CURRICULUM VITAE

Dr. Jairo Sinova

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Last update: October 7th 2009

PROFESSIONAL APPOINTMENTS

Texas A&M University	Associate Professor of Physics	2007 to Present
Inst. of Physics of the Academy of Sciences of the Czech Republic	Independent Researcher	2007 to Present
Texas A&M University	Assistant Professor of Physics	2003 to 2007
University of Texas at Austin	Postdoctoral Research Fellow	2001 to 2003
University of Tennessee	Postdoctoral Research Fellow	1999 to 2001
Indiana University	Graduate Research Assistant	1995 to 1999
Indiana University	Teaching assistant and Summer Researcher	1994 to 1995
Indiana University Cyclotron Facility	Nuclear Summer Researcher	1993
Ohio University	Instructor of Observational Astronomy Course	1992 to 1994
Michigan State University	Astrophysics Summer Research Assistant	1992

EDUCATION

Indiana University	Ph.D. Physics	August 1999
	Thesis Advisor: Professor Steven M. Girvin	
Indiana University	M.S. Physics	August 1995
Ohio University	B.S. Physics (Magna Cum Laude)	June 1994

CURRENT RESEARCH TOPICS

- Semiconductor and metallic spintronics.
- Emergent phenomena in strongly correlated systems revealed in transport phenomena.
- Thermoelectric effects in topological insulator and ferromagnetic materials.
- Current driven magnetization-dynamics in ferromagnetic and strongly spin-orbit coupled systems.

RESEARCH HIGHLIGHTS (2000-2009)

- Over 78 publications in top peer-reviewed journals such as Nature Physics (1), Physical Review Letters (20), Applied Physics Lett. (3), Review of Modern Physics (2), and Physical Review B (36).
- Over 3000 citations with an h-factor of 26
- Research featured in Physics Today, Feb. 2005 (24 research items are featured per year over the whole of the physical sciences in this journal)
- Proposed the notion of intrinsic spin Hall effect (Phys. Rev. Lett. 2004) and formed part of one of the teams that discovered the Spin Hall effect (Phys. Rev. Lett. 2005)
- Part of the team that observed the Aharonov-Casher effect for the first time (Phys. Rev. Lett. 2006)
- Organizer of the first international conference on Spin Hall effect in South Korea (August 2005)

HONORS, AWARDS, AND RECOGNITIONS:

2008: Distinguished Achievement College Level Award in Teaching (Award donated to the Physics Department of Texas A&M University)
2007: Big XII Research Fellowship
2006: NSF CAREER Award
2006: Cottrell Scholar Award from the Research Corporation
2006: Montague-Center for Teaching Excellence Scholar
1998: Excellence in Teaching Award (Indiana University)
1992: The Gresseli Award for Undergraduate Research
1991: Distinguished Professor Scholarship (Ohio University)
1990: Honors Tutorial Scholarship (Ohio University)

MEMBERSHIPS

- American Physical Society
- American Association of Physics Teachers

CURRICULUM VITAE ADDENDUM

RESEARCH FUNDING

Funding summary: $770,000 in external funding as a single PI (funded from 2006-2011) and $150,000 as co-PI in an industry consortium to search for new IT devices.

Title: "CAREER: Spin Dependent Phenomena in Semiconductors"
Agency: National Science Foundation, Single PI
Amount and period: $400,000, July 2006-July 2011.

Title: "Semiconductor nano-spintronics: spin-Hall effect and related phenomena"
Agency: Office of Naval Research, Single PI
Amount and period: $245,118, January 2006-December 2009.

Title: "Spin-Hall effect in semiconductors and related phenomena in nano-spintronics" Agency: Cottrell Scholar (Research Corporation), Single PI
Amount and period: $100,000, June 2006-June 2011.

Title: "Paradigm of Physics Education Program", Agency: Texas A&M University, Montague-Center for Teaching Excellence Scholar, Single PI
Amount and period: $5,000, September 2006-September 2008.

Title: "NRI Center: South West Academy for Nanoelectronics"
Agency: State of Texas and NERC, multiple PIs. Coordinator S. Banerjee from UT
Amount and period: $150,000 (for Sinova), September 2006-August 2009

Title: "Workshop on Semiconductor Nano-Spintronics: Spin-Hall Effect and Related Issues"
Agency: National Science Foundation, Single PI
Amount and period: $24,750, August 2005.

