

prepared 5/10/2007

IGOR ŽUTIĆ

Department of Physics
State University of New York at Buffalo
Buffalo, NY 14260

Phone: (716) 645-2017 ext.183 email: zigor@buffalo.edu Fax: (716) 645-2507

EDUCATION:

- Ph.D., Physics, University of Minnesota, 1998, GPA 4.00/4.00.
Thesis title: "Nonlinear Electrodynamics of High Temperature Superconductors."
- B.Sc., Physics, University of Zagreb, Croatia, 1992.
- University of Zagreb, Graduate School, Mathematics Department (attended as an undergraduate).

EMPLOYMENT:

- Assistant Professor of Physics, SUNY Buffalo, August 2005-.
- National Research Council Fellow, Center for Computational Materials Science, Naval Research Laboratory, November 2003-August 2005.
- Research Associate, Department of Physics, University of Maryland, College Park, September 1998-October 2003.

HONORS AND AWARDS:

- 2006 National Science Foundation CAREER Award.
- 2005 National Research Council/American Society for Engineering Education Post-doctoral Research Publication Award.
- National Research Council Fellowship, 2003-2005.
- University of Minnesota Graduate School Doctoral Dissertation Fellowship 1997-1998.
- Supplemental Research Fellowship, University of Minnesota 1997.
- Stanwood Johnston Memorial Fellowship, University of Minnesota 1995-1996.
- Foster Wheeler Fellowship, University of Minnesota 1994-1995.
- Outstanding GPA Fellowship, University of Zagreb, Institute for Physics 1989-1992.
- Outstanding Academic Performance Fellowship, City of Zagreb 1988-1991.

RESEARCH INTERESTS:

- Spin-Polarized Transport in Electronic Materials; Spintronics
- Theoretical Nanoscience
- High Temperature and Unconventional Superconductivity
- Ferromagnetic Semiconductors
- Magnetic Quantum Dots
- Computational Physics
- Quantum Computation

TEACHING EXPERIENCE:

- PHY 101, College Physics (Algebra based), Fall 2005, Fall 2006.
- PHY 102, College Physics (Algebra based), Spring 2007.
- Developing problems and appendices for Physics 1252 and 1253 (Calculus based Introductory course at the University of Minnesota) Laboratory Manual.
<http://www.physics.umn.edu/groups/phased/Research/PSL/1252toc.html>
<http://www.physics.umn.edu/groups/phased/Research/PSL/1253toc.html>

PROFESSIONAL ACTIVITIES:

- Co-organizer of the Focused Topic: Spin-Dependent Phenomena in Semiconductors, American Physical Society March Meeting, Denver, CO, March 5-9, 2007.
- Gordon Research Conference on Magnetic Nanostructures, discussion leader, Oxford University, U.K., September 3-8, 2006.
- Department of Energy Workshop on Superconductivity, subpanel writer for Theory of Superconducting Interface Phenomena, Washington, D.C., May 8-11, 2006.
- Program Committee of the 49th Conference on Magnetism and Magnetic Materials, Jacksonville, FL, November 7-11, 2004. <http://www.magnetism.org/>
- Co-chair of the Symposia Series: Novel Aspects of Spintronic Materials and Devices, Material Research Society Meeting, Boston, MA, December 2-6, 2002. <http://www.mrs.org/meetings/fall2002/cfp/p.html>
- Proposed, chaired and co-organized Spintronics 2001: International Conference on Novel Aspects of Spin-Polarized Transport and Spin Dynamics, Washington DC, August 9-11, 2001. <http://www.physics.umd.edu/spevents/spintronics2001/>
- Guest Editor for the February 2002 issue (Vol. **15**, No. 1) of Journal of Superconductivity (Spintronics 2001: Novel Aspects of Spin-Polarized Transport and Spin Dynamics).
- Referee for Reviews of Modern Physics, Nature, Nature Materials, Nature Physics, Physical Review Letters, Physical Review B, Europhysics Letters, Nanotechnology, Applied Physics Letters, Journal of Applied Physics, Physica A, Physica B, Physica C, Physica Status Solidi (B), Journal of Physics: Condensed Matter, Journal of Physics D: Applied Physics, Journal of Superconductivity, Solid-State Electronics, IEEE Transactions on Electronic Devices, IEEE Transactions on Magnetics, Journal of Magnetism and Magnetic Materials, Semiconductor Science and Technology, Materials Science and Engineering B, National Science Foundation, Department of Energy, U.S. Civilian Research and Development Foundation, National Commission for Scientific & Technological Research of Chile, and Research Grants Council of Hong Kong.

