

MICHAEL A ZUDOV - CURRICULUM VITAE

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EDUCATION

1999 Ph. D, University of Utah
1994 Diploma, Moscow Engineering and Physics Institute,
Moscow, Russia

EMPLOYMENT

2015-on Professor, School of Physics and Astronomy,
University of Minnesota
2010-2015 Associate Professor, School of Physics and Astronomy,
University of Minnesota
2004-2010 Assistant Professor, School of Physics and Astronomy,
University of Minnesota
2001-2004 Postdoctoral Researcher/Assistant Research Professor,
Department of Physics, University of Utah
1999-2000 Postdoctoral Researcher, Stanford/Rice University

AWARDS AND HONORS

2015 Fellow of the American Physical Society
2006-2013 National Science Foundation CAREER Award
1994 Summa Cum Laude Diploma, Moscow Engineering and
Physics Institute, Moscow, Russia

MEMBERSHIP

1995-on American Physical Society

REVIEW ARTICLES AND BOOK CHAPTERS

- [1] M. A. Zudov, “Microwave-induced Nonequilibrium Phenomena” in Z. F. Ezawa, *Quantum Hall Effects: Recent Theoretical and Experimental Developments*, pp. 754-778, World Scientific, Singapore, ISBN: 978-981-4360-75-3 (2013)
- [2] I. A. Dmitriev, A. D. Mirlin, D. G. Polyakov, and M. A. Zudov, “Nonequilibrium phenomena in high Landau levels”, *Reviews of Modern Physics* **84**, 1709 (2012)

ARTICLES

- [3] X. Fu, Q. Shi, M. A. Zudov, G. C. Gardner, J. D. Watson, and M. J. Manfra, “Two- and three-electron bubbles in $\text{Al}_x\text{Ga}_{1-x}\text{As}/\text{Al}_{0.24}\text{Ga}_{0.76}\text{As}$ quantum wells”, *Physical Review B – Rapid Communications* **99**, 151402(R) (2019) [\[editor’s suggestion\]](#)
- [4] X. Fu, Q. Shi, M. A. Zudov, Y. J. Chung, K. W. Baldwin, L. N. Pfeiffer, and K. W. West, “Quantum Hall stripes in high-density GaAs/AlGaAs quantum wells”, *Physical Review B* **98**, 205418 (2018)
- [5] X. Fu, A. D. Riedl, M. D. Borisov, M. A. Zudov, J. D. Watson, G. C. Gardner, M. J. Manfra, K. W. Baldwin, L. N. Pfeiffer, and K. W. West, “Effect of low-temperature illumination on quantum lifetime in GaAs quantum wells”, *Physical Review B* **98**, 195403 (2018)
- [6] X. Fu, M. D. Borisov, M. A. Zudov, J. D. Watson, and M. J. Manfra, “Effect of density on the amplitude of microwave-induced resistance oscillations”, *Physical Review B – Rapid Communications* **98**, 121303(R) (2018)
- [7] M. Sammon, M. A. Zudov, and B. I. Shklovskii, “Mobility and quantum mobility of modern GaAs/AlGaAs heterostructures”, *Physical Review Materials* **2**, 064604 (2018)
- [8] M. A. Zudov, Q. Shi, I. A. Dmitriev, B. Friess, V. Umansky, K. von Klitzing, and J. Smet, “Hall field-induced resistance oscillations in a tunable-density GaAs quantum well”, *Physical Review B – Rapid Communications* **96**, 121301(R) (2017)
- [9] Q. Shi, M. A. Zudov, J. Falson, Y. Kozuka, A. Tsukazaki, M. Kawasaki, and J. Smet, “Nonlinear response of a MgZnO/ZnO heterostructure close to zero bias”, *Physical Review B* **96**, 125401 (2017)
- [10] O. E. Raichev, A. T. Hatke, M. A. Zudov, and J. R. Reno, “Bloch-Grüneisen nonlinearity of electron transport in GaAs/AlGaAs heterostructures”, *Physical Review B – Rapid Communications* **96**, 081407(R) (2017)
- [11] X. Fu, Q. A. Ebner, Q. Shi, M. A. Zudov, Q. Qian, J. D. Watson, and M. J. Manfra, “Microwave-induced resistance oscillations in a back-gated GaAs quantum well”, *Physical Review B* **95**, 235415 (2017)
- [12] Q. Shi, M. A. Zudov, B. Friess, J. Smet, J. D. Watson, G. C. Gardner, and M. J. Manfra, “Apparent temperature-induced reorientation of quantum Hall stripes”, *Physical Review B – Rapid Communications* **95**, 161404(R) (2017)
- [13] Q. Shi, M. A. Zudov, J. D. Watson, Q. Qian, and M. J. Manfra, “Effect of density on quantum Hall stripe orientation in tilted magnetic fields”, *Physical Review B – Rapid Communications* **95**, 161303(R) (2017)

- [14] Q. Shi, M. A. Zudov, J. Falson, Y. Kozuka, A. Tsukazaki, M. Kawasaki, K. von Klitzing, and J. Smet, “Hall field-induced resistance oscillations in MgZnO/ZnO heterostructures”, *Physical Review B – Rapid Communications* **95**, 041411(R) (2017)
- [15] Q. Shi, M. A. Zudov, I. A. Dmitriev, K. Baldwin, L. N. Pfeiffer, and K.W. West, “Fine structure in high-power microwave-induced resistance oscillations”, *Physical Review B – Rapid Communications* **95**, 041403(R) (2017)
- [16] Q. Shi, M. A. Zudov, L. N. Pfeiffer, K. W. West, J. D. Watson and M. J. Manfra “Resistively detected high-order magnetoplasmons in a high-quality two-dimensional electron gas”, *Physical Review B* **93**, 165438 (2016)
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- [19] Q. Shi, S. A. Studenikin, M. A. Zudov, K. W. Baldwin, L. N. Pfeiffer and K. W. West, “Microwave photoresistance in an ultra-high-quality GaAs quantum well”, *Physical Review B – Rapid Communications* **93**, 121305(R) (2016)
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- [22] M. A. Zudov, “Comment on “Theory of microwave-induced zero-resistance states in two-dimensional electron systems” and on “Microwave-induced zero-resistance states and second-harmonic generation in an ultraclean two-dimensional electron gas””, *Physical Review B* **92**, 047301 (2015)
- [23] Q. Shi, M. A. Zudov, C. Morrison, and M. Myronov, “Spinless composite fermions in an ultra-high quality strained Ge quantum well”, *Physical Review – Rapid Communications* **91**, 241303(R) (2015)
- [24] Q. Shi, M. A. Zudov, C. Morrison, and M. Myronov, “Strong transport anisotropy in a Ge/SiGe quantum well in tilted magnetic fields”, *Physical Review B – Rapid Communications* **91**, 201301(R) (2015)
- [25] Q. Shi, M. A. Zudov, L. N. Pfeiffer, and K. W. West, “Nonlinear transport in 2D electron gas exhibiting colossal negative magnetoresistance”, *Physical Review B – Rapid Communications* **90**, 201301(R) (2014)