COMMITTEES AND OTHER PROFFESIONAL ACTIVITIES

Other professional activities:

- Member of the Research Corporation Advisory Board 2009-Present
- Onsite NSF reviewer 2009
- Reverse sight MRSEC-NSF panelist reviewer 2008
- Organizer of the international Workshop on Semiconductor Nano-Spintronics: Spin-Hall Effect and Related Issues, Korea, August (2005)
- Organizer of the Condensed Matter Seminar Series at Texas A&M University (2003-Present)
- Local organizer and co-editor of the proceedings of the Conference for Strongly Correlated Systems in May of 2007 in Houston
- Proposal Reviewer and Panelist for NSF and DOE since 2003
- Physical Review, Applied Physics Letters, Science, and Nature referee
- Redesigned departmental webpage at Texas A&M University

Committees:

- Qualifying examination Committee 2008-2009
- Evaluation Committee 2008-2009 (Chair)
- Undergraduate Curriculum Committee 2007-Present
- Building Committee 2006-Present
- Nano Search Committee 2006-2007
- Condensed Matter Experimental Search Committee 2005 (Co-chair)
- Condensed Matter Theory Search Committee 2005 (Chair)
- Nano-science Search Committee (Co-chair)

- Phenomenology Search Committee
- Graduate and Undergraduate Student Recruitment

PUBLICATIONS

Summary: 1 Nature Physics, 2 pending articles, 20 Phys. Rev. Lett., 36 Phys. Rev. B, 2 Rev. of Mod. Phys., 3 Appl. Phys. Lett., 3 Other.

68. Xin Liu, M. F. Borunda, Xiong-Jun Liu, Jairo Sinova, *"Control of Josephson current by Aharonov-Casher Phase in a Rashba Ring"*, submitted for publication to Physical Review B (2009); arXiv:0907.0272.
67. G. Acbas, M.-H. Kim, M. Cukr, V. Novak, M. A. Scarpulla, O. D. Dubon, T. Jungwirth, Jairo Sinova, J. Cerne, *"Electronic structure of ferromagnetic semiconductor Ga1-xMnxAs probed by sub-gap magneto-optical spectroscopy"*, Phys. Rev. Lett. **103**, 137201 (2009).
66. Karel Výborný, Jan Kucera, Jairo Sinova, A.W. Rushforth, B.L. Gallagher, and T. Jungwirth, *"Microscopic mechanism of the non-crystalline anisotropic magnetoresistance in (Ga,Mn)As"*, Phys. Rev. B **80**, 165204 (2009).
65. N. Nagaosa, Jairo Sinova, S. Onoda, A. H. MacDonald, and P. Ong, *"Anomalous Hall Effect"*, accepted for publication in Review of Modern Physics (2009).
64. A. A. Kovalev, Y. Tserkovnyak, K. Vyborny, and Jairo Sinova, *"Transport theory for disordered multiple-band systems: Anomalous Hall effect and anisotropic magnetoresistance"*, Phys. Rev. B **79**, 195129 (2009).
63. C. Bruene, A. Roth, E.G. Novik, M. Koenig, H. Buhmann, E.M. Hankiewicz, W. Hanke, J. Sinova, L. W. Molenkamp, *"Ballistic Intrinsic Spin Hall Effect in HgTe Nanostructures"*, arXiv:0812.3768, submitted for publication to Nature Physics (2009).
62. Ion Garate, Jairo Sinova, T. Jungwirth, A.H. MacDonald, *"Theory of Weak Localization in Ferromagnetic (Ga,Mn)As"*, Phys. Rev. B **79**, 155207 (2009).
61. J. Wunderlich, A. C. Irvine, Jairo Sinova, B. G. Park, X. L. Xu, B. Kaestner, V. Novak, and T. Jungwirth, *"Spin-injection Hall effect in a planar photovoltaic cell"*, Nature Physics **5**, 675 (2009).
60. Karel Vyborny, Alexey A. Kovalev, Jairo Sinova, T. Jungwirth, *"Semiclassical framework for the calculation of transport anisotropies"*, Phys. Rev. B **79**, 045427 (2009).
59. Xiong-Jun Liu, Mario F. Borunda, Xin Liu, Jairo Sinova, *"Effect of Induced Spin-Orbit Coupling for Atoms via Laser Fields"*, Phys. Rev. Lett. **102**, 046402 (2009).
58. M. F. Borunda, Xin Liu, Alexey A. Kovalev, Xiong-Jun Liu, T. Jungwirth, Jairo Sinova, *"Aharonov-Cahser and spin Hall effects in two-dimensional mesoscopic ring structures with strong spin-orbit interaction"*, Phys. Rev. B **78**, 245315 (2008).
57. V. Novak, K. Olejnik, J. Wunderlich, M. Cukr, K. Vyborny, A. W. Rushforth, R. P. Campion, B. L. Gallagher, Jairo Sinova, T. Jungwirth, *"Curie Point Singularity in the Temperature Derivative of Resistivity in (Ga,Mn)As"*, Phys. Rev. Lett. **101**, 077201 (2008).
56. Alexey A. Kovalev, Karel Vyborny, Jairo Sinova *"Hybrid skew scattering regime of the anomalous Hall effect in Rashba systems: unifying Keldysh, Boltzmann, and Kubo formalisms"*, Phys. Rev. B Rapids **78**, 041305 (2008).
55. Alexey A. Kovalev, Liviu P. Zarbo, Y. Tserkovnyak, G. E. W. Bauer, Jairo Sinova *"Piezospin Polarization of Currents in Nanostructures",* Phys. Rev. Lett. **101**, 036401 (2008).
54. Wei-Cheng Lee, Jairo Sinova, A. A. Burkov, Yogesh Joglekar, A.H. MacDonald *"Theory of reduced superfluid density in underdoped cuprate superconductors"*, Phys. Rev. B **77**, 214518 (2008).
53. T. Jungwirth, Jairo Sinova, A. H. MacDonald, B. L. Gallagher, V. Novak, K. W. Edmonds, A. W. Rushforth, R. P. Campion, C. T. Foxon, K. Olejnk, J. Masek, S.-R. Eric Yang, J. Wunderlich, C. Gould, L. W. Molenkamp, T. Dietl, and H. Ohno, *"Character of states near the Fermi level in (Ga,Mn)As: impurity to valence band crossover"*, Phys. Rev. B **76**, 125206 (2007).