GRANTS:

- Principal Investigator, NSF CAREER Award, "Spin-Polarized Transport and Spintronic Devices," ECS-054782, budget: \$ 400,000, 2006-2011.
- Principal Investigator, US ONR Grant, "Bipolar Spintronics," N000140610123, budget: \$ 243,953, 2006-2009.
- Principal Investigator, Center for Computational Sciences, Oak Ridge National Laboratory, "Theory of Spin-Polarized Transport in Semiconductor Nanostructures," Supercomputer Grant NMS2004-015, 2004-2006.

- Co-Principal Investigator (with S. Das Sarma), NSF Grant “Spin Electronics,” ECS-0200172, budget: \$ 300,000, 2002-2005.
- US ONR Grant N00014-02-1-0816 for the Symposia Series: Novel Aspects of Spintronic Materials and Devices, Material Research Society Meeting, Boston, MA, December 2-6, 2002, budget: \$ 5,000.
- Raised funds for the organization of Spintronics 2001, including \$ 5,000 from DARPA, \$ 5,000 from US ONR, and \$ 4,300 from NSF (Co-Principal Investigator, NSF Grant DMR-0108908).

PUBLICATIONS:

- “Fundamentals and Theory,” edited by M. Faehle, S. Maekawa, and I. Žutić, in preparation, to appear as Vol. 1 of “Handbook of Magnetism and Advanced Magnetic Materials,” to be published by John Wiley.
 - “Towards Semiconductor Spin Logic,” I. Žutić and J. Fabian, chapter in *Future Trends in Microelectronics*, edited by S. Luryi, J. Xu, and A. Zaslavsky, Wiley (in press).
 - “Bipolar Spintronics,” I. Žutić and J. Fabian, chapter in *Concepts in Spin Electronics*, edited by S. Maekawa, Oxford University Press (2006).
 - J. Supercond., **15**, 1-104 (2002), I. Žutić, Guest Editor. (Spintronics 2001: Novel Aspects of Spin-Polarized Transport and Spin Dynamics).
47. “Silicon twists,” I. Žutić, and J. Fabian, *Nature* **447**, 269-270 (2007),
 46. “Tailoring Magnetism in Quantum Dots,” R. Abolfath, P. Hawrylak, and I. Žutić, *Phys. Rev. Lett.*, **98**, 207203 (2007), cond-mat/0612489.
 45. “Bipolar spintronics: from spin injection to spin-controlled logic,” I. Žutić, J. Fabian, and S. C. Erwin, *J. Phys.: Condens. Matter*, **19**, 165219 (2007).
 44. “Gadolinium makes good spin contacts,” I. Žutić, *Nature Mater.* **5**, 771-772 (2006).
 43. “Spin injection and detection in silicon,” I. Žutić, J. Fabian, and S. C. Erwin, *Phys. Rev. Lett.* **97**, 022602 (2006), cond-mat/0412580.
 42. “Determination of Interface Atomic Structure and Its Impact on Spin Transport Using Z-Contrast Microscopy and Density-Functional Theory, T. J. Zega, A. T. Hanbicki, S. C. Erwin, I. Žutić, G. Kioseoglou, C. H. Li, B. T. Jonker, and R. M. Stroud, *Phys. Rev. Lett.* **96**, 196101 (2006).
 41. “Bipolar spintronics: Fundamentals and applications,” I. Žutić, J. Fabian, and S. C. Erwin, *IBM J. Res. & Dev.* **50**, 121-139 (2006).
 40. “A path to spin logic,” I. Žutić and M. Fuhrer, *Nature Phys.* **1**, 85-86 (2005).
 39. “Spin accumulation in the extrinsic spin Hall effect,” W.-K. Tse, J. Fabian, I. Žutić, and S. Das Sarma, *Phys. Rev. B* **72**, 214303(R) (2005), cond-mat/0508076.
 38. “Phase-sensitive tests of the pairing state symmetry in Sr_2RuO_4 ,” I. Žutić, and I. Mazin, *Phys. Rev. Lett.* **95**, 217004 (2005), cond-mat/0506745.
 37. “Temperature dependent asymmetry of the nonlocal spin-injection resistance: evidence for spin non-conserving interface scattering,” S. Garzon, I. Žutić, and R. A. Webb, *Phys. Rev. Lett.* **94**, 176601 (2005), cond-mat/0504201.
 36. “The Ebers-Moll model for magnetic bipolar transistors,” J. Fabian and I. Žutić, *Appl. Phys. Lett.*, **86** 133506, (2005), cond-mat/0409196.