¹ Featured in “Best Research of 2016” of National High Magnetic Field Laboratory.
<https://nationalmaglab.org/news-events/news/best-research-of-2016>

- [26] Q. Shi, Q. A. Ebner, and M. A. Zudov, “Hall field-induced resistance oscillations in Ge/SiGe quantum wells”, *Physical Review B – Rapid Communications* **90**, 161301(R) (2014)
- [27] Q. Zhang, T. Arikawa, E. Kato, J. L. Reno, Wei Pan, J. D. Watson, M. J. Manfra, M. A. Zudov, M. Tokman, M. Erukhimova, A. Belyanin, and J. Kono, “Superradiant decay of cyclotron resonance of two-dimensional electron gases”, *Physical Review Letters* **113**, 047601 (2014)
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- [42] A. T. Hatke, M. A. Zudov, L. N. Pfeiffer, and K. W. West, “Microwave photoresistance in a 2D electron gas in separated Landau levels”, *Physical Review B – Rapid Communications* **84**, 241304(R) (2011)
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² Featured in (1) P. F. Schewe, B. Stein, D. Castelvechi “A Hint of Negative Electrical Resistance”, *Physics News Update*, **780** (2006); (2) “Physics: Electron rebellion”, *Nature* **441**, 910 (2006); (3) “A Hint of Negative Electrical Resistance”, *Physics Today* **59** (8), 20 (2006); (4) A. C. Durst, “Resistance is futile”, *Nature* **442**, 752 (2006); (5) S. Maier, “Physik: Widerstand ist negativ!” *wissenschaft.de*, June 16 2006, (6) “Can 2-D electron systems have zero resistance?”, *Physics Today News Picks*, August 21, 2006; (7) “Physics: Electron rebellion”, *ITems*, University of Minnesota, September 2006; (8) “The Physics Story of the Year”, *Physics News Update*, **804** (2006); (9) “A Hint of Negative Electrical Resistance”, *APS News*, *Physics News in 2006*, Vol. **16** No. 2, p. 6 (2007) ; (10) [zpenery.com](#); (11) [physicsact.wordpress.com/2009/01/23](#); (12) [pub.maruzen.co.jp](#)

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³ Featured in (1) R. Fitzgerald, “Microwaves Induce Vanishing Resistance in Two-Dimensional Electron Systems”, *Physics Today* **56** (4), 24-27 (2003); (2) “Cooking a Two-Dimensional Electron Gas with Microwaves”, A. C. Durst and S. M. Girvin, *Science* **304**, 1752 (2004); (3-5) <http://perst.issp.ras.ru>, March 13 (2003); June 30, 2004; December 15, 2004 (Russia) (6) “Condensed Matter: On Two-Dimensional Electron Gases”, scienceweek.com, sa040806-2 (2004); (7) A. C. Durst, “Resistance is futile”, *Nature* **442**, 752 (2006)

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RESEARCH PRESENTATIONS

INVITED TALKS, SEMINARS, COLLOQUIA

- [1] “Broken symmetry states in GaAs quantum Hall systems”, International workshop “Quantum Transport in 2D systems - III” (QT2DS-2019), École des sciences avancées de Luchon, Bagnères-de-Luchon, France (2019)
- [2] “Nonequilibrium transport in high Landau levels of high-mobility 2D electron gas”, ICQD Seminar Series, University of Science and Technology of China, Hefei, China (2018) (given by X. Fu)
- [3] “Anisotropic and non-equilibrium transport in a two-dimensional electron gas”, XXII Ural International Winter School on Semiconductor Physics, Yekaterinburg, Russia (2018)
- [4] “Temperature-induced reorientation of quantum Hall stripes in a tilted magnetic field”, 22nd International Conference on Electronic Properties of Two-Dimensional Systems (EP2DS-22), State College, Pennsylvania (2017)
- [5] “Magneto-transport in quantum Hall systems at high Landau levels”, University of Minnesota, Minneapolis (2017) (given by Q. Shi)

- [6] Effects of alloy disorder and density on non-equilibrium transport in two-dimensional electron gases”, University of Minnesota, Minneapolis (2017) (given by Q. Ebner)
- [7] “Quantum Hall stripes and high-power microwave photoresistance in GaAs quantum wells”, International Workshop: Frontiers in Quantum Hall Physics, Niels Bohr Institute, Copenhagen, Denmark (2017)
- [8] “Recent developments in non-equilibrium transport in very high Landau levels”, Workshop on Quantum Transport in 2D Systems II (QT2DS-II), Bagnères-de-Luchon, France (2017)
- [9] “Reorientation of quantum Hall stripes: effects of density, in-plane field, and disorder”, Workshop on Quantum Transport in 2D Systems II (QT2DS-II), Bagnères-de-Luchon, France (2017)
- [10] “Exchange-enhanced spin gap Ge/SiGe quantum wells in tilted magnetic fields”, Workshop on Quantum Transport in 2D Systems II (QT2DS-II), Bagnères-de-Luchon, France (2017)
- [11] “Anisotropic and nonequilibrium transport in buried flatlands”, Columbia University, New York, New York (2017) (given by Q. Shi)
- [12] “Orientation of quantum Hall stripes under in-plane magnetic fields”, APS March Meeting, New Orleans, Louisiana (2017)
- [13] “Anisotropic and nonequilibrium transport in semiconductor heterostructures”, Los Alamos National Laboratory, Los Alamos, New Mexico (2016)
- [14] “Anisotropic and nonequilibrium transport in semiconductor heterostructures”, Michigan State University, East Lansing, Michigan (2016)
- [15] “Anisotropic and nonequilibrium transport in semiconductor heterostructures”, Institute of Solid State Physics of Russian Academy of Sciences, Chernogolovka, Russia (2016)
- [16] “Reorientation of quantum Hall stripes by in-plane magnetic fields”, Institute of Radio-Engineering and Electronics of Russian Academy of Sciences, Moscow, Russia (2016)
- [17] “Fine structure in high-power microwave-induced resistance oscillations”, Institute of Radio-Engineering and Electronics of Russian Academy of Sciences, Moscow, Russia (2016)
- [18] “Reorientation of quantum Hall stripes by in-plane magnetic fields”, Max-Planck Institute, Stuttgart, Germany (2016) (given by Q. Shi)
- [19] “Anisotropic and nonequilibrium transport in semiconductor heterostructures”, ICQM Seminar, Peking University, Beijing, China (2016)
- [20] “Anisotropic and nonequilibrium transport in semiconductor heterostructures”, The Daniel Chee Tsui Lab, Institute of Physics, Chinese Academy of Sciences, Beijing, China (2016)
- [21] “Non-equilibrium transport in 2D systems: recent progress and open issues”, International Workshop: Recent developments in 2D electron systems (RD2DS-2016), Okinawa, Japan (2016)
- [22] “Emergent phenomena in quantum Hall systems far from equilibrium”, Experimental Condensed Matter Physics Principal Investigators’ Meeting, Gaithersburg, Maryland (2015)
- [23] “Magnetotransport in Ge quantum wells”, International Workshop: Quantum transport in 2D systems, Bagnères-de-Luchon, France (2015) (given by Q. Shi)