52. Tamara S. Nunner, N.A. Sinitsyn, Mario F. Borunda, A. A. Kovalev, Ar. Abanov, Carsten Timm, T. Jungwirth, Junichiro Inoue, A.H. MacDonald, Jairo Sinova, *"Anomalous Hall effect in a two-dimensional electron gas"*, Phys. Rev. B **76**, 235312 (2007).

51. A. W. Rushforth, K. Výborný, C. S. King, K. W. Edmonds, R. P. Campion, C. T. Foxon, J. Wunderlich, A. C. Irvine, P. Vašek, V. Novák, K. Olejník, Jairo Sinova, T. Jungwirth, B. L. Gallagher, *"Anisotropic magnetoresistance components in (Ga,Mn)As"*, Phys. Rev. Lett. **99**, 147207 (2007).

50. Mario F. Borunda, Tamara S. Nunner, Thomas Luck, N. A. Sinitsyn, Carsten Timm, J. Wunderlich, T. Jungwirth, A. H. MacDonald, and Jairo Sinova, *"Absence of skew scattering in two-dimensional systems: Testing the origins of the anomalous Hall Effect"*, Phys. Rev. Lett. **99**, 066604 (2007).

49. R.A. Duine, A.S. Nunez, Jairo Sinova, and A.H. MacDonald*, "Functional Keldysh Theory of Spin Torques"*, Phys. Rev. B **75**, 214420 (2007).

48. A. A. Kovalev, M. F. Borunda, T. Jungwirth, L. W. Molenkamp, J. Sinova**, "***Aharonov-Casher effect in a 2-D hole ring with spin-orbit interaction",* Phys. Rev. B **76**, 125307 (2007).

47. J. Wunderlich, T. Jungwirth, A. C. Irvine, J. Zemen, A. W. Rushforth, E. De Ranieri, U. Rana, K. Vyborny, Jairo Sinova, C. T. Foxon, R. P. Campion, D. A. Williams, and B. L. Gallagher, *"Local control of magnetocrystalline anisotropy in (Ga,Mn)As: application in spin-transfer-torque microdevices"*, Phys. Rev. B **76**, 054424 (2007).