35. "Spintronics: Fundamentals and Applications," I. Žutić, J. Fabian, and S. Das Sarma, *Invited, Rev. Mod. Phys.*, **76** 323-410, (2004), cond-mat/0405528.
34. "Tailoring ferromagnetic chalcopyrites" S. C. Erwin and I. Žutić, *Nature Materials*, **3**, 410-414 (2004), cond-mat/0401157.
33. "Spin-polarized current amplification and spin injection in magnetic bipolar transistors," J. Fabian and I. Žutić, *Phys. Rev. B* **69**, 115314 (2004), cond-mat/0311456.
32. "Magnetic bipolar transistor," J. Fabian, I. Žutić, and S. Das Sarma, *Appl. Phys. Lett.* **84**, 85-87 (2004), cond-mat/0307014.
31. "Spin-Voltaic Effect and its Implications," I. Žutić and J. Fabian, *Materials Transactions* **44**, 2062-2065 (2003), cond-mat/0304472.
30. "Theory of magnetic bipolar transistor," J. Fabian, I. Žutić, and S. Das Sarma, cond-mat/0211639.
29. "Spin-polarized bipolar transport and its applications," S. Das Sarma, J. Fabian, and I. Žutić, *J. Supercond.* **16**, 697-705 (2003), cond-mat/0206540.
28. "Theory of spin-polarized bipolar transport in magnetic *p-n* junctions," J. Fabian, I. Žutić, and S. Das Sarma, *Phys. Rev. B* **66**, 165301 (2002), cond-mat/0205340.
27. "Proposal for all-electrical measurement of T_1 in semiconductors," I. Žutić, J. Fabian, and S. Das Sarma, *Appl. Phys. Lett.* **82**, 221-223 (2003), cond-mat/0205177.
26. "Novel Aspects of Spin-Polarized Transport and Spin Dynamics," I. Žutić, *J. Supercond.* **15**, 5 (2002), cond-mat/0112368.
25. "Spin-polarized transport in inhomogeneous magnetic semiconductors: theory of magnetic/ nonmagnetic *p-n* junctions," I. Žutić, J. Fabian, and S. Das Sarma, *Phys. Rev. Lett.*, **88**, 066603 (2002), cond-mat/0106085.
24. "Spin Electronics and Spin Computation," S. Das Sarma, J. Fabian, X. D. Hu, and I. Žutić, *Solid State Commun.* **119**, 207-215 (2001), cond-mat/0105247.
23. "Proposal for a spin-polarized solar battery," I. Žutić, J. Fabian, and S. Das Sarma, *Appl. Phys. Lett.* **79**, 1558-1560 (2001), cond-mat/0104416.
22. "Spin injection through the depletion layer: a theory of spin-polarized *p-n* junctions and solar cells," I. Žutić, J. Fabian, and S. Das Sarma, *Phys. Rev. B* **64** Rapid Comm., 121201 (2001), cond-mat/0104146.
21. "Midgap Edge States and Pairing Symmetry of Quasi-One-Dimensional Organic Superconductor," K. Sengupta, I. Žutić, H.-J. Kwon, V. M. Yakovenko, and S. Das Sarma, *Phys. Rev. B* **63**, 144531 (2001), cond-mat/0010206.
20. "Reanalysis of the magnetic field dependence of the penetration depth: Observation of the nonlinear Meissner Effect," K. Halterman, O. T. Valls, and I. Žutić, *Phys. Rev. B* **63** Rapid Comm., 180405 (2001), cond-mat/0011021.
19. "Spin-Polarized Transport Across an $\text{La}_{0.7}\text{Sr}_{0.3}\text{MnO}_3/\text{YBa}_2\text{Cu}_3\text{O}_{7-x}$ Interface: Role of Andreev Bound States," Z. Y. Chen, A. Biswas, I. Žutić, T. Wu, S. B. Ogale, R. L. Greene, and T. Venkatesan, *Phys. Rev. B* **63**, 212508 (2001), cond-mat/0007353.
18. "Angular dependence of the penetration depth in unconventional superconductors," K. Halterman, O. T. Valls, and I. Žutić, *Phys. Rev. B* **63**, 14501 (2001), cond-mat/0007510.
17. "Issues, Concepts and Challenges in Spintronics," S. Das Sarma, J. Fabian, X. D. Hu, and I. Žutić, The 58th Annual Device Research Conference (IEEE, Piscataway, 2000), p. 95-98, cond-mat/0006369.

