

# ***NINA MARKOVIC***

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## ***Research Interests***

Experimental condensed matter physics: quantum transport, electron transport in low dimensions, superconductivity in thin films and nanowires, novel phenomena in nanostructures

## ***Appointments***

2009-current Associate Professor, Physics and Astronomy, **Johns Hopkins University**  
2003-2009 Assistant Professor, Physics and Astronomy, **Johns Hopkins University**  
2000-2002 Postdoctoral Fellow at **Harvard University** (with Michael Tinkham)  
1998-2000 Postdoctoral Research at **Delft University of Technology**, Netherlands  
(with Herre van der Zant and J. E. Mooij)

## ***Education***

1998 Ph.D in Physics, **University of Minnesota** (with Allen Goldman)  
1993 B.S. in Physics **University of Zagreb**, Croatia (with Boran Leontic)

## ***Awards and honors***

NSF CAREER Award, 2006  
Alfred P. Sloan Fellowship, 2004  
Anesuur Rahman Award for best thesis, University of Minnesota, May 1998.

## ***Affiliations***

American Physical Society, Materials Research Society

## *Publications*

1. "Anomalous field-effect in ultrathin films of metals near the superconductor-insulator transition," G. Martinez -Arizala, D. E. Grupp, C. Christiansen, A. M. Mack, N. Markovic, Y. Seguchi and A. M. Goldman, *Phys. Rev. Lett.* 78, 1130 (1997).
2. "Coulomb-glass-like behavior of ultrathin films of metals," G. Martinez -Arizala, C. Christiansen, D. E. Grupp, N. Markovic, A. M. Mack and A. M. Goldman, *Phys. Rev. B* 57, R670 (1998).
3. "Evidence of vortices on the insulating side of the superconductor-insulator transition," N. Markovic, A. M. Mack, G. Martinez -Arizala, C. Christiansen and A. M. Goldman, *Phys. Rev. Lett.* 81, 701 (1998).
4. "Superconductor--insulator transitions in the two-dimensional limit," A. M. Goldman and N. Markovic, *Physics Today* 51, No. 11, 39 (1998).
5. "Thickness-magnetic field phase diagram at the superconductor-insulator transition in 2D," N. Markovic, C. Christiansen and A. M. Goldman, *Phys. Rev. Lett.* 81, 5217 (1998).
6. "Superconductor--insulator transition in two dimensions," N. Markovic, C. Christiansen and A. M. Goldman, *Phys. Rev. B.* 60, 4320 (1999).
7. "Transversely driven charge density waves in NbSe<sub>3</sub>," N. Markovic, M.A.H. Dohmen and H.S.J. van der Zant, *J. Phys. IV France* 9, 65 (1999).
8. "Mesoscopic NbSe<sub>3</sub> wires," H.S.J. van der Zant, A. Kalwij, O.C. Mantel, N. Markovic, Yu.I. Latyshev, B. Pannetier and P. Monceau, *J. Phys. IV France* 9, 157 (1999).
9. "Tunable charge-density-wave transport in a current effect transistor," N. Markovic, M. A. H. Dohmen and H. S. J. van der Zant, *Phys. Rev. Lett.* 84, 534 (2000).
10. "Superconductor--insulator transitions in 2D: The experimental situation," N. Markovic, C. Christiansen, A. M. Mack, and A. M. Goldman, *Phys. Stat. Sol. B* 218, 221 (2000).
11. "Anomalous hopping exponents of ultrathin metal films," N. Markovic, C. Christiansen, D. E. Grupp, A. M. Mack, G. Martinez -Arizala and A. M. Goldman, *Phys. Rev. B.* 62, 2195 (2000).
12. "Submicron charge density wave devices", H. S. J. van der Zant, N. Markovic and E. Slot, *Phys.-Usp.*, 44, 61 (2001).