46. J. Masek, J. Kudrnovsky, F. Maca, Jairo Sinova, A.H. MacDonald, R.P. Campion, B.L. Gallagher, and T. Jungwirth, *"Mn-doped Ga(As,P) and (Al,Ga)As ferromagnetic semiconductors"*, Phys. Rev. B **75**, 045202 (2007).

45. N.A. Sinitsyn, A.H. MacDonald, T. Jungwirth, V. K. Dugaev, Jairo Sinova*, "Anomalous Hall effect in 2D Dirac band: link between Kubo-Streda formula and semiclassical Boltzmann equation approach",* Phys. Rev. B **75**, 045315 (2007).

44. N. A. Sinitsyn, J.E. Hill, Hongki Ming, Jairo Sinova, and A. H. MacDonald, *"Charge and spin Hall conductivity in metallic graphene"*, Phys. Rev. Lett. **97**, 106804 (2006).

43. T. Jungwirth, Jairo Sinova, J. Masek, J. Kucera, and A. H. MacDonald, *"Theory of ferromagnetic (III,Mn)V Semiconductors"*, Rev. of Mod. Phys. **78,** 809 (2006).

42. Jairo Sinova, Shuichi Murakami, S-Q. Shen, and Mahn-Soo Choi, *"Spin-Hall effect: Back to the Beginning at a Higher Level"*, Solid State Comm. **138**, 214 (2006).

41. K. Nomura, J. Wunderlich, J. Sinova, B. Kaestner, A.H. MacDonald, T. Jungwirth, *"Edge spin accumulation in semiconductor 2-D hole gases"*, Phys. Rev. B **72**, 245330 (2006).

40. M. Koenig, A. Tschetschetkin, E.M. Hankiewicz, Jairo Sinova, V. Hock, V. Daumer, M. Schaefer, C.R. Becker, H. Buhmann, and L.W. Molenkamp, *"Direct observation of the Aharonov-Casher phase"*, Phys. Rev. Lett. **96**, 076804 (2006).

39. B. Kaestner, J. Wunderlich, Jairo Sinova, and T. Jungwirth, *"Co-planar spin-polarized light emitting diode "*, Appl. Phys. Lett. **88**, 091106 (2006).

38. T. Jungwirth, J. Masek, K.Y. Wang, K.W. Edmonds, M. Sawicki, M. Polini, Jairo Sinova, A.H. MacDonald, R.P. Campion, L.X. Zhao, N.R.S. Farley, T.K. Johal, G. van der Laan, C.T. Foxon, and B.L. Gallagher , *" Low temperature magnetization of (Ga,Mn)As semiconductors"*, Phys. Rev. B **73**, 165205 (2006).

37. K. Nomura, Jairo Sinova, N.A. Sinitsyn, and A. H. MacDonald, *"Dependence of the intrinsic spin Hall effect on spin-orbit interaction character"*, Phys. Rev. B **72**, 165316 (2005).

36. E. M. Hankiewicz, Jian Li, Tomas Jungwirth, Qian Niu, Shun-Qing Shen, and Jairo Sinova, *"Charge Hall effect driven by spin-chemical potential gradients and Onsager relations in mesoscopic systems"*, Phys. Rev. B **72**, 155305 (2005).

35. E. Y. Sherman and J. Sinova, *"Physical limits of the ballistic and non-ballistic spin-field-effect transistor: Spin dynamics in remote-doped structures",* Phys. Rev. B **72,** 075318 (2005).

34. T. Jungwirth, K.Y. Wang, J. Masek, K.W. Edmonds, Jurgen Konig, Jairo Sinova, M. Polini, N.A. Goncharuk, A.H. MacDonald, M. Sawicki, R.P. Campion, L.X. Zhao, C.T. Foxon, and B.L. Gallagher , *"Prospects of high temperature ferromagnetism in (Ga,Mn)As semiconductors"*, Phys. Rev. B **72**, 165204 (2005).

33. N.A. Sinitsyn, Qian Niu, Jairo Sinova, K. Nomura, *"Disorder effects in the AHE induced by Berry curvature"*, Phys. Rev. B **72**, 045346 (2005).