- [24] “Recent developments in non-equilibrium quantum transport”, International Workshop: Quantum transport in 2D systems, Bagnères-de-Luchon, France (2015)
- [25] “Electron effective mass in an ultra-high mobility GaAs/AlGaAs quantum well”, International Workshop: Quantum transport in 2D systems, Bagnères-de-Luchon, France (2015) (given by S. Studenikin)
- [26] “Tilt field-induced transport anisotropies in 2D quantum wells”, International Symposium: Disorder and its Role in Transport in 2D Systems, Okinawa, Japan (2015) (given by Q. Shi)
- [27] “Disorder and nonequilibrium quantum transport in 2D systems”, International Symposium: Disorder and its Role in Transport in 2D Systems, Okinawa, Japan (2015)
- [28] “Nonequilibrium transport in quantum Hall systems”, Physics & Astronomy Colloquium, School of Physics & Astronomy, University of Minnesota, Minneapolis, Minnesota (2014)
- [29] “Nonequilibrium transport in 2D systems: recent developments”, 10-th International Conference of Computational Methods in Sciences and Engineering (ICCMSE 2014), Athens, Greece (2014)
- [30] “Recent developments in nonequilibrium transport in 2D systems”, XX Ural International Winter School on Semiconductor Physics, Yekaterinburg, Russia (2014)
- [31] “Nonequilibrium transport in 2D systems: recent developments”, Kapitsa Seminar, Landau Institute of Theoretical Physics, Moscow, Russia (2014)
- [32] “Nonequilibrium transport in very high Landau levels of two-dimensional systems”, Condensed Matter Seminar, University of Tokyo, Tokyo, Japan (2013)
- [33] “Nonequilibrium transport in high Landau levels of quantum Hall systems”, Symposium on Quantum Hall Effects and Related Topics, Stuttgart, Germany (2013)
- [34] “Giant microwave photoresistance effects”, International workshop “MIRO and all that”, Montpellier, France (2013)
- [35] “Nonequilibrium transport in high Landau levels of quantum Hall systems”, International workshop “MIRO and all that”, Montpellier, France (2013)
- [36] “Nonequilibrium transport in high Landau levels of quantum Hall systems”, International Symposium “Nanophysics and Nanoelectronics”, Nizhny Novgorod, Russia (2013)
- [37] “Nonequilibrium transport in high Landau levels of a high mobility 2D electron gas”, Condensed Matter Seminar, Purdue University, West Lafayette, IN (2012)
- [38] “Effective mass in GaAs/AlGaAs quantum wells obtained from microwave photoresistance”, Advanced Research Workshop: Fundamentals of Electronic Nanosystems (NanoPeter-2012), St. Petersburg, Russia (2012)
- [39] “Experiments on nonequilibrium magnetotransport in high Landau levels”, International workshop: Nonequilibrium phenomena in correlated electrons and other quantum systems, Okinawa, Japan (2012)
- [40] “Magnetoplasmon resonance in a two-dimensional electron system driven into a zero-resistance state”, International workshop: Nonequilibrium phenomena in correlated electrons and other quantum systems, Okinawa, Japan (2012)

- [41] “Spin-resolved Shubnikov-de Haas oscillations in GaAs/AlGaAs quantum wells in tilted magnetic fields”, XIX Ural International Winter School on Semiconductor Physics, Yekaterinburg, Russia (2012)
- [42] “Microwave photoconductivity in high Landau levels of a high mobility 2D electron gas”, NEST-INFN and Scuola Normale Superiore di Pisa, Pisa, Italy (2011)
- [43] “New microwave photoresistivity effect in high-mobility two-dimensional electron systems”, X-th Russian Conference on Physics of Semiconductors, Nizhnii Novgorod, Russia (2011)
- [44] “Emergent phenomena in quantum Hall systems far from equilibrium”, Experimental Condensed Matter Physics Principal Investigators Meeting, Rockville, Maryland (2011)
- [45] “Emergent nonlinear transport phenomena in high Landau levels”, 19th International Conference on High Magnetic Fields in Semiconductor Physics (HMF-19), Fukuoka, Japan (2010)
- [46] “Emergent nonlinear transport phenomena in two-dimensional electron systems”, Advanced Research Workshop: Fundamentals of electronic nanosystems, NanoPeter 2010, Saint Petersburg, Russia (2010)
- [47] “Nonlinear transport in high Landau levels of high mobility 2DEG”, FTPI Workshop: Quantum Hall Effect at 30 Years (QHE@30), Minneapolis, Minnesota (2010)
- [48] “Magneto-resistance oscillations in very high Landau levels of two-dimensional electron systems”, APS March Meeting, Portland, Oregon (2010)
- [49] “Role of electron-electron interactions in magnetoresistance oscillations in very high Landau levels of quantum Hall systems”, XVIII Ural International Winter School on Semiconductor Physics, Yekaterinburg, Russia (2010)
- [50] “Nonequilibrium transport in quantum Hall systems at very large filling factors”, NHMFL Seminar, Tallahassee, Florida (2009)
- [51] “Magnetotransport in quantum Hall systems in very high Landau levels”, Physics & Astronomy Colloquium, University of Minnesota, Minneapolis, Minnesota (2009)
- [52] “Non-equilibrium transport in very high Landau levels of quantum Hall systems”, Colloquium, Institute for Microstructural Sciences, National Research Council, Ottawa, Canada (2009)
- [53] “Non-equilibrium transport in very high Landau levels of quantum Hall systems”, Faculty of Sciences Seminar, NEST-INFN and Scuola Normale Superiore di Pisa, Pisa, Italy (2009)
- [54] “Non-equilibrium transport in very high Landau levels of quantum Hall systems”, Seminar über Theoretische Festkörperphysik, Institut für Theorie der Kondensierten Materie, Universität Karlsruhe, Karlsruhe, Germany (2009)
- [55] “Oscillations in magnetoresistance induced by microwave and/or dc electric fields in two-dimensional electron systems”, Condensed Matter Seminar, Institute of Solid State Physics of Russian Academy of Sciences, Chernogolovka, Russia (2009)
- [56] “Oscillations in magnetoresistance induced by microwave and/or dc electric fields in two-dimensional electron systems”, Condensed Matter Seminar, Lebedev Physical Institute of the Russian Academy of Sciences, Moscow, Russia (2009)