13. "Quantum phase slips in superconducting nanowires," C. N. Lau, N. Markovic, M. Bockrath, A. Bezryadin and M. Tinkham, Phys. Rev. Lett. 87, 217003 (2001).
14. "Electric-field effect in ultrathin films near the superconductor-insulator transition," N. Markovic, C. Christiansen, G. Martinez-Arizala, and A. M. Goldman, Phys. Rev. B 65, 012501 (2002).
15. "Scanned conductance microscopy of carbon nanotubes and  $\lambda$ -DNA," M. Bockrath, N. Markovic, A. Shepard, M. Tinkham, L. Gurevich, L. P. Kouwenhoven, M. W. Wu and L.L. Sohn, Nano Lett. 2, 187 (2002).
16. "The limits of superconductivity in MoGe nanowires," N. Markovic, C. N. Lau and M. Tinkham, Physica C 387, 44 (2003).
17. "Resistance induced by quantum phase-slips in superconducting nanowires" M Tinkham, CN Lau, N Markovic, Physica E 18 , 308 (2003).
18. "Impact of time-ordered measurements of the two states in a niobium superconducting qubit structure," K. Segall, D. Crankshaw, D. Nakada, T. P. Orlando, L. S. Levitov, S. Lloyd, N. Markovic, S. O. Valenzuela, M. Tinkham and K. K. Berggren, Phys. Rev. B 67, 220506 (2003).
19. "Hysteretic I-V curves of superconducting nanowires," M. Tinkham, J. U. Free, C. N. Lau and N. Markovic, Phys. Rev. B 68, 134515 (2003).
20. "Imaging the charge transport in arrays of CdSe nanocrystals," M. Drndic, R. Markov, M. V. Jarosz, M. G. Bawendi, M. A. Kastner, N. Markovic and M. Tinkham, Appl. Phys. Lett. 83, 4008 (2003).
21. "Resistance induced by quantum phase-slips in superconducting nanowires," M. Tinkham, C. N. Lau and N. Markovic, Physica E 18, 308 (2003).
22. "Experimental characterization of the two current states in a Nb persistent-current qubit," K. Segall, D. S. Crankshaw, D. Nakada, B. Singh, J. Lee, T. P. Orlando, K. K. Berggren, N. Markovic, M. Tinkham, IEEE Trans. Appl. Supercon. 13, 1009 (2003).
23. "dc-measurements of macroscopic quantum levels in a superconducting qubit structure with a time-ordered meter," D. Crankshaw, K. Segall, , D. Nakada, T. P. Orlando, L. S. Levitov, S. Lloyd, S. O. Valenzuela, N. Markovic, M. Tinkham, and K. K. Berggren, Phys. Rev. B 69, 144518 (2004).
24. "Exploiting finite size effects in a novel core/shell microstructure," Z. Liu, G. Xia, F. Zhu, S. Kim, N. Markovic, C. L. Chien, and P. C. Searson, J. App. Phys. 103, 064313 (2008).

25. "Electrically tunable spin polarization in a carbon nanotube spin diode," C. A. Merchant and N. Markovic, *Phys. Rev. Lett.* 100, 156601 (2008).
26. "Effect of geometry on magnetic domain structure in Ni strips with perpendicular anisotropy," S. H. Lee, F. Q. Zhu, C. L. Chien, and N. Markovic, *Phys. Rev. B* 77, 132408 (2008).
27. "Effects of diffusion on photocurrent generation in single-walled carbon nanotube films," C. A. Merchant and N. Markovic, *Appl. Phys. Lett.* 92, 243510 (2008).
28. "Fabrication of one-dimensional programmable-height nanostructures via dynamic stencil deposition," J. L. Wasserman, K. Lucas, S. H. Lee, A. Ashton, C. T. Crawl, N. Markovic, *Rev. Sci. Instrum.* 79, 073909 (2008).
29. "Current and shot noise measurements in a carbon nanotube-based spin diode (invited)," C. A. Merchant and N. Markovic, *J. Appl. Phys.* 105, 07C711 (2009).
30. "Photoresponse of Carbon Nanotube Films with Schottky Contacts," C. A. Merchant and N. Markovic, *Nanotechnology* 20, 175202 (2009).
31. "Diode effect in a superconductor-carbon nanotube-ferromagnet structure," C. A. Merchant and N. Markovic, *J. Supercond. Nov. Magn.* 23, 41 (2010).
32. "Field-effect-tuned lateral organic diodes" B. M. Dhar, G. S. Kini, G. Xia, B. J. Jung, N. Markovic, and H. E. Katz, *PNAS* 107 (2010).
33. "Transport of metal oxide nanoparticles and single-walled carbon nanotubes in human mucus", A. Jachak, S. K. Lai, K. Hida, J. S. Suk, N. Markovic, S. Biswal, P. N. Breyse, and J. Hanes, *Nanotoxicology* 6, 614 (2012).
34. "Synthesis and Alignment of Discrete Polydiacetylene-Peptide Nanostructures", S. R. Diegelmann, N. Hartman, N. Markovic, and J. D. Tovar, *J Am Chem Soc.* 134, 2028 (2012).
35. "Kelvin probe microscopic visualization of charge storage at polystyrene interfaces with pentacene and gold", T.J. Dawidczyk, G.L. Johns, R. Ozgun, O. Alley, A.G. Andreou, N. Markovic, and H.E. Katz, *Appl. Phys. Lett.* 100, 073305 (2012).
36. "Next-Generation Polymer Solar Cell Materials: Designed Control of Interfacial Variables" R. Lecover, N. Williams, N. Markovic, D. H. Reich, D. Q. Naiman, and H. E. Katz, *ACS Nano*, 6, 2865 (2012).