16. "Theoretical Perspectives on Spintronics and Spin-Polarized Transport," S. Das Sarma, J. Fabian, X. D. Hu, and I. Žutić, *IEEE Trans. on Magn.* **36**, 2821-2826 (2000), cond-mat/0002256.
15. "Spintronics: Electron Spin Coherence, Entanglement, and Transport," S. Das Sarma, J. Fabian, X. D. Hu, and I. Žutić, *Superlattice Microst.* **27**, 289-295 (2000), cond-mat/9912040.
14. "Interface-Charged Impurity Scattering in Semiconductor MOSFET and MODFETs: Temperature-Dependent Resistivity and 2D "Metallic" Behavior," S. Das Sarma, E. H. Hwang, and I. Žutić, *Superlattice Microst.* **27**, 421-424 (2000), cond-mat/003429.
13. "Tunneling Spectroscopy for Ferromagnet/Superconductor Junctions," I. Žutić and O. T. Valls, *Phys. Rev. B* **61**, 1555-1566 (2000), cond-mat/9902080.
12. "Spin-Polarized Transport and Andreev Reflection in Semiconductor/Superconductor Hybrid Structures" I. Žutić and S. Das Sarma, *Phys. Rev. B* **61**, R16322- R16325 (1999), cond-mat/9909002.
11. "Spin-Polarized Tunneling in Ferromagnet/Unconventional Superconductor Junctions," I. Žutić and O. T. Valls, *Phys. Rev. B* **60**, 6320-6323 (1999), cond-mat/9808285.
10. Comment on "Is the Nonlinear Meissner effect unobservable?" A. Bhattacharya, I. Žutić, A. M. Goldman, and O. T. Valls, *Phys. Rev. Lett.* **83**, 887 (1999), cond-mat/9812290.
9. "Angular Dependence of the Nonlinear Magnetic Moment of $\text{YBa}_2\text{Cu}_3\text{O}_{6.95}$ in the Meissner State," A. Bhattacharya, I. Žutić, A. M. Goldman, O. T. Valls, U. Welp, and B. Veal, *Phys. Rev. Lett.* **82**, 3132-3135 (1999), cond-mat/9812234.
8. "Investigation of the symmetry of the pairing state in $\text{YBa}_2\text{Cu}_3\text{O}_{7-\delta}$ using the nonlinear transverse magnetic moment: Experimental results," A. Bhattacharya, A. M. Goldman, I. Žutić, O. T. Valls, U. Welp, and B. Veal, *J. Supercond.* **12**, 99-103 (1999).
7. "Low Frequency Nonlinear Magnetic Response of an Unconventional Superconductor," I. Žutić and O. T. Valls, *Phys. Rev. B* **58**, 8738-48 (1998), cond-mat/9806288.
6. "Computation of the Nonlinear Magnetic Response of a Three Dimensional Anisotropic Superconductor," I. Žutić and O. T. Valls, *J. Appl. Phys.* **83**, 6804-6806 (1998), cond-mat/9712210.
5. "Superconducting-Gap-Node Spectroscopy Using Nonlinear Electrodynamics," I. Žutić and O. T. Valls, *Phys. Rev. B* **56**, 11279-11393 (1997), cond-mat/9706095.
4. "Numerically Implemented Perturbation Method for the Nonlinear Magnetic Moment of an Anisotropic Superconductor," I. Žutić and O. T. Valls, *J. Comput. Phys.* **136**, 337-53 (1997), cond-mat/9704240.
3. "Nonlinear Transverse Magnetic Moment in Anisotropic Superconductors," I. Žutić and O.T. Valls, *Phys. Rev. B* **54**, 15500-12 (1996), cond-mat/9606102.
2. "Determination of the Pairing State of High- T_C Superconductors Through Measurements of the Transverse Magnetic Moment," J. Buan, B. P. Stojković, A. Bhattacharya, I. Žutić, N. Israeloff, A. M. Goldman, D. Grupp, C. C. Huang, and O. T. Valls, Proceedings of the 10th Anniversary HTS Workshop on Physics, Materials and Applications, Houston, Texas, 1996, edited by B. Batlogg, C. W. Chu, W. K. Chu, D. U. Gubser and K. A. Müller, (World Scientific p. 219-22 (1996)).
1. "Fractal Dimensions or How to Measure in Nature," I. Žutić, D. Rodinis, (in Croatian) *Priroda*, **79**, 12-17 (1989).

