid Quantum Devices," $80,000. Principal Investigator.

**Collaborators & Other Affiliations**

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| *Collaborators* | Miles Blencowe, Dartmouth College; Andrew Armour, U. Nottingham; Dr. R. W. Simmonds, NIST Boulder; Prof. J. Parpia, Cornell; Dr. P. D. Nation, Northrop-Grummond; Rob Ilic, NIST Gaithersburg; J. Mutus, Google; Ted White, Google |
| *Thesis Advisor and Postgraduate-Scholar Sponsor* | W. Lu, Ph. D.; M. E. Cox, M. S.; S. Zaric, M. S.; J. Sarkar, M. S.; M. Thalakulam, Ph. D.; Z. Ji, Ph. D.; T. Gilheart, Ph. D.; W. W. Xue, Ph. D. ; Feng Pan, postdoc; Mustafa Bal, postdoc; J. Stettenheim, Ph. D, postdoc; Fei Chen, Ph. D.; M. Yuan, Ph. D.; Zhen Yang, Ph. D.;, Juliang Li, Ph. D; Chunyang Tang, M.S.; William Braasch, Ph. D.; Bhargava Thyagarajan, graduate student (current); Ben Brock, graduate student (current); Sisira Kanhirathingal, graduate student (current) |

**PUBLICATIONS**

55. "A Fast and Ultrasensitive Electrometer Operating at the Single-Photon Level," B. L. Brock, J. Li, S. Kanhirathingal, B. Thyagarajan, M. P. Blencowe and A. J. Rimberg, arXiv:2102.05362. Submitted to Phys. Rev. Lett.

54. "Charge Sensitivity of a Cavity-Embedded Cooper Pair Transistor in the Single-Photon Quantum Noise Limit," S. Kanhirathingal, B. L. Brock, M. P. Blencowe and A. J. Rimberg, arXiv:2011.06298. Submitted to Phys. Rev. Applied.

53. "Nonlinear Charge- and Flux-Tunable Cavity Derived From an Embedded Cooper-Pair Transistor," B. L. Brock, J. Li, S. Kanhirathingal, B. Thyagarajan, W. F. Braasch, Jr., M. P. Blencowe and A. J. Rimberg, Phys. Rev. Applied. **15**, 044009 (2021).

52. "Frequency Fluctuations in Tunable and Nonlinear Microwave Cavities," B. L. Brock, M. P. Blencowe and A. J. Rimberg, Phys. Rev. Applied **14**, 054026 (2020).

51. "Wigner Current for Open Quantum Systems," W. F. Braasch, Jr., O. D. Friedman, A. J. Rimberg and M. P. Blencowe, Phys. Rev. A **100**, 012124 (2019).

50. "Mechanically Generating Entangled Photons from the Vacuum: A Microwave Circuit-Acoustic Resonator Analog of the Oscillatory Unruh Effect," H. Wang, M. P. Blencowe, C. M. Wilson, and A. J. Rimberg, Phys. Rev. A **99**, 053833 (2019).

49. "Quantum Dynamics of a Josephson Junction Driven Cavity Mode System in the Presence of Voltage Bias Noise," Hui Wang, M. P. Blencowe, A. D. Armour and A. J. Rimberg, Phys. Rev. B **96**, 104503 (2017).

48. "Iterative Solutions to the Steady-State Density Matrix for Optomechanical Systems," P. D. Nation, J. R. Johansson, M. P. Blencowe and A. J. Rimberg, Phys. Rev. E **91**, 013307 (2015).

47. "Realization of a Single-Cooper-Pair Josephson Laser," Fei Chen, J. Li, A. D. Armour, E. Brahimi, Joel Stettenheim, A. J. Sirois, R. W. Simmonds, M. P. Blencowe, and A. J. Rimberg, Phys. Rev. B **90**, 020506(R) (2014).