- [57] “Transport in Microwave and dc-driven quantum Hall Systems”, Condensed Matter Seminar, Department of Physics, University of Utah, Salt Lake City, Utah (2009)
- [58] “Non-linear and non-equilibrium magnetotransport in quantum Hall systems”, Keck Seminar, Department of Physics, Rice University, Houston, Texas (2008)
- [59] “Magnetotransport in microwave-irradiated quantum Hall systems”, R. G. Herb Condensed Matter Seminar, Department of Physics, University of Wisconsin, Madison, Wisconsin (2008)
- [60] “Non-linear transport in quantum Hall systems: microwave, acoustic phonon, and impurity resonances”, Advanced Research Workshop: Fundamentals of Electronic Nanosystems (NanoPeter-2008), St. Petersburg, Russia (2008)
- [61] “Microwave and acoustic phonon resonances in non-linear response of quantum Hall systems”, International Workshop: Quantum Phases and Excitations in Quantum Hall Systems, Max-Planck-Institute for Complex Systems, Dresden, Germany (2008)
- [62] “Non-equilibrium magnetotransport in quantum Hall systems”, INT Seminar, Institute for Nanotechnology, Forschungszentrum Karlsruhe, Karlsruhe, Germany (2007)
- [63] “Effect of dc-excitation on microwave-induced zero-resistance states”, International Workshop on Emergent Phenomena in Quantum Hall Systems-2 (EPQHS2), State College, Pennsylvania (2007)
- [64] “Magnetoresistance of 2DES under ac and dc excitations”, Workshop on Interactions, excitations, and broken symmetries in quantum Hall systems, Max-Planck-Institute for Complex Systems, Dresden, Germany (2006)
- [65] “Bichromatic and multiphoton microwave photoresistance”, Condensed Matter Seminar, Institute of Radio-Engineering and Electronics of Russian Academy of Sciences, Moscow, Russia (2005)
- [66] “Multiphoton microwave photoresistance”, FTPI Workshop: Non-Equilibrium and Correlation Effects in Low-Dimensional Structures, Minneapolis, Minnesota (2005)
- [67] “Microwave-pumped 2DES: microwave-induced oscillations and dissipationless states”, Physics Department Colloquium, Department of Physics, University of Utah, Salt Lake City, Utah (2004)
- [68] “Microwave-induced oscillations and dissipationless states”, Special Seminar, Department of Physics, Applied Physics, and Astronomy, RPI, Troy, New York (2004)
- [69] “Microwave-induced oscillations and dissipationless states”, Physics Department Colloquium, Department of Physics, Texas A&M University, College Station, Texas (2004)
- [70] “Microwave-induced oscillations and dissipationless states”, APS March Meeting, Montreal, Canada (2004)
- [71] “Resistance oscillations and zero-resistance states in microwave-pumped 2DES”, Physics Department Colloquium, Department of Physics, College of William & Mary, Williamsburg, Virginia (2004)
- [72] “Resistance oscillations and zero-resistance states in microwave-pumped 2DES”, Colloquium, Department of Physics, University of Arizona, Tucson, Arizona (2004)

- [73] “Microwave-pumped 2DES: from microwave-induced oscillations to dissipationless states”, School of Physics and Astronomy, University of Minnesota, Minnesota (2004)
- [74] “Zero-resistance states: the period, the phase and multi-photon processes”, Seminar IRE “Electronics of Solid State”, November 4, Institute of Radio-engineering and Electronics of Russian Academy of Science, Moscow, Russia (2003)
- [75] “Dissipationless 2D electronic transport induced by microwaves”, VI-th Russian Conference on Physics of Semiconductors, St. Petersburg, Russia (2003)
- [76] “The period and the phase of oscillatory microwave photoresistance and zero-resistance states”, Condensed Matter Seminar, Department of Physics, University of Colorado at Boulder, Boulder, Colorado (2003)
- [77] “Microwave-pumped 2D electron systems: from oscillatory photoresistance to “zero-resistance” states”, Physics Colloquium, Department of Physics, University of Colorado at Boulder, Boulder, Colorado (2003)
- [78] “Zero-resistance states in microwave-pumped 2DES”, Nanocenter/MRSEC Condensed Matter Seminar, Columbia University, New York, New York (2003)
- [79] “Magnetophonon oscillations by leaky interface acoustic phonons”, APS March Meeting, Indianapolis, Indiana (2002)
- [80] “Search for excitonic instabilities near a semimetal-semiconductor transition”, Solid State Seminar, Department of Physics, University of Utah, Salt Lake City, Utah (2001)
- [81] “Giant oscillations in microwave photoresistance in 2DES”, Stanford FEL Center Seminar, Stanford University, Stanford, California (1998)