INVITED PRESENTATIONS:

59. "Tailoring Ferromagnetism in Bulk Semiconductors and Quantum Dots," Spring Meeting of the German Physical Society, Regensbrug, March 26-31, 2007.

58. "Spin-Dependent Bipolar Transport," plenary talk at 47th Sanibel Symposium, St. Simons Island, GA, February 22-27, 2007.
57. "Bipolar Transport and Spin Currents in $p-n$ junctions," International Workshop on Spin Currents, Institute of Materials Research, Tohoku University, Sendai, Japan, February 19-20, 2007.
56. "Semiconductor Spintronics," Case Western Reserve University, Cleveland, OH, November 6, 2006.
55. "Putting Spin into Electronics," University of Toronto, Canada, November 3, 2006.
54. "Ferromagnetic Oxide Semiconductors: Challenges and Opportunities," Gordon Research Conference on Magnetic Nanostructures, Oxford University, U.K., September 3-8, 2006.
53. "Semiconductor Spintronics: From Spin Injection to Spin-Controlled Logic," Kinken-Wakate 2006, 3rd Materials Science School for Young Scientists, Physics and Applications of Advanced Magnetic Materials, Sendai, Japan, August 26-28, 2006.
52. "Magnetic Heterojunctions: From Electrical Spin Detection to Magnetic Bipolar Transistors," Tokyo Institute of Technology, Japan, August 24, 2006.
51. "Semiconductor Spintronics: From Spin Injection to Spin-Controlled Logic," Future Trends in Microelectronics: Up the Nano Creek, Crete, Greece, June 26-30, 2006.
50. "Research Opportunities in Andreev Reflection Spectroscopy," DOE Workshop on Superconductivity, Washington, D.C., May 8-11, 2006.
49. "Spin-Polarized Transport in Semiconductors: Lessons from Superconductivity," University of Florida, Gainesville, April 3, 2006.
48. "Semiconductor Spintronics," Center for Nonlinear Studies, Los Alamos National Laboratory, January 23, 2006.
47. "Semiconductor Spintronics," National Research Council, Ottawa, Canada, January 19, 2006.
46. "Spin-Polarized Transport and Andreev Bound States in Superconducting Junctions," Strongly Correlated Electron Materials: Physics and Nanoengineering, International Conference on Optics & Photonics 2005, San Diego, July 31 - August 4, 2005.
45. "Spin-Polarized Transport in Semiconductors: Lessons from Superconductivity," colloquium at Virginia Tech, Blacksburg, March 31, 2005.
44. "Spin Injection in Semiconductors," Vanderbilt University, Nashville, March 29, 2005.
43. "Spin-Polarized Transport in Semiconductors: Lessons from Superconductivity," colloquium at Vanderbilt University, Nashville, March 28, 2005.
42. "Spin-Polarized Transport: From Spin Injection to Andreev Bound States," University of Tennessee, Knoxville, March 15, 2005.
41. "Spin-Polarized Transport in Semiconductors: Lessons from Superconductivity," colloquium at University of Nebraska, Lincoln, March 10, 2005.
40. "Spin-Polarized Transport in Semiconductors: Lessons from Superconductivity," University of California at Davis, March 7, 2005.
39. "Spin Injection in Semiconductors," 43. Internationale Universitätswochen für Theoretische Physik Schladming, Austria, February 26 - March 4, 2005.
38. "Spin-Polarized Transport in Semiconductor Junctions: From Superconductors to Magnetic Bipolar Transistors," 43. Internationale Universitätswochen für Theoretische Physik Schladming, Austria, February 26 - March 4, 2005.