46. "Signatures of the Valley Kondo Effect in Si/SiGe Quantum Dots," M. Yuan, R. Joynt, Zhen Yang, Chunyang Tang, D. E. Savage, M. G. Lagally, M. A. Eriksson, and A. J. Rimberg, Phys. Rev. B **90**, 035302 (2014).

45. "A Cavity-Cooper Pair Transistor Scheme for Investigating Quantum Optomechanics in the Ultra-Strong Coupling Regime," A. J. Rimberg, M. P. Blencowe, A. D. Armour, and P. D. Nation, New J. Phys. **16**, 055008 (2014)

44. "Universal Quantum Fluctuations of a Cavity Mode Driven by a Josephson Junction," A. D. Armour, M. P. Blencowe, E. Brahimi, and A. J. Rimberg, Phys. Rev. Lett. **111**, 247001 (2013).

43. "Charge Sensing in a Si/SiGe Quantum Dot with a Radio Frequency Superconducting Single-Electron Transistor," Mingyun Yuan, Zhen Yang, D. E. Savage, M. G. Lagally, M. A. Eriksson, and A. J. Rimberg, Appl. Phys. Lett. **101**, 142103 (2012).

42. "Quantum-Classical Correspondence for a dc-Biased Cavity Resonator Cooper-Pair Transistor System," M. P. Blencowe and A. J. Rimberg and A. D. Armour, *Fluctuating Nonlinear Oscillators* , M. Dykman, ed., Oxford University Press (2012).

41. "Introduction of a DC Bias into a High-$Q$ Superconducting Microwave Cavity," Fei Chen, A. J. Sirois, R. W. Simmonds and A. J. Rimberg, Appl. Phys. Lett. **98**, 132509 (2011).

40. "Si/SiGe Quantum Dot with Superconducting Single-Electron Transistor Charge Sensor," Mingyun Yuan, Feng Pan, Zhen Yang, T. J. Gilheart, Fei Chen, D. E. Savage, M. G. Lagally, M. A. Eriksson, and A. J. Rimberg, Appl. Phys. Lett., **98**, 142104 (2011).

39. "Near-Quantum-Limited Operation of a Charge-Sensitive Electrical Amplifier," A. J. Rimberg, W. W. Xue, Z. Ji, F. Pan and J. Stettenheim, IEEE Trans. Nanotechnol., **10**, 174 (2011).

38. "Pauli Spin Blockade and Lifetime-Enhanced Transport in a Si/SiGe Double Quantum Dot," C. B. Simmons, Teck Seng Koh, Nakul Shaji, Madhu Thalakulam, L. J. Klein, Hua Qin, H. Luo, D. E. Savage, M. G. Lagally, A. J. Rimberg, Robert Joynt, Robert Blick, Mark Friesen, S. N. Coppersmith and M. A. Eriksson, Phys. Rev. B **82**, 245312 (2010).

37. "A Macroscopic Mechanical Resonator Driven by Mesoscopic Electrical Backaction," J. Stettenheim, M. Thalakulam, F. Pan, M. Bal, Z. Ji, W. W. Xue, L. Pfeiffer, K. W. West, M. P. Blencowe, and A. J. Rimberg, Nature **466**, 86 (2010).

36. "Analogue Hawking Radiation in a dc-SQUID Array Transmission Line," P. D. Nation, M. P. Blencowe, A. J. Rimberg and E. Buks, Phys. Rev. Lett. **103**, 087004 (2009).

35. "Measurement of Quantum Noise in a Single Electron Transistor Near the Quantum Limit," W. W. Xue, Z. Ji, F. Pan, J. Stettenheim, M. P. Blencowe and A. J. Rimberg, Nature Phys. **5**, 660 (2009).

34. "Spin Blockade and Lifetime-Enhanced Transport in a Few-Electron Si/SiGe Double Quantum Dot," Nakul Shaji, C. B. Simmons, Madhu Thalakulam, Levente J. Klein, Hua Qin, H. Luo, D. E. Savage, M. G. Lagally, A. J. Rimberg, R. Joynt, M. Friesen, R. H. Blick, S. N. Coppersmith and M. A. Eriksson , Nature Phys. **4**, 540 (2008).