CONTRIBUTED CONFERENCE PRESENTATIONS

- [1] M.A. Zudov, X. Fu, Q. Shi, G. C. Gardner, J. D. Watson, M. J. Manfra, K. W. Baldwin, L. N. Pfeiffer, and K. W. West, “Quantum Hall stripes with a reduced transport anisotropy at half-filled Landau levels in GaAs quantum wells”, APS March Meeting, March 4-8, Boston, Massachusetts (2019)
- [2] M. Sammon, M. A. Zudov, and B. I. Shklovskii, “Mobility and quantum mobility of a 2DEG in modern GaAs/AlGaAs heterostructures”, APS March Meeting, March 4-8, Boston, Massachusetts (2019)
- [3] Q. Shi, X. Fu, M.A. Zudov, J. D. Watson, G. C. Gardner, M. J. Manfra, K. W. Baldwin, L. N. Pfeiffer, and K. W. West, “Quantum Hall stripes: high density regime and a new feature”, International Conference on the Physics of Semiconductors (ICPS2018), July 29-August 3, Montpellier, France (2018)
- [4] M.A. Zudov, X. Fu, Q. Shi, J. D. Watson, G. C. Gardner, M. J. Manfra, K. W. Baldwin, L. N. Pfeiffer, and K. W. West, “Quantum Hall stripes: high density regime and a new feature”, International Conference on High Magnetic Fields in Semiconductor Physics (HMF-23), July 22-27, Toulouse, France (2018)

- [5] X. Fu, M. A. Zudov, A. D. Riedl, M. D. Borisov, J. D. Watson, G. C. Gardner, M. J. Manfra, K. W. Baldwin, L. N. Pfeiffer, and K. W. West, “Effect of illumination on quantum lifetime in GaAs quantum wells”, International Conference on High Magnetic Fields in Semiconductor Physics (HMF-23), July 22-27, Toulouse, France (2018)
- [6] X. Fu, Q. A. Ebner, Q. Shi, M. A. Zudov, Q. Qian, J. D. Watson, and M. J. Manfra, “Density dependence of the effective mass in GaAs quantum well”, APS March Meeting, March 5-9, Los Angeles, California (2018)
- [7] M. A. Zudov, X. Fu, M. D. Borisov, J.D. Watson, and M. J. Manfra, “Effect of density on the amplitude of microwave-induced resistance oscillations”, APS March Meeting, March 5-9, Los Angeles, California (2018)
- [8] A. T. Hatke, O. E. Raichev, M. A. Zudov, and J. R. Reno, “Bloch-Gruneisen nonlinearity of electron transport in GaAs/AlGaAs heterostructures”, APS March Meeting, March 5-9, Los Angeles, California (2018)
- [9] X. Fu, Q. Shi, M. A. Zudov, K. Baldwin, L. N. Pfeiffer, and K.W. West, “Quantum Hall stripes in tilted magnetic fields in high-density GaAs quantum wells”, APS March Meeting, March 5-9, Los Angeles, California (2018)
- [10] M. A. Zudov, X. Fu, A. D. Riedl, M. D. Borisov, J. D. Watson, G. C. Gardner, M. J. Manfra, K. W. Baldwin, L. N. Pfeiffer, and K. W. West, “Effect of low-temperature illumination on quantum lifetime in GaAs quantum wells”, APS March Meeting, March 5-9, Los Angeles, California (2018)
- [11] Q. Shi, M. A. Zudov, I. A. Dmitriev, K. Baldwin, L. N. Pfeiffer, and K.W. West, “Fine structure in high-power microwave-induced resistance oscillations”, XXII Ural International Winter School on Semiconductor Physics, February 19-24, Yekaterinburg, Russia (2018)
- [12] Q. Shi, M. A. Zudov, J. Falson, Y. Kozuka, A. Tsukazaki, M. Kawasaki, and J. Smet, “Nonlinear quantum transport in MgZnO/ZnO heterostructures”, International Symposium on Nanoscale Transport and phoTonics (ISNTT2017), November 13-17, Atsugi, Japan (2017)
- [13] X. Fu, M. D. Borisov, Q. Shi, Q. A. Ebner, M. A. Zudov, Q. Qian, J. D. Watson, and M. J. Manfra, “Role of density on microwave photoresistance in 2D electron gas”, International Symposium on Nanoscale Transport and phoTonics (ISNTT2017), November 13-17, Atsugi, Japan (2017)
- [14] M. A. Zudov, Q. Shi, I. A. Dmitriev, B. Friess, V. Umansky, K. von Klitzing, and J. Smet, “Hall field-induced resistance oscillations in a tunable-density wide GaAs/AlGaAs quantum well”, International Symposium on Nanoscale Transport and phoTonics (ISNTT2017), November 13-17, Atsugi, Japan (2017)
- [15] Q. Shi, M. A. Zudov, I. A. Dmitriev, K. Baldwin, L. N. Pfeiffer, and K.W. West, “Fine structure of microwave-induced resistance oscillations in GaAs quantum wells”, International Symposium on Nanoscale Transport and phoTonics (ISNTT2017), November 13-17, Atsugi, Japan (2017)

- [16] Q. Shi, M. A. Zudov, I. A. Dmitriev, K. Baldwin, L. N. Pfeiffer, and K.W. West, “Fine structure in high-power microwave-induced resistance oscillations”, 22nd International Conference on Electronic Properties of Two-Dimensional Systems (EP2DS-22), July 31-August 4, State College, Pennsylvania (2017)
- [17] X. Fu, Q. A. Ebner, Q. Shi, M. A. Zudov, Q. Qian, and M. J. Manfra, “Microwave-induced resistance oscillations in a backgated GaAs quantum well”, 22nd International Conference on Electronic Properties of Two-Dimensional Systems (EP2DS-22), July 31-August 4, State College, Pennsylvania (2017)
- [18] Q. Shi, M. A. Zudov, J. D. Watson, Q. Qian, and M. J. Manfra, “Effect of density on quantum Hall stripe orientation in tilted magnetic fields”, 22nd International Conference on Electronic Properties of Two-Dimensional Systems (EP2DS-22), July 31-August 4, State College, Pennsylvania (2017)
- [19] M. A. Zudov, Q. Shi, J. D. Watson, G. C. Gardner, and M. J. Manfra “Effect of alloy disorder on quantum Hall stripes”, APS March Meeting, March 13-17, New Orleans, Louisiana (2017)
- [20] M. A. Zudov, Q. Shi, B. Friess, J. Smet, J. D. Watson, G. C. Gardner, and M. J. Manfra “Temperature-induced reorientation of quantum Hall stripes”, APS March Meeting, March 13-17, New Orleans, Louisiana (2017)
- [21] Q. Shi, M. A. Zudov, J. Falson, Y. Kozuka, A. Tsukazaki, M. Kawasaki, K. von Klitzing, and J. Smet, “Hall field-induced resistance oscillations in MgZnO/ZnO heterostructures”, APS March Meeting, March 13-17, New Orleans, Louisiana (2017)
- [22] Q. Shi, M. A. Zudov, I. A. Dmitriev, K. Baldwin, L. N. Pfeiffer, and K.W. West, “Fine structure in high-power microwave-induced resistance oscillations”, APS March Meeting, March 13-17, New Orleans, Louisiana (2017)
- [23] Q. Shi, M. A. Zudov, J. D. Watson, G. C. Gardner, M. J. Manfra, “Effect of alloy disorder on quantum Hall stripes and their orientation”, International Conference on the Physics of Semiconductors (ICPS2016), July 31- August 5, Beijing, China (2016)
- [24] Q. Shi, S. A. Studenikin, M. A. Zudov, K. W. Baldwin, L. N. Pfeiffer and K. W. West “Microwave photoresistance in an ultra-high-quality GaAs quantum well”, International Conference on the Physics of Semiconductors (ICPS2016), July 31- August 5, Beijing, China (2016)
- [25] Q. Shi, M. A. Zudov, J. D. Watson, G. C. Gardner, M. J. Manfra, “Reorientation of quantum Hall stripes by in-plane magnetic fields”, International Conference on the Physics of Semiconductors (ICPS2016), July 31- August 5, Beijing, China (2016)
- [26] Q. Shi, M. A. Zudov, K. W. Baldwin, L. N. Pfeiffer and K. W. West “Beating pattern in microwave-induced resistance oscillations”, International Conference on the Physics of Semiconductors (ICPS2016), July 31- August 5, Beijing, China (2016)
- [27] Q. Shi, M. A. Zudov, I. A. Dmitriev, K. Baldwin, L. N. Pfeiffer, K.W. West, and J. Smet, “Fine structure in high-power microwave-induced resistance oscillations”, International Conference on High Magnetic Fields in Semiconductor Physics (HMF-22), July 24-29, Sapporo, Japan (2016)