37. "Transmission of phase information between electrons and holes in graphene", A. Rahman, J. W. Guikema, S. H. Lee and N. Markovic, *Phys. Rev. B* 87, 081401(R) (2013).
38. "Effects of Pulsing and Interfacial Potentials on Tellurium-Organic Heterostructured Films", R. M. Ireland, T. J. Dawidczyk, P. Cottingham, T. McQueen, G. L. Johns, N. Markovic and H. E. Katz, *ACS Appl. Mat. Int.* 5, 1604 (2013).
39. "Substrate-independent catalyst-free synthesis of high-purity Bi<sub>2</sub>Se<sub>3</sub> nanostructures", Jerome T. Mlack, Atikur Rahman, Gary L. Johns, Kenneth J. T. Livi, and Nina Markovic, *Appl. Phys. Lett.* 102, 193108 (2013).
40. "Reducing Leakage Currents in n-Channel Organic Field-effect Transistors Using Molecular Dipole Monolayers on Nanoscale Oxides", J. F. Martinez Hardigree, T. J. Dawidczyk, R. M. Ireland, G. L. Johns, B. J. Jung, M. Nyman, R. Österbacka, N. Markovic and H. E. Katz, *ACS Appl. Mat. Int.* 5, 7025 (2013).
41. "Visualizing and Quantifying Charge Distributions Correlated to Threshold Voltage Shifts in Lateral Organic Transistors", T. J. Dawidczyk, J. F. Martinez Hardigree, G. L. Johns, R. Ozgun, O. Alley, A. G. Andreou, N. Markovic and H. E. Katz, *ACS Nano* 8, 2714 (2014).
42. "Fabrication of sub-15nm aluminum wires by controlled etching", T. Morgan-Wall, H. J. Hughes, N. Hartman, T. M. McQueen and N. Markovic, *Appl. Phys. Lett.* 104, 173101 (2014).
43. "Quantum interference noise near the Dirac point in graphene", A. Rahman, J. W. Guikema and N. Markovic, *Phys. Rev. B.* 89, 235407 (2014).
44. "Asymmetric scattering of Dirac electrons and holes in graphene", A. Rahman, J. W. Guikema and N. Markovic, *Nano Lett.* 14, 6621 (2014).
45. "Angle-dependent transmission of Dirac electrons in graphene heterojunctions", A. Rahman, J. W. Guikema, N. M. Hassan and N. Markovic, *Appl. Phys. Lett.* 106, 013112 (2015).
46. "Persistent Negative Polarity of PCBM Adjacent to Donor Polymer and Carbon Nanotube Domains", Olivia J. Alley, Meng-Yin Wu, Gary L. Johns, Thomas J. Dawidczyk, Nina Markovic, Michael S. Arnold, and Howard E. Katz, *Appl. Phys. Lett.* 106, 033301 (2015).
47. "Weber blockade in superconducting nanowires", T. Morgan-Wall, B. Leith, N. Hartman, A. Rahman and N. Markovic, **arXiv:1406.6802**, accepted for publication in *Physical Review Letters*.