33. "The Quantum Limit for Electrical Amplifiers: Can We Reach It?" A. J. Rimberg, W. W. Xue, Z. Ji, F. Pan, J. Stettenheim, and T. J. Gilheart, Proceedings of the SPIE, **6885**, 688505 (2008).

32. "On-Chip Matching Networks for Radio-Frequency Single-Electron Transistors," W. W. Xue, B. Davis, Feng Pan, J. Stettenheim, T. J. Gilheart, A. J. Rimberg and Z. Ji, Appl. Phys. Lett. **91**, 093511 (2007).

31. "Real-time electron counting in semiconductor nanostructures," A. J. Rimberg, M. Thalakulam, W. Lu, Z. Ji, L. N. Pfeiffer and K. W. West, Proceedings of the SPIE **5790**, 254 (2005).

30. "Sensitivity and linearity of superconducting radio-frequency single-electron transistors: Effects of quantum charge fluctuations," M. Thalakulam, Z. Ji, and A. J. Rimberg, Phys. Rev. Lett. **93**, 066804 (2004).

29. "Real-time detection of electron tunneling in a quantum dot," W. Lu, Z. Ji, L. N. Pfeiffer, K. W. West and A. J. Rimberg, Nature **423**, 422 (2003).

28. "Soft lithographic directed growth of wire grating arrays with optical resonances," C. E. Moran, J. M. Steele, A. Lee, C. Aguirre, C. Radloff, A. Rimberg, and N. J. Halas, Proceedings of the SPIE, **4810**, 1 (2002)

27. "Superconducting single-electron transistor coupled to a locally tunable electromagnetic environment," W. Lu, K. D. Maranowski and A. J. Rimberg, Appl. Phys. Lett. **81**, 4976 (2002). (Selected for the Virtual Journal of Nanoscale Science and Technology, www.vjnano.org, Jan. 6 2003, and for the Virtual Journal of Applications of Superconductivity, www.vjsuper.org, Jan. 1 2003.)

26. "Charge transport processes in a superconducting single-electron transistor coupled to a microstrip transmission line," W. Lu, K. D. Maranowski and A. J. Rimberg, Phys. Rev. B **65**, 060501 (Rapid Commmunications) (2002). (Selected for the Virtual Journal of Nanoscale Science and Technology, www.vjnano.org, Feb. 4 2002, and for the Virtual Journal of Applications of Superconductivity, www.vjsuper.org, Feb. 1 2002.)

25. "A single-electron transistor strongly coupled to an electrostatically defined quantum dot," W. Lu, A. J. Rimberg, K. D. Maranowski and A. C. Gossard, Appl. Phys. Lett. **77**, 2746 (2000).

24. "Controlling the charging energy of arrays of tunnel junctions," Ç. Kurdak, A. J. Rimberg, T. R. Ho and J. Clarke and J. D. Walker, Physica E **5**, 274 (2000).

23. "Controlled deposition of individual single-walled carbon nanotubes on chemically functionalized templates," J. Liu, M. J. Casavant, M. Cox, D. A. Walters, P. Boul, W. Lu, A. J. Rimberg, K. A. Smith, D. T. Colbert and R. E. Smalley, Chem. Phys. Lett. **303**, 125 (1999).

22. "Activated transport and scaling behavior in the current-voltage characteristic and Coulomb blockade oscillations of two-dimensional arrays of metallic islands," Ç. Kurdak, A. J. Rimberg, T. R. Ho, and J. Clarke, Phys. Rev. B **57** , R6842 (1998).

21. "Dissipation-driven superconductor-insulator transition in a two-dimensional array of Josephson junctions," A. J. Rimberg, T. R. Ho, Ç. Kurdak, J. Clarke, K. L. Campman and A. C. Gossard, Phys. Rev. Lett. **78**, 2632 (1997).