- [28] Q. Shi, M. A. Zudov, J. D. Watson, G. C. Gardner, M. J. Manfra, “Effect of alloy disorder on quantum Hall stripes and their orientation”, International Conference on High Magnetic Fields in Semiconductor Physics (HMF-22), July 24-29, Sapporo, Japan (2016)
- [29] Q. Shi, S. A. Studenikin, M. A. Zudov, K. W. Baldwin, L. N. Pfeiffer and K. W. West “Microwave photoresistance in an ultra-high-quality GaAs quantum well”, International Conference on High Magnetic Fields in Semiconductor Physics (HMF-22), July 24-29, Sapporo, Japan (2016)
- [30] Q. Shi, M. A. Zudov, J. D. Watson, G. C. Gardner, M. J. Manfra, “Reorientation of quantum Hall stripes by in-plane magnetic fields”, International Conference on High Magnetic Fields in Semiconductor Physics (HMF-22), July 24-29, Sapporo, Japan (2016)
- [31] Q. Shi, M. A. Zudov, K. W. Baldwin, L. N. Pfeiffer and K. W. West “Beating pattern in microwave-induced resistance oscillations”, International Conference on High Magnetic Fields in Semiconductor Physics (HMF-22), July 24-29, Sapporo, Japan (2016)
- [32] Q. Shi, M. A. Zudov, J. D. Watson, G. C. Gardner and M. J. Manfra, “Reorientation of quantum Hall stripes by in-plane magnetic fields”, International Workshop: Recent developments in 2D electron systems, April 4-8, Okinawa, Japan (2016)
- [33] Q. Shi, M. A. Zudov, J. D. Watson, G. C. Gardner and M. J. Manfra, “Reorientation of quantum Hall stripes by in-plane magnetic fields”, International Workshop: Recent developments in 2D electron systems, April 4-8, Okinawa, Japan (2016)
- [34] Q. Shi, M. A. Zudov, J. D. Watson, G. C. Gardner and M. J. Manfra, “Reorientation of quantum Hall stripes within a partially filled Landau level”, APS March Meeting, Baltimore, Maryland (2016)
- [35] M. A. Zudov, Q. Shi, L. N. Pfeiffer, K. W. West, J. D. Watson and M. J. Manfra “Resistively detected high-order magnetoplasmons in a high-quality two-dimensional electron gas”, APS March Meeting, Baltimore, Maryland (2016)
- [36] Q. Shi, M. A. Zudov, P. D. Martin, A. T. Hatke, J. D. Watson, M. J. Manfra, L. N. Pfeiffer, and K. W. West, “Shubnikov-de Haas oscillations in 2D electron gas under sub-terahertz radiation”, 21st International Conference on Electronic Properties of Two-Dimensional Systems (EP2DS-21), July 21-26, Sendai, Japan (2015)
- [37] M. A. Zudov, Q. Shi, C. Morrison, M. Myronov, “Tilt field-induced transport anisotropies in quantum Hall systems” 21st International Conference on Electronic Properties of Two-Dimensional Systems (EP2DS-21), July 21- 26, Sendai, Japan (2015)
- [38] Q. Shi, M. A. Zudov, C. Morrison and M. Myronov, “Quantum transport in Ge/SiGe quantum wells”, FTPI Workshop on Symmetries and Interactions in Topological Matter, May 1-3, Minneapolis, Minnesota (2015)
- [39] M. A. Zudov, Q. Shi, J. D. Watson, and M. J. Manfra, “Magnetotransport “quality” of $\text{Al}_x\text{Ga}_{1-x}\text{As}/\text{Al}_{0.24}\text{Ga}_{0.76}\text{As}$ quantum wells from microwave photoresistance: implications for $\nu = 5/2$ quantum Hall state”, International Conference on High Magnetic Fields in Semiconductor Physics (HMF-21), August 3-8, Panama City Beach, FL (2014)