32. Branislav K. Nikolic, Satofumi Souma, Liviu P. Zarbo, and Jairo Sinova, *"Non-Equilibrium Spin Accumulation due to the Spin Hall Effect in Mesoscopic Two-Probe Ballistic Spin-Orbit Coupled Semiconductor Structures*", Phys. Rev. Lett. **95**, 046601 (2005).

31. Joerg Wunderlich, Bernd Kaestner, Jairo Sinova, and Tomas Jungwirth, *"Experimental observation of the spin-Hall effect in two-dimensional spin-orbit coupled semiconductor systems"*, Phys. Rev. Lett. **94**, 047204 (2005).

30. K. Nomura, J. Sinova, T. Jungwirth, Q. Niu, and A. H. MacDonald, *"Non-vanishing spin Hall currents in disordered spin-orbit coupling systems"*, Phys. Rev. B Rapids **71**, 041304 (2005).

29. A.D. Giddings, M.N. Khalid, J. Wunderlich, S. Yasin, R.P. Campion, K.W. Edmonds, Jairo Sinova, T. Jungwirth, K. Ito, K.Y. Wang, D. Williams, B.L. Gallagher, and C.T. Foxon, *'Large tunneling anisotropic magnetoresistance in (Ga,Mn)As nanoconstrictions'*, Phys. Rev. Lett. **94**, 127202 (2005).

28. C. Ruster, C. Gould, T. Jungwirth, Jairo Sinova, G.M Schott, R. Giraud, K. Brunner, G. Schmidt, and L. W. Molenkamp, *"Super-giant Tunneling Anisotropic Magnetoresistance in a (Ga,Mn)As stack"*, Phys. Rev. Lett. 94, 027203 (2005).

27. E. M. Hankiewicz, L.W. Molenkamp, T. Jungwirth, and Jairo Sinova, *"Manifestation of the spin-Hall effect through transport measurements in the mesoscopic regime"*, Phys. Rev. B Rapids **70**, 241301 (2004)

26. R. Aguado, M.P. López-Sancho, Jairo Sinova, L. Brey, *"Dielectric Function of Diluted Magnetic Semiconductors in the Infrared Regime"*, Phys. Rev. B **70**, 1952001 (2004).

25. E. M. Hankiewicz, T. Jungwirth, T. Dietl, C. Timm, and Jairo Sinova, *"Optical properties of metallic (III,Mn)V ferromagnetic semiconductors in the infrared to visible range"*, Phys. Rev. B **70**, 245211 (2004).

24. J. Sinova, T. Jungwirth, and J. Cerne, *"Magneto-transport and magneto-optical properties of ferromagnetic (III,Mn)V semiconductors"*, Int. Jour. of Mod. Phys. B **18**, 1083 (2004).

23. N. A. Sinitsyn, E. H. Hankiewicz, Winfried Teizer, and Jairo Sinova, *"Spin-Hall and spin-diagonal conductivity in the presence of Rashba and Dresselhaus spin-orbit coupling"*, Phys. Rev. B Rapids **70**, 081212, (2004).

22. Dimitrie Culcer, Jairo Sinova, N. A. Sinitsyn, T. Jungwirth, A.H. MacDonald, and Qian Niu, *"Semiclassical theory of spin transport in spin-orbit coupled systems"*, Phys. Rev. Lett. **93**, 046602 (2004).

21. Yugui Yao, L. Kleinman, A. H. MacDonald, Jairo Sinova, Ding-Sheng Wang, Enge Wang, and Qian Niu, *"First Principles Calculation of Anomalous Hall Conductivity in Ferromagnetic bcc Fe"*, Phys. Rev. Lett. **92**, 037204 (2004).

20. Jairo Sinova, T. Jungwirth, X. Liu, Y. Sasaki, J.K. Furdyna,W. A. Atkinson, and A.H. MacDonald, *"Magnetization relaxation in (Ga,Mn)As ferromagnetic semiconductors"*, Phys. Rev. B **69**, 085209 (2004).

19. Jairo Sinova, Dimitrie Culcer, Q. Niu, N. A. Sinitsyn, T. Jungwirth, and A.H. MacDonald, *"Universal Intrinsic Spin-Hall Effect",* Phys. Rev. Lett. **92**, 126603 (2004).

18. T. Jungwirth, J. Masek, Jairo Sinova, and A.H. MacDonald , *"Ferromagnetic transition temperature enhancement in (Ga,Mn)As semiconductor by carbon-codoping"*, Phys. Rev. B **68**, 161202 (2003).