20. "Scaling behavior in the current-voltage characteristics of one- and two-dimensional arrays of metallic islands," A. J. Rimberg, T. R. Ho and J. Clarke, Phys. Rev. Lett. **74**, 4714 (1995).

19. "Capacitive detection of subband structure in the electron gas in a wide parabolic quantum well," A. J. Rimberg, Scott Yang, Jed Dempsey, J. H. Baskey, R. M. Westervelt, P. F. Hopkins and A. C. Gossard, Appl. Phys. Lett. **62**, 390 (1993).

18. "Remotely-doped superlattices in wide parabolic GaAs/$Al_xGa_{1-x}$As quantum wells," J. H. Baskey, A. J. Rimberg, Scott Yang, R. M. Westervelt, P. F. Hopkins and A. C. Gossard, Appl. Phys. Lett. **61**, 1573 (1992).

17. "Conductance fluctuations and chaotic scattering in ballistic microstructures," C. M. Marcus, A. J. Rimberg, R. M . Westervelt, P. F. Hopkins and A. C. Gossard, Phys. Rev. Lett. **69**, 506 (1992).

16. "Magnetotransport characterization of remotely-doped superlattices in wide parabolic GaAs/$Al_xGa_{1-x}$As quantum wells," A. J. Rimberg, J. H. Baskey, R. M. Westervelt, P. F. Hopkins, M. Sundaram and A. C. Gossard, *Proc. Conf. on Nanostructures and Mesoscopic Systems, Santa Fe, 1991,* Superlatt. and Microstruct. **11**, 317 (1992).

15. "Photoluminescence excitation spectroscopy of remotely doped wide parabolic GaAs/$Al_xGa_{1-x}$As quantum wells," J. H. Burnett, H. M. Cheong, W. Paul, P. F. Hopkins, A. J. Rimberg, R. M. Westervelt, M. Sundaram and A. C. Gossard, Phys. Rev. B **43**, 12 033 (1991).

14. "Quantum Hall effect in InAs/AlSb quantum wells," P. F. Hopkins, A. J. Rimberg, G. Tuttle and H. Kroemer, Appl. Phys. Lett. **58** 1428 (1991).

13. "Photoluminescence excitation spectroscopy of wide parabolic GaAs/$Al_xGa_{1-x}As$ quantum wells," J. H. Burnett, H. M. Cheong, W. Paul, P. F. Hopkins, A. J. Rimberg, R. M. Westervelt, M. Sundaram and A. C. Gossard, *Proc. Fifth Int. Conf. on Superlattices and Microstructures*, Berlin, 1990, Superlatt. and Microstruct. **10**, 167 (1991).

12. "Optical study of wide parabolic GaAs/$Al_xGa_{1-x}As$ quantum wells", J. H. Burnett, H. M. Cheong, W. Paul, P. F. Hopkins, A. J. Rimberg, R. M. Westervelt, M. Sundaram and A. C. Gossard, in *Proc. 20th Int. Conf. on the Physics of Semiconductors, Thessaloniki, 1990, vol. 2*, E. Anastassakis and J. D. Joannopoulos, eds., (World Scientific Press, Singapore, 1990) p. 1085.

11. "Electron transport in wide parabolic GaAs/$Al_xGa_{1-x}As$ quantum wells," R. M. Westervelt, A. J. Rimberg, P. F. Hopkins, E. G. Gwinn, M. Sundaram and A. C. Gossard, in *Proc. 20th Int. Conf. on the Physics of Semiconductors, Thessaloniki, 1990, vol. 2*, E. Anastassakis and J. D. Joannopoulos, eds., (World Scientific Press, Singapore, 1990) p. 1669.

10. "Mobility and uniformity of the electron gas in wide parabolic GaAs/$Al_xGa_{1-x}As$ wells" P. F. Hopkins, A. J. Rimberg, E. G. Gwinn, R. M. Westervelt, M. Sundaram and A. C. Gossard, ", in *Proc. 5th Int. Conf. on Superlattices and Microstructures, Berlin , 1990*, Superlatt. and Microstruct. **9**, 127 (1991).