## ***Patents***

1. Provisional patent application: "Direct deposition of height-modulated nanostructures through a dynamic stencil mask," N. Markovic and J. L. Wasserman, 2007.
2. N. Markovic, C. A. Merchant and J. R. Medford, International Patent Application No. PCT/US2009/061165: "Bent carbon nanotubes and methods of production", pending.
3. A. Jermyn, J. D. Silverman, and N. Markovic, "System for Lightweight Image Processing", US 20130064458, pending.

## ***Invited talks, seminars, conferences***

1. Workshop on Electronic Crystals, La Colle-sur-Loup, France, June 1999.
2. Workshop on Physics of Ultra Thin Films Near the Metal Insulator Transition, Brown University, December 1999.
3. APS March Meeting (invited), Minneapolis, March 2000.
4. Condensed matter seminar at Yale University, May 2000.
5. Condensed matter seminar at University of Illinois at Urbana-Champaign, May 2000.
6. National Seminar at the Lorentz Institute for Theoretical Physics, Leiden, Netherlands, December 2000.
7. Condensed matter seminar at the Institute for Physics, Zagreb, December 2000.
8. Condensed matter seminar at University of Massachusetts, Amherst, May 2001.
9. Condensed matter seminar at Northeastern University, May 2001.
10. Condensed matter seminar at Pennsylvania State University, August 2001.
11. Condensed matter seminar at Johns Hopkins University, February 2002.
12. Condensed matter seminar at Brown University, February 2002.
13. Condensed matter seminar at the University of Minnesota, February 2002.
14. Condensed matter seminar at Massachusetts Institute of Technology, February 2002.

15. Condensed matter seminar at New York University, March 2002.
16. Condensed matter seminar at University of Pennsylvania, March 2002.
17. Condensed matter seminar at Princeton University, October 2002.
18. Condensed matter seminar at the Georgia Institute of Technology, November 2002.
19. Workshop at the Argonne National Laboratory, November 2002.
20. APS March Meeting (invited), Austin, TX, March 2003.
21. Colloquium at the Physics Department at the University of Delaware, September 2003.
22. XXVIII International Conference of Theoretical Physics on Electron correlations in nano and macrosystems (invited), Ustron, Poland, September 2004.
23. Colloquium at the Physics Department at Georgetown University, October 2004.
24. Condensed Matter Seminar at Brookhaven National Laboratory, January 2005.
25. Workshop on Thin Films (invited), Brookhaven National Laboratory, January 2005.
26. Colloquium at the Physics Department at University of Maryland Baltimore County, March 2006.
27. Workshop on Conductor-Insulator Quantum Phase Transitions at Ohio State University (Invited), January 2008.
28. Fifth International Conference on Physics and Applications of Spin-related Phenomena in Semiconductors (Invited), Iguassu Falls, Brazil, August 2008.
29. 53<sup>rd</sup> Annual Conference on Magnetism and Magnetic Materials (Invited), Austin, TX, November 2008.
30. Condensed matter seminar at the University of Minnesota, March 2009.
31. Workshop on superconductivity (Invited), University of Minnesota, May 2009.
32. Seminar, JHU Applied Physics Laboratory, November 2009
33. APS March Meeting (invited), Portland, OR, March 2010.