17. T. Jungwirth, Jairo Sinova, K.Y. Wang, K.W. Edmonds, R.P. Campion, B.L. Gallagher, C.T. Foxon, Qian Niu, and A.H. MacDonald , *"DC-transport properties of ferromagnetic (Ga,Mn)As semiconductors"*, Appl. Phys. Lett. **83**, 320 (2003).

16. Jairo Sinova, T. Jungwirth, J. Kucera, and A.H. MacDonald, *"Infrared magneto-optical properties of (III,Mn)V ferromagnetic semiconductors"*, Phys. Rev. B **67**, 235203 (2003).

15. T. Jungwirth, Jairo Sinova, J. Kucera, and A.H. MacDonald, *"Theoretical models of ferromagnetic III-V semiconductors"*, Current Applied Physics **3**, 461 (2003).

14. Jairo Sinova, C. B. Hanna, and A. H. MacDonald, *"Measuring the condensate fraction of rapidly rotating trapped boson systems: off-diagonal order from the density",* Phys. Rev. Lett. **90** , 120401 (2003).

13. S.-R. Eric Yang, Jairo Sinova, T. Jungwirth, Y.P. Shim, and A. H. MacDonald , *"Non-Drude Optical Conductivity of (III,Mn)V Ferromagnetic Semiconductors"*, Phys. Rev. B **67**, 045205(2003).

12. T. Jungwirth, M. Abolfath, Jairo Sinova, J. Kucera, and A.H. MacDonald , *"Boltzmann theory of engineered anisotropic magnetoresistance in (Ga,Mn)As"*, Appl. Phys. Lett. **81**, 4029 (2002).

11. Jairo Sinova, T. Jungwirth, S.-R. Eric Yang, J. Kucera, and A.H. MacDonald , *"Infrared conductivity of metallic (III,Mn)V ferromagnets"*, Phys. Rev. B **66**, R041202 (2002).

10. J. Sinova, C. B. Hanna, and A. H. MacDonald , *"Quantum Melting and Absence of Bose-Einstein Condensation in 2-D Vortex Matter"*, Phys. Rev. Lett. **88**, 030403 (2002).

9. T. Jungwirth, J. Konig, Jairo Sinova, J. Kucera, and A.H. MacDonald , *"Curie Temperature Trends in (III,Mn)V Ferromagnetic Semiconductors"*, Phys. Rev. B **66**, 012402 (2002).
8. Jairo Sinova, J. Schliemann, Alvaro S. Nuñez, and A.H. MacDonald, *"2D bands and electron-phonon interactions in polyacene plastic transistors"*, Phys. Rev. Lett. **87**, 226802 (2001).
7. Jairo Sinova and Geoff Canright, *"Nature and number of distinct phases in the random field Ising model"*, Phys. Rev. B **64**, 094402 (2001).
6. Joel E. Moore, A. Zee, and Jairo Sinova, *"The quantum Hall plateau transition at order 1/N"*, Phys. Rev. Lett. **87**, 046801 (2001).
5. Jairo Sinova, Geoff Canright, H. Castillo, and A.H. MacDonald*, "Extensive eigenvalues in spin-spin correlations: a tool for counting pure states in Ising spin glasses",* Phys. Rev. B **63**, 104427 (2001).
4. J. Sinova, G. Canright, and A.H. MacDonald, *"Nature of ergodicity breaking in Ising spin glasses as revealed by correlation function spectral properties",* Phys. Rev. Lett. **85,** 2609 (2000).
3. Jairo Sinova, A.H. MacDonald, and S.M. Girvin, *"Disorder and interactions in Quantum Hall Ferromagnets near v = 1",* Phys. Rev. B **62**, 13579 (2000).
2. Jairo Sinova, V. Meden, and S.M. Girvin, *"Liouvillian approach to the integer Quantum Hall effect transition*", Phys. Rev. B **62**, 2008 (2000).
1. Jairo Sinova, S.M. Girvin, T. Jungwirth, and K. Moon, *"Skyrmion dynamics and NMR line shapes in Quantum Hall Ferromagnets"*, Phys. Rev. B **61**, 2749 (2000).