9. "Low-density high-mobility electron gas in wide parabolic GaAs/$Al_xGa_{1-x}As$ wells," P. F. Hopkins, A. J. Rimberg, E. G. Gwinn, R. M. Westervelt, M. Sundaram and A. C. Gossard, Appl. Phys. Lett. **57**, 2823 (1990).

8. "Characterization of the electron gas in wide parabolic GaAs/$Al_xGa_{1-x}As$ quantum wells," E. G. Gwinn, P. F. Hopkins, A. J. Rimberg, R. M. Westervelt, M. Sundaram and A. C. Gossard, Phys. Rev. B **41**, 10 700 (1990).

7. "Electron energy levels for a dense electron gas in parabolic GaAs/$Al_xGa_{1-x}As$ wells," A. J. Rimberg and R. M. Westervelt, Phys. Rev. B **40**, 3970 (1989).

6. "Quantum Hall effect in wide parabolic GaAs/$Al_xGa_{1-x}As$ wells," E. G. Gwinn, R. M. Westervelt, P. F. Hopkins, A. J. Rimberg, M. Sundaram and A. C. Gossard, Phys. Rev. B **39**, 6260 (1989). (Rapid Communication)

5. "Quantum Hall effect in wide parabolic GaAs/$Al_xGa_{1-x}As$ wells," E. G. Gwinn, R. M. Westervelt, P. F. Hopkins, A. J. Rimberg, M. Sundaram and A. C. Gossard, Superlatt. and Microstruct. **6**, 95 (1989).

4. "Quantum Hall effect in wide parabolic GaAs/$Al_xGa_{1-x}As$ wells," E. G. Gwinn, P. F. Hopkins, A. J. Rimberg, R. M. Westervelt, M. Sundaram and A. C. Gossard, in *High Magnetic Fields in Semiconductor Physics II*, G. Landwehr, ed., Springer Series in Solid State Physics (Springer-Verlag, New York, 1989), p. 58.

3. "Magnetic-field-induced localization in degenerately doped n-type Ge," P. F. Hopkins, M. J. Burns, A. J. Rimberg and R. M. Westervelt, Phys. Rev. B **39**, 12 708, (1989).

2. "Temporal fluctuations of multiply scattered light in a random medium," A. J. Rimberg and R. M. Westervelt, Phys. Rev. B **38**, 5073 (1988). (Rapid Communication)

1. "Magnetic-field-induced metal-insulator transition in degenerately doped n-type Ge," R. M. Westervelt, M. J. Burns, P. F. Hopkins, A. J. Rimberg and G. A. Thomas, in *Proceedings of the University of Tokyo International Symposium on Anderson Localization*, 1987, (Springer-Verlag, Berlin, 1988) p.33.

**INVITED TALKS**

61. "Ultra-strong Optomechanical Coupling Using a Cavity-Embedded Cooper Pair Transistor," Workshop on Nanomechanical Systems: From New Materials to New Applications, Jeju Island, South Korea, July 29, 2015.

60. "The Cavity-Embedded Cooper Pair Transistor: Quantum Dynamics in a Strongly Coupled Light/Matter System," Workshop on Charge Transfer meets Circuit Quantum Electrodynamics, Max Planck Institute for the Physics of Complex Systems, Dresden, Germany, July 1, 2015.

59. "Strong, Engineered Photon/Spin Qubit Coupling," Condensed Matter Seminar, University of Wisconsin, Madison, December 12, 2014.

58. "Realization of a Single-Cooper-Pair Josephson Laser," Physics Seminar, Laboratory for Physical Sciences, College Park, October 15, 2014.

57. "Realization of a Single-Cooper-Pair Josephson Laser," Physics Seminar, National Institute of Standards and Technology, Gaithersburg, October 14, 2014.