37. "Spin-Polarized Transport in Semiconductors: Lessons from Superconductivity," colloquium at University of California Riverside, February 3, 2005.
36. "Spin-Polarized Transport: Fundamentals and Applications," Oak Ridge National Laboratory, December 13, 2004.
35. "Spin-Polarized Transport in Semiconductor Junctions," University of Notre Dame, December 7, 2004.
34. "Spintech: Challenges and Opportunities," panel presentation, DARPA workshop, San Francisco, October 29, 2004.
33. "Concepts in Spin-Polarized Transport," colloquium at George Mason University, October 4, 2004.
32. "Bipolar Spintronics," 4th Generation Light Source Spintronics Satellite Meeting, Rutherford Appleton Laboratories, Oxfordshire, UK, September 14-15, 2004.
31. "Bipolar Spintronics: From Magnetic Diodes to Magnetic Bipolar Transistors," APS March Meeting, Montreal, Canada, March 22-26, 2004.
30. "Spintronics: Fundamentals and Applications," colloquium at University of Arizona, March 12, 2004.
29. "Spintronics: Fundamentals and Applications," University of Virginia, March 4, 2004.
28. "Fundamentals of Spintronics," University of Pittsburgh, February 9, 2004.
27. "Spinning Off into the Future - Ultra-Performance Spins in Semiconductors, panel presentation, DARPA SpinS Program Review, Santa Monica, October 17, 2003."
26. "Semiconductor Spintronics," SUNY Buffalo, October 7, 2003.
25. "Spin-Dependent Transport in Magnetic p-n Junctions," Institute for Materials Research, Sendai, Japan, August 25, 2003.
24. "Spin-Dependent Transport in Magnetic p-n Junctions," Institute for Solid State Physics International Summer School for Young Researchers on Quantum Transport in Mesoscopic Scale and Low Dimensions, University of Tokyo, Japan, August 13-21, 2003.
23. "Semiconductor Spintronics," International Workshop on Analysis and Numerics for Modeling Semiconductor Devices and Biological Channels, College Park, May 19-23, 2003.
22. "Spintronics: Fundamentals and Applications," Institute of Physics, Zagreb, Croatia, April 28, 2003.
21. "Spin-Polarized Transport in Electronic Materials," Oregon State University, April 8, 2003.
20. "Spintronics: Fundamentals and Applications," colloquium at Oregon State University, April 7, 2003.
19. "Spin-Polarized Transport in Inhomogeneous Semiconductors," Foundation Advanced Technology Institute, Tokyo, Japan, March 14, 2003.
18. "Bipolar Spintronics," Tohoku University, Sendai, Japan, March 13, 2003.
17. "Magnetic Semiconductor Nanodevices," International Workshop on Nanostructured Metallic Materials, Akigu, Japan, March 9-12, 2003.
16. "Spin Injection in Electronic Materials" University of Toronto, Canada, February 17, 2003.
15. "Spintronics: Fundamentals and Applications," colloquium at McGill University, Montreal, Canada, February 10, 2003.
14. "Bipolar Spintronics," Laboratory of Physical Sciences, College Park, January 29, 2003.
13. "Bipolar Spintronics," Northeastern University, Boston, November 20, 2002.

12. "Spintronics: Fundamentals and Applications," colloquium at Texas A&M University, September 12, 2002.
11. "Spintronics: Fundamentals and Applications," University of Texas, Austin, September 10, 2002.
10. " Spintronics and Spin-Polarized Transport," ICTP Trieste, Italy, July 3, 2002.
9. " Spintronics and Spin-Polarized Transport," University of Delaware, Newark, March 28, 2002.
8. " Spintronics and Spin-Polarized Transport," University of Massachusetts, Amherst, March 14, 2002.
7. " Spintronics and Spin-Polarized Transport," NIST, Gaithersburg, March 7, 2002.
6. "Semiconductor Spintronic Devices: Theoretical Concepts," colloquium at IBM Almaden, February 8, 2002.
5. "Spintronics and Spin-Polarized Transport in Electronic Materials," University of Pittsburgh, January 17, 2002.
4. "Magnetic and Spin-Polarized p-n Junctions and Solar Batteries: A Theoretical Proposal for Semiconductor Spintronic Devices," Princeton University, November 5, 2001.
3. "Spin-Polarized Transport and Andreev Reflection in Semiconductors," APS March Meeting, Seattle, WA, March 12-16, 2001.
2. "Spin-Polarized Tunneling in Unconventional Superconductors," Johns Hopkins University, April 27, 1999.
1. "Spin-Polarized Transport and Andreev Reflection in Ferromagnet/Superconductor Junctions," Naval Research Laboratory, April 20, 1999.