34. Condensed Matter Physics and Quantum Computation Seminar at the Graduate Center of the City University of New York, October 2010.
35. APS March Meeting, Dallas, TX, March 2011.
36. International Workshop on Nanomagnetism and Superconductivity (invited), Coma-Ruga, Spain, July 2011.
37. Workshop on Topological Insulators, Aspen Center for Physics, July 2011.
38. “Strongly Disordered Superconductors and Electronic Segregation”, Leiden, Netherlands, August 2011.
39. Condensed matter seminar at New York University, November 2011.
40. Condensed Matter Seminar at the University of Pennsylvania, Philadelphia, March 2012.
41. Condensed Matter Seminar at the University of Illinois, Urbana-Champaign, April 2012.
42. Graphene Week 2012, Delft, Netherlands, June 2012.
43. Workshop on Topological States of Matter, Aspen Center for Physics, January 2013.
44. Workshop on New Trends in Topological Insulators, Barcelona, Spain, June 2013.
45. Workshop on Disorder, Dynamics, Frustration and Topology in Quantum Condensed Matter, Aspen Center for Physics, June 2013.
46. “International Symposium on Advanced Nanodevices and Nanotechnology” Kauai, HI, December 2013.
46. Seminar at University of Wisconsin, Madison, March 2014.
47. Condensed Matter Seminar at Ohio University, March 2014.
48. “From solid state to biophysics VII”, Dubrovnik, Croatia, Invited talk, June 2014.
49. International School in Solid State Physics “Superstripes” 2014 on “Multi-condensate superconductivity”, Erice, Sicily, Invited talk, July 2014.
50. Workshop on Innovative Nanoscale Devices and Systems, Hawaii, November 2014.
51. Condensed Matter Seminar at the University of Delaware, November 2014.



52. “Superstripes” 2015, Ischia, Italy, Invited talk, June 2015.

## **Professional activities**

Editorial Board Member for Scientific Reports, Nature Publishing Group. 2014-2016.

Member of the Physics Evaluation Group of the Natural Sciences and Engineering Research Council of Canada (NSERC), 2014-2017.

Oak Ridge National Laboratory, Center for Nanophase Materials Sciences (CNMS) Proposal Review Committee, 2006-current.

NSF NSEC Grantees Workshop, Panelist, December 2014.

JHU Woodrow Wilson Undergraduate Research Fellowship Selection Committee, 2013.

NSF MRSEC Review Panel, November 2013.

NSF Review Panel, October 2012.

NSF MRSEC Site Visit Panel, Pennsylvania State University, April 2012.

NSF Review Panel, April 2010.

Organizer of a workshop on “Exotic insulating states of matter” on January 14th-16th, 2010 (110 participants).

Reviewer of the Postdoctoral Study Program in Condensed Matter Physics at the University of Zagreb for the National Council for Higher Education of Croatia, July 2008.

NSF MRSEC Reverse Site Visit Panel, May 2008.

NSF CAREER Panel Review, October 2007.

NSF MRSEC Site Visit Panel at University of Nebraska, May 2006.

NSF NIRT Panel Review, March, 2005.

NSF NER Panel Review, February 2005.

NSF MRSEC Site Visit Panel at Pennsylvania State University, May 2004.

Frequent reviewer for Physical Review, Physical Review Letters, Applied Physics Letters, Europhysics Letters, Nanoletters, Nature, Nature Physics, NSF and DOE proposals and programs.

## **Grants and awards**

NSF “NER: Superconductor-nanotube entangler,” \$100K, 8/2004-7/2005. \$99,999.00

Alfred P. Sloan Fellowship, \$40K, 9/2004-8/2006.

American Chemical Society Petroleum Research Fund, G grant: “Spin Transport in Ferromagnetic Nanostructures,” \$35K, 7/2005-8/2007.

NSF “CAREER: Quantum Phase Transitions and Dissipation in Superconducting Nanowires,” \$500K, 5/2006-4/2011.

NSF “Materials Research Science and Engineering Center” (11 investigators), \$4.5M, 10/2005-12/2013. \$8,073,826.00 5 investigators

NSF “IGERT: Physical and Biomolecular Foundations for Designing Nanoprobes for Biology” (20 investigators), 9/ 2006-4/2012, \$2,899,966.00

NSF “MRI: Acquisition of a high field, multi-probe cryogenic system for quantum and nanostructured materials research” (5 investigators), \$500K, 10/2008-9/2009. \$501,374.00

NSF “P-N Interface Probing and Design for Organic/Hybrid Photovoltaics and Circuit Components” (3 investigators), \$350K, 9/2008-8/2012. \$349,998.00

Johns Hopkins Institute for NanoBiotechnology Therapeutics Grant: “Investigation of ultrashort carbon nanotubes for therapeutic applications” , \$10K, 10/2008-9/2009.