56. "Realization of a Single-Cooper-Pair Josephson Laser," Condensed Matter Seminar, University of Wisconsin, Madison, May 15, 2014.

55. "The Cavity-Embedded Cooper Pair Transistor: Quantum Dynamics in a Strongly Coupled Light/Matter System," Condensed Matter Seminar, University of Nottingham, United Kingdom, December 5, 2012.

54. "The Cavity-Embedded Cooper Pair Transistor: Quantum Dynamics in a Strongly Coupled Light/Matter System," Condensed Matter Seminar, University of Ülm, Germany, July 25, 2012.

53. "A Macroscopic Mechanical Resonator Driven by Mesoscopic Electrical Backaction," Condensed Matter Seminar, Ohio State University, June 2, 2011.

52. "A Macroscopic Mechanical Resonator Driven by Mesoscopic Electrical Backaction," Colloquium, Institute for Quantum Computing, University of Waterloo, Canada, May 2, 2011.

51. "A Macroscopic Mechanical Resonator Driven by Mesoscopic Electrical Backaction," Condensed Matter Seminar, Syracuse University, December 10, 2010.

50. "A Macroscopic Mechanical Resonator Driven by Mesoscopic Electrical Backaction," Condensed Matter Seminar, University of Wisconsin, Madison, September 16, 2010.

49. "A Macroscopic Mechanical Resonator Driven by Mesoscopic Electrical Backaction," QUEST Workshop, Santa Fe, NM, August 24, 2010.

48. "A Macroscopic Mechanical Resonator Driven by Mesoscopic Electrical Backaction," Physics Colloquium, University of Sherbrooke, Sherbrooke, May 4, 2010.

47. "A Macroscopic Mechanical Resonator Driven by Mesoscopic Electrical Backaction," Physics Colloquium, University of Vermont, Burlington, VT, April 21, 2010.

46. "A Macroscopic Mechanical Resonator Driven by Mesoscopic Electrical Backaction," Gordon Conference on Mechanical Systems in the Quantum Regime, Galveston, TX, March 25, 2010.

45. "Near-Quantum-Limited Operation of a Charge-Sensitive Electrical Amplifier," Nanoelectronic Devices for Defense and Security, Ft. Lauderdale, September 30, 2009.

44. "Controlling the Shot Noise of a Quantum Point Contact by Coupling to an Acoustic Resonance," National Research Council of Canada, Institute for Microstructural Sciences, Ottawa, June 30, 2009.

43. "Controlling the Shot Noise of a Quantum Point Contact by Coupling to an Acoustic Resonance," National Institute of Science and Technology, Boulder, May 28, 2009.

42. "Controlling the Shot Noise of a Quantum Point Contact by Coupling to an Acoustic Resonance," Duke University, May 14, 2009.

41. "Controlling the Shot Noise of a Quantum Point Contact by Coupling to an Acoustic Resonance," University of Massachusetts, Boston, April 29, 2009.

40. "Quantum Noise in Single Electron Transistors: Nearing the Quantum Limit," Cornell University, July 2008.

39. "The Quantum Limit for Electrical Amplifiers: Can We Reach It?", SPIE MOEMS-MEMS Symposium, San Jose, January 2008.

38. "The Quantum Limit for Electrical Amplifiers: Can We Reach It?" Amherst College, September, 2007.

37. "Approaching the Shot-Noise Limit for Fast Charge Detectors," University of Wisconsin, Madison, June 2007.

36. "Real-Time Electron Counting in Semiconductor Nanostructures," SPIE Defense & Security Symposium, Orlando, March 2005.

35. "Spin-Based Qubits in Semiconductors," Gordon Research Conference on Quantum Information Science, Ventura, CA, March 2005.

34. "Real-Time Electron Counting in Semiconductor Nanostructures," University of Southern California, October 2004.

33. Invited speaker, Heraeus workshop on "Control of Quantum Coherence," Bad Honef, Germany, July 2004.

32. "Real-Time Electron Counting in Semiconductor Nanostructures,", University of California, San Diego, May 2004.