- [40] Q. Shi, M. A. Zudov, O. A. Mironov, and D. R. Leadley, “Strongly anisotropic transport in p -type Ge/SiGe quantum well induced by high in-plane magnetic fields”, International Conference on High Magnetic Fields in Semiconductor Physics (HMF-21), August 3-8, Panama City Beach, FL (2014)
- [41] Q. Zhang, T. Arikawa, M. A. Zudov, J. L. Reno, W. Pan, J. D. Watson, M. J. Manfra, J. Kono, “Superradiant Decay of Coherent Cyclotron Resonance in Ultrahigh-Mobility Two-Dimensional Electron Gases”, International Conference on High Magnetic Fields in Semiconductor Physics (HMF-21), August 3-8, Panama City Beach, FL (2014)
- [42] Q. Shi, P. D. Martin, Q. A. Ebner, M. A. Zudov, L. N. Pfeiffer, and K. W. West, “Colossal negative magnetoresistance in 2D electron gas”, International Conference on High Magnetic Fields in Semiconductor Physics (HMF-21), August 3-8, Panama City Beach, FL (2014)
- [43] Q. Shi, P. D. Martin, A. T. Hatke, J. D. Watson, M. A. Zudov, M. J. Manfra, L. N. Pfeiffer, and K. W. West, “Photoresistance of two-dimensional electron gas at sub-Terahertz frequencies”, International Conference on High Magnetic Fields in Semiconductor Physics (HMF-21), August 3-8, Panama City Beach, FL (2014)
- [44] O. A. Mironov, R. J. H. Morris, A. Dobbie, A. H. A. Hassan, D. R. Leadley, I. B. Berkutov, S. V. Bengus, M. Uhlarz, E. Green, S. Zvyagin, J. Wosnitza, M. Helm, O. Drachenko, Q. Shi, M. A. Zudov, D. V. Kozlov, V. I. Gavrilenko, M. Orlita, Qi Zhang, J. Kono, and A. V. Suslov, “Magnetotransport, cyclotron resonance (10 GHz-4.5 THz) and GHz-MIRO investigations in the range 25 mK-300 K and up to 35 T for the 2DHG with ultra-high $\mu > 10^6$ cm²/Vs in ultra-pure strained Ge-QW on Si_{0.2}Ge_{0.8}”, International Conference on High Magnetic Fields in Semiconductor Physics (HMF-21), August 3-8, Panama City Beach, FL (2014)
- [45] Q. Zhang, T. Arikawa, M. A. Zudov, J. L. Reno, W. Pan, J. D. Watson, M. J. Manfra, J. Kono, “Superradiant Decay of Coherent Cyclotron Resonance in Ultrahigh-Mobility Two-Dimensional Electron Gases”, International Conference on Physics of Semiconductors, August 10-15, Austin, TX (2014)
- [46] Q. Zhang, J. Kono, O. Mironov, R. Morris, D. Leadley, M. Zudov, E. Kato, D. Saha, C. Stanton, “Coherent Cyclotron Resonance of Ultrahigh-Mobility Two-Dimensional Holes in a Ge/Si_{0.15}Ge_{0.85} Quantum Well”, International Conference on Physics of Semiconductors, August 10-15, Austin, TX (2014)
- [47] Q. Zhang, T. Arikawa, M. A. Zudov, J. L. Reno, W. Pan, J. D. Watson, M. J. Manfra, J. Kono, “Superradiant Decay of Coherent Cyclotron Resonance in Ultrahigh-Mobility Two-Dimensional Electron Gases”, Conference on Lasers and Electro-Optics (CLEO:2014), June 8 -13, San Jose, CA (2014)
- [48] Q. Shi, M. A. Zudov, O. A. Mironov, and D. R. Leadley, “Strongly Anisotropic Transport in a Ge/SiGe Quantum Well in Tilted Magnetic Fields”, FTPI Workshop on Correlated Oxides and Oxide Interfaces, May 1-4, Minneapolis, Minnesota (2014)
- [49] M. A. Zudov, Q. Shi, P. D. Martin, Q. A. Ebner, A. T. Hatke, L. N. Pfeiffer, and K. W. West, “Giant negative magnetoresistance in irradiated two-dimensional electron systems”, APS March Meeting, March 3-7, Denver, Colorado (2014)

- [50] P. D. Martin, M. A. Zudov, J. D. Watson, M. J. Manfra, L. N. Pfeiffer, and K. W. West, “Photoresistance of two-dimensional electron gas at sub-Terahertz frequencies”, APS March Meeting, March 3-7, Denver, Colorado (2014)
- [51] Q. Shi, P. D. Martin, Q. A. Ebner, M. A. Zudov, L. N. Pfeiffer, and K. W. West, “Effect of direct current on giant negative magnetoresistance in two-dimensional electron systems”, APS March Meeting, March 3-7, Denver, Colorado (2014)
- [52] Q. A. Ebner, P. D. Martin, Q. Shi, M. A. Zudov, O. A. Mironov, R. J. H. Morris, and D. R. Leadley, “Observation of microwave-induced resistance oscillations in high-mobility 2D hole gas in sGe/SiGe quantum wells”, APS March Meeting, March 3-7, Denver, Colorado (2014)
- [53] M. A. Zudov, O. A. Mironov, Q. A. Ebner, P. D. Martin, Q. Shi, and D. R. Leadley, “Observation of microwave-induced resistance oscillations in high-mobility 2D hole gas in strained Ge/SiGe quantum wells”, International Symposium on Nanoscale Transport and Technology (ISNTT2013), November 26-29, Atsugi, Japan (2013)
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- [68] Q. Shi, M. Khodas, and M. A. Zudov, “Interference effect in magneto-oscillations in two-dimensional system under bichromatic irradiation”, APS March Meeting, February 27- March 2, Boston, Massachusetts (2012)
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- [70] M. Khodas, H. -S. Chiang, A. T. Hatke, M. A. Zudov, L. N. Pfeiffer, K. W. West, “Fine structure of photoconductivity of intensely irradiated high mobility 2D electron gas at cyclotron resonance harmonics”, 19th International Conference on Electronic Properties of Two-Dimensional Systems (EP2DS-19), July 24-29, Tallahassee, Florida (2011)
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- [78] A. T. Hatke, H. -S. Chiang, M. A. Zudov, J. L. Reno, “Shubnikov-de Haas oscillations in microwave-irradiated 2DEG”, FTPI Workshop: Quantum Hall Effect at 30 Years (QHE@30), April 30-May 2, Minneapolis, Minnesota (2010)
- [79] M. Khodas, H. -S. Chiang, A. T. Hatke, M. A. Zudov, M. G. Vavilov, L. N. Pfeiffer, and K. W. West “Effect of Multiphoton Processes on Differential Magneto-resistance of Two-Dimensional Electron Systems”, FTPI Workshop: Quantum Hall Effect at 30 Years (QHE@30), April 30-May 2, Minneapolis, Minnesota (2010)
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- [83] M. G. Vavilov, M. Khodas, H. -S. Chiang, A. T. Hatke, M. A. Zudov, L. N. Pfeiffer, and K. W. West “Effect of Multiphoton Processes on Differential Magneto-resistance of Two-Dimensional Electron Systems”, APS March Meeting, March 14-19, Portland, Oregon (2010)
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SUPERVISION OF GRADUATE STUDENTS

PH.D DEGREE ADVISEES

Ms. Qianhui Shi (2017)