Contract from Johns Hopkins Applied Physics Laboratory, \$20K, 10/2008-4/2009.

JHU Workshop on “Exotic superconducting and insulating phases of quantum matter”, 01/10, (4 organizers), Institute of Complex Adaptive Matter, \$20,000

Contract from Johns Hopkins Applied Physics Laboratory, \$200K, 9/2010-8/2012.

NSF DMR “Spin Control in One-Dimensional Quantum Dots”, \$443K, 8/2011-7/2014. \$360,000.00

DOE “Molecularly designed localized static charging for energy efficiency in organic electronics “, \$825K (3 investigators), 6/2013-5/2016.

NSF DMR “Designing quantum matter with superconducting nanowires”, \$430K, pending.

## Teaching

AS 172-114 Intro to Frontier Physics, 1cr, Spring 2003, 30 students  
AS 171-622 Condensed Matter Physics, 3cr, Spring 2004, 5 students  
AS 171-312 Statistical Physics and Thermodynamics, 4cr, Fall 2004, 9 students  
AS 172-763 Condensed Matter Seminar, 1cr, Fall 2004  
AS 171-622 Condensed Matter Physics, 3cr, Spring 2005, 5 students  
AS 172-763 Condensed Matter Seminar, 1cr, Fall 2005  
AS 171-622 Condensed Matter Physics, 3cr, Spring 2006, 6 students  
AS 171-312 Statistical Physics and Thermodynamics, 4cr, Fall 2006, 25 students  
AS 172-763 Condensed Matter Seminar, 1cr, Fall 2006  
AS 171-622 Condensed Matter Physics, 3cr, Spring 2007, 6 students  
AS 172-114 Intro to Frontier Physics, 1cr, Spring 2007, co-teaching with Peter Armitage (4 lectures), 24 students  
AS 171-312 Statistical Physics and Thermodynamics, 4cr, Fall 2007, 20 students  
AS 172-763 Condensed Matter Seminar, 1cr, Fall 2007  
AS 171-312 Statistical Physics and Thermodynamics, 4cr, Fall 2008, 20 students  
AS 172-763 Condensed Matter Seminar, 1cr, Fall 2008  
AS 171-764 Experimental Techniques in Condensed Matter Physics, Fall 2008, co-teaching with Chien, Broholm, Armitage and Petrovic, (2 lectures), 12 students  
AS 171-622 Condensed Matter Physics, 3cr, Spring 2009, 6 students  
AS 171-202 Modern Physics, 4cr, Spring 2010, 21 students  
AS 171-764 Experimental Techniques in Condensed Matter Physics, Fall 2010, 7 students  
AS 171-202 Modern Physics, 4cr, Spring 2011, 33 students  
AS 171-405/621 Condensed Matter Physics, 3cr, Fall 2011, 10 students  
AS 172-763 Condensed Matter Seminar, 1cr, Fall 2011  
AS 171-202 Modern Physics, 4cr, Spring 2012, 23 students  
AS 171-405/621 Condensed Matter Physics, 3cr, Fall 2012, 15 students  
AS 171-202 Modern Physics, 4cr, Spring 2013, 30 students  
AS 171-405/621 Condensed Matter Physics, 3cr, Fall 2013, 20 students  
AS 171-202 Modern Physics, 4cr, Spring 2014, 20 students  
AS 171-405/621 Condensed Matter Physics, 3cr, Fall 2014, 15 students  
(most recent class webpage at [http://www.pha.jhu.edu/courses/171\\_621/](http://www.pha.jhu.edu/courses/171_621/))

## **Mentoring**

### **Postdoctoral fellows:**

Janice Wynn Guikema (2008-2009)

Atikur Rahman (2009-2012)

### **Graduate students:**

Jeffrey L. Wasserman, Ph.D. 2008

Guoqiang Xia, Ph.D. 2009

Christopher A. Merchant, Ph.D. 2009

Soo Hyung Lee, Ph.D. 2011

Gary Johns, 2009-2013 (transferred to Purdue to join fiancée)

Nikolaus Hartman, Ph.D. expected 2015.