31. "Real-Time Electron Counting in Semiconductor Nanostructures,", Harvard University, April 2004.

30. "Real-Time Electron Counting in Semiconductor Nanostructures," Texas A&M University, February 2004.

29. "Real-Time Electron Counting in Semiconductor Nanostructures," University of California, Irvine, February 2004.

28. "Real-Time Electron Counting in Semiconductor Nanostructures," Dartmouth College, February 2004.

27. "Real-Time Electron Counting in Semiconductor Nanostructures," Department of Physics, McGill University, February 2004.

26. "Real-Time Electron Counting in Semiconductor Nanostructures: Where Physics Meets Engineering," Department of Electrical and Computer Engineering, McGill University, February 2004.

25. "Real-Time Electron Counting in Semiconductor Nanostructures," University of California, Riverside, February 2004.

24. "Real-Time Electron Counting in Semiconductor Nanostructures," University of Arizona, February 2004.

23. "Real-Time Electron Counting in Semiconductor Nanostructures," National Institute of Standards and Technology, Boulder, January 2004.

22. "Real-Time Electron Counting in Semiconductor Nanostructures," Ohio State University, January 2004.

21. "Real-Time Electron Dynamics in a Quantum Dot," University of Chicago, May 2003.

20. "Real-Time Electron Dynamics in a Quantum Dot," University of Maryland, College Park, April 2003.

19. "Real-Time Electron Dynamics in a Quantum Dot," National Institute of Standards and Technology, Gaithersburg, April 2003.

18. "Real-Time Electron Dynamics in a Quantum Dot," University of California, Berkeley, January 2003.

17. "Real-Time Electron Dynamics in a Quantum Dot," University of Pennsylvania, November 2002.

16. "Real-Time Electron Dynamics in a Quantum Dot," University of Michigan, October 2002.

15. "Real-Time Electron Dynamics in a Quantum Dot," National Institute of Standards and Technology, Boulder, October 2002.

14. "Real-Time Electron Dynamics in a Quantum Dot," University of Wisconsin, Madison, September 2002.

13. "Correlated Electrons in Nanoscale Systems," Gordon Research Conference on Correlated Electrons, July 2002.

12. "Superconducting single-electron transistor coupled to a two-dimensional electron gas: a model system for studies of the electromagnetic environment," Duke University, May 2002.

11. "Superconducting single-electron transistor coupled to a two-dimensional electron gas: a model system for studies of the electromagnetic environment," Yale University, May 2002.

10. "Detecting Single Electrons on a Quantum Dot," Physics Seminar, Trinity University, November 2000.

9. "Probing high-frequency noise in mesoscopic structures," Physics Colloquium, University of Houston, October 1999.

8. "Arrays of coupled aluminum islands near a ground plane," Physics Colloquium, Rice University, April 1997.

7. "Arrays of coupled aluminum islands near a ground plane," Condensed Matter Seminar, Brown University, April, 1996.

6. "Arrays of coupled aluminum islands near a ground plane," Physics Colloquium, University of Pennsylvania, February, 1996.

5. "Arrays of coupled aluminum islands near a ground plane," Physics Colloquium, Rice University, February, 1996.

4. "Arrays of coupled aluminum islands near a ground plane," Condensed Matter Seminar, University of South Carolina, January, 1996.

3. "Magnetotransport in wide graded GaAs/$Al_xGa_{1-x}$As quantum wells," Materials Science Seminar, University of California, Santa Barbara, February, 1992.

2. "Magnetotransport in wide graded GaAs/$Al_xGa_{1-x}$As quantum wells," Physics Research Division Seminar, AT&T Bell Labs, February, 1992.

1. "Magnetotransport in wide graded GaAs/$Al_xGa_{1-x}$As quantum wells," Physics Seminar, National Institute of Standards and Technology, Gaithersburg MD, January, 1992.