Thesis title: "Magnetotransport in quantum Hall systems at high Landau levels"

Current position: Postdoctoral Associate, Columbia University, New York, New York

Mr. Quentin Ebner (2017)

Thesis title: "Nonlinear quantum transport in two-dimensional electron gases in modulation-doped heterostructures"

Current position: N/A

Mr. Anthony Hatke (2011)

Thesis title: "Nonequilibrium transport in semiconductor quantum structures"

Current position: Postdoctoral Associate, Station Q Purdue, Purdue University, West Lafayette, Indiana

Mr. Hung-Sheng Chiang (2011)

Thesis title: "Nonlinear transport in 2DEG at large filling factors"

Current position: Postdoctoral Associate, Electrical and Computer Engineering, University of Minnesota, Minneapolis, Minnesota

Mr. Wenhao Zhang (2008)

Thesis title: "Nonequilibrium magnetotransport in GaAs/AlGaAs-based two-dimensional electron systems"

Current position: Principal Test Engineer, Certified LabVIEW Developer, Medtronic Incorporated, Minneapolis, Minnesota

M.S DEGREE ADVISEES

Mr. Austin Riedl (2018)

Mr. Peter Martin (2013)

PH.D DEGREES IN PROGRESS

Ms. Xiaojun Fu

Graduate written examination: **passed, Spring 2017**

Preliminary oral examination: **passed, Fall 2017**

Expected graduation: **2021**

CONFERENCE ORGANIZATION

- 2020** International workshop “Recent Developments in 2D Systems” (RD2DS-2020), Okinawa Institute of Science and Technology, Okinawa, Japan
[tba](#)
- 2019** International workshop “Quantum Transport in 2D systems - III” (QT2DS-2019), École des sciences avancées de Luchon, Bagnères-de-Luchon, France
<http://www.quantware.ups-tlse.fr/ecoledeluchon/sessionw6/>
- 2017** International workshop “Quantum Transport in 2D systems - II” (QT2DS-2017), École des sciences avancées de Luchon, Bagnères-de-Luchon, France
<http://www.quantware.ups-tlse.fr/ecoledeluchon/sessionw5/>
- 2017** Invited symposium at the March Meeting of the American Physical Society, “Stripe and Bubble Phases in a Two-dimensional Electron Gas: Recent Developments”, Portland, Oregon
<http://meetings.aps.org/Meeting/MAR17/Session/H23>
- 2016** Program Committee Member, International Conference on “High Magnetic Fields in Semiconductor Physics” (HMF-22), Sapporo, Japan
<http://www.hmf22.iis.u-tokyo.ac.jp/>
- 2016** International workshop “Recent Developments in 2D Systems” (RD2DS-2016), Okinawa Institute of Science and Technology, Okinawa, Japan
<https://groups.oist.jp/rd2ds>
- 2015** International workshop “Quantum Transport in 2D systems” (QT2DS-2015), École des sciences avancées de Luchon, Bagnères-de-Luchon, France
<http://www.quantware.ups-tlse.fr/ecoledeluchon/sessionw2/>
- 2015** International symposium “Disorder and its Role in Transport in 2D systems”, (DiRT2D-2015), Okinawa Institute of Science and Technology, Okinawa, Japan
<https://groups.oist.jp/dirt2d>
- 2013** International workshop “MIRO and all that” (MIRO-2013), University of Montpellier, Montpellier, France
<http://www.coulomb.univ-montp2.fr/MIRO-and-all-that?lang=fr>
- 2013** International workshop “Electron-electron interactions in graphene and other new 2D systems” (EIG-2013), FTPI, University of Minnesota, Minneapolis, Minnesota
<http://www.ftpi.umn.edu/workshops/2012-2013/eig2013/index.html>
- 2010** International workshop “Quantum Hall effect at 30” (QHE@30), FTPI, University of Minnesota, Minneapolis, Minnesota
<http://www.ftpi.umn.edu/qhe@30/index.html>
- 2010** Invited symposium at the March Meeting of the American Physical Society, “Non-equilibrium phenomena in very high Landau levels”, Portland, Oregon
<http://meetings.aps.org/Meeting/MAR10/SessionIndex2/?SessionEventID=118750>
- 2005** International workshop “Non-Equilibrium and Correlation Effects in Low-Dimensional Structures” (NECE-2005), FTPI, University of Minnesota, Minneapolis, Minnesota
http://www.ftpi.umn.edu/workshops/2004-2005/nece/index_nece05.html

REFEREEING FOR PEER-REVIEWED JOURNALS

Phys. Rev. Lett., Phys. Rev. B, Phys. Rev. X, New J. Phys., Appl. Phys. Lett., J. Appl. Phys., J. of Lumin., Solid State Commun., Physica Status Solidi, Physica B & B, ACS Nano, Nanotechnology, Nature Commun., Semicond. Sci. Tech., Comp. Mater. Science, Mat. Sci. Eng., J. Phys.: Conf. Ser., J. Chem. Phys., Rev. Sci. Inst., Phys. Lett. A

REVIEWING PROPOSALS

National Science Foundation, Department of Energy, Israel Science Foundation, German Research Foundation, National Science Center (Poland), National High Magnetic Field Laboratory

PUBLIC OUTREACH AND EDUCATION

- 2015 Reviewed an introductory physics text, **The Adventure of Physics - Vol. II: Relativity** by Christoph Schiller
- 2015 Judged science projects by high-school student, **Twin Cities Regional Science Fair**, Minneapolis, Minnesota
- 2014 Judged science projects by high-school students, **Twin Cities Regional Science Fair**, Minneapolis, Minnesota
- 2013 Mentored a high-school student, **Mr. Adarsh Ravishankar**, School of Physics & Astronomy, University of Minnesota, Minneapolis, Minnesota
- 2013 Judged science projects by high-school students, **Twin Cities Regional Science Fair**, Minneapolis, Minnesota
- 2009 Guest professor @ dinner with recipients of 3M Undergraduate Fellowship, Minneapolis, Minnesota
- 2008 Reviewed an introductory physics text, **University Physics** by Bauer & Westfall, McGraw-Hill
- 2007 Judged science projects by high-school students, **Twin Cities Regional Science Fair**, Minneapolis, Minnesota
- 2007 Reviewed an introductory physics text, **Learning Physics** by Birkett & Elby, Wiley Publishers
- 2006 Consultant, SVT Associates, Eden Prairie, Minnesota
- 2005 Judged science projects by high-school students, **Minnesota State Science Fair**, St. Paul, Minnesota