Tyler Morgan-Wall, Ph.D. expected 2015.

Jerome Mlack, Ph.D. expected 2015.

### **Undergraduates:**

Sondra Hellstrom 2004, Ph.D. Stanford University, now postdoc at Caltech (Atwater group)

Michael Balazs 2004, Ph.D. University of Virginia, now at MITRE Corporation

Peter Bythrow 2005, US patent office

Gregory Brunner 2005, Ph.D. Rice University, now at Navy

Kristin Lucas 2006-2008, now Microelectronics Engineer at United States Department of Defense

James Medford 2006-2008, Ph.D. Harvard University, now at Northrop-Grumman

Melissa Lectura 2007-2008, at Albert Einstein College of Medicine

Ben Stein 2007-2008, now at Army Research Laboratory

Serah Gutman 2008-2009, graduate student at the University of California at Irvine

Mackenzie Barton-Rowledge 2008-2009, graduate student at the University of Washington

Elan Hourticolon-Retzler 2008-2010, at Sensorstar Inc

Peter Wildfeuer 2009-2011, graduate student at the University of Pennsylvania

Justin Silverman 2009-2011, MD/PhD student at Duke University

Roberto Rivera summer 2010

Stephanie Blease summer 2010

Katie Sparks 2010-2013

Matthew Oresky 2010-2012

Joseph Schwartz 2011-2012, graduate student at Imperial College London

Laurence Giordano 2011-2012

Justin Lee 2012

Grant Lease 2012

Matthew Salotto 2011-2012, graduate student at Johns Hopkins University

Benjamin Leith 2011-2013

Elizabeth Skerit 2012-2013, Applied Physics Laboratory

Benjamin Hartman 2012-2013  
Nicha Apichitsopa 2012-2013, graduate student at MIT  
Paul Bewak summer 2013  
Hannah Hughes summer 2013- current  
William Cunnigham 2013-current  
Grace McClintock 2014- current

### **High school students:**

Caitlin Crawl, Garrison Forest School, 2006-2007, graduated from Smith College in 2012, minor in physics  
Elizabeth Milstred, Baltimore Polytechnic Institute, 2007-2008  
Grace Young, Potomac School, summer 2008 (Marshall Scholar, graduated at MIT in 2013, see recent profile at <http://newsoffice.mit.edu/2013/student-profile-grace-young-1002>)  
Adam Jermyn, Longmeadow High School, summer 2010, (now physics major at Caltech)  
Christopher Weddle, Baltimore Polytechnic Institute, 2011 – 2011 (now physics major at Case Western)  
Aleczander Jordan, Baltimore Polytechnic Institute, 2012 – 2013 (now undergrad at JHU)  
Carly Greenberg, Beth Tfiloh Dahan Community School, 2014 (now undergrad at UMD College Park)

### **Six additional high school students in the summers 2003-2009 through MRSEC:**

Megan Firko 2003,  
Rachel Herman 2004,  
Adi Ratner 2005,  
Anthony Ashton 2006,  
Ashley Sydnor 2007  
Melinda Chen 2009

### **Department and University Service**

Undergraduate Curriculum Committee 2003-2004  
Colloquium Committee 2004-2009  
Recruitment Committee (chair) 2004-2010  
    Produced a brochure and a poster advertising graduate study in the department  
    Organized 28 open house events for prospective undergraduate and graduate students  
Condensed Matter Faculty Search Committee 2005  
Colloquium Committee (chair) 2009-2013  
Undergraduate Curriculum Committee 2012-current  
Condensed Matter Faculty Search Committee 2013  
Served on oral exam and thesis defense committees for over 35 graduate students.

## **Outreach and other activities**

Keynote presentation at the “Workshop on Nanoscience and Engineering” for middle schools, organized by the Center for Talented Youth, 2004 and 2008.

Physics and Astronomy booth at the Hopkins Spring Fair, every April 2003-2014.

Book review for W. H. Freeman Publishers, January 2005.

Book review for Jones and Bartlett Publishers, December 2005.