REFEREED CONFERENCE PROCEEDINGS

10. A.W. Rushforth, K. Výborný, C.S. King, K.W. Edmonds, R.P. Campion, C.T. Foxon, J. Wunderlich, A.C. Irvine, V. Novák, K. Olejník, A. A. Kovalev, Jairo Sinova, T. Jungwirth, B.L. Gallagher, *"The Origin and Control of the Sources of AMR in (Ga,Mn)As Devices"*, Journal of Magnetism and Magnetic Materials, **321**, 1001 (2009).
9. G. Acbas, J. Sinova, M.A. Scarpulla, O.D. Dubon, M. Cukr, V. Novak, and J. Cerne, *"Comparison of the mid-infrared magneto-otical response of GaMnAs films grown by molecular beam epitaxy and ion implantation and pulsed laser melting*", Journal of Supercond. and Novel Magnetism, **20**, 457 (2007).
8. G. Acbas, J. Cerne, M. Cukr, V. Novak, and J. Sinova, *"Infrared Magneto-Optical Studies in GaMnAs Films*", Physics of Semiconductors, AIP Conference Proceedings, **893,** 1217 (2007).
7. B. Kaestner, J. Wunderlich, Jairo Sinova, and T. Jungwirth, *"Experimental observation of the spin-Hall effect in a spin-orbit coupled two-dimensional hole gas"*, Physics E **34**, 47 (2006).
6. E. M. Hankiewicz, N. A. Sinitsyn**,** and J. Sinova, *"Spin Currents and Intrinsic Spin-Hall effect in Low Dimensional Systems*", *Journal of Superconductivity* **18**, 151 (2005).
5. E. M. Hankiewicz, T. Jungwirth, T. Dietl, C. Timm, and Jairo Sinova, *"Ac Conductivity and Magneto-Optical Effects in the Metallic (III,Mn)V Ferromagnetic Semiconductors from the Infrared to the Visible Range"*, Proceedings of *American Institute of Physics (AIP)* (2004).
4. M. Polini, R. Fazio, M.P. Tosi, Jairo Sinova, and A. H. MacDonald, *"Frustration of a Bose Gas inside an optical lattice"*, Laser Physics **14**, 603 (2004).
3. T. Jungwirth, Jairo Sinova, and A.H. MacDonald, *"Magnetic and transport properties of (III,Mn)V ferromagnetic semiconductors"*, Acta Physica Polonica A **104**, 103 (2003).
2. Jairo Sinova, A.H. MacDonald, and S.M. Girvin*, "Disorder and interactions in Quantum Hall Ferromagnets: effects of disorder in Skyrmion physics*", Physica E **12**, 12 (2002).
1. Jairo Sinova, A, S. Nuñez, and J. Schliemann*, "Electron-phonon interactions in polyacene organic transistors"*, Physica status solidi b **230**, 309 (2002).

CHAPTERS IN BOOKS

1. Jairo Sinova and Tomas Jungwirth, "*Diluted Magnetic Semiconductors*", in Frontiers in Magnetic Materials, Edited by A. V. Narlikar, Springer, New York, 2005.

2. Jairo Sinova and Allan H. MacDonald, *"Theory of Spin-Orbit effects in Semiconductors"*, in Spintronics included in the series of Semiconductors and Semimetals, edited by T. Dielt, D. Awschalom, M. Kaminska, and H. Ohno, Elesvier, New York (2008).

3. Jairo Sinova, *"Anomalous and Spin-injection Hall effects",* in Spin Transport and Magnetism in Electronic Systems, edited by E. Tsymbal and I. Zutic, Taylor & Francis, New York (2010).

INVITED TALKS

67. “Spin-injection Hall effect: a new member of the spintronics Hall family and its implications in nano-spintronics”, Optical Spintronics Meeting, Cambridge, October 27th (2009).

66. “Spin-injection Hall effect: a new member of the spintronics Hall family and its implications in nano-spintronics”, Symposium Spin Manipulation in Solid State Systems, Würzburg University, October 9th (2009).

65. “Spin-dependent Hall effects in strongly spin-orbit coupled systems”, Ohio State University, October 5th (2009).

64. “Making Semiconductors Ferromagnetic”, Ohio State University, October 2nd (2009).

63. “Spin-injection Hall effect: a new member of the spintronics Hall family and its implications in nano-spintronics”, Ohio State University, October 1st (2009).

62. “Spin-injection Hall effect: a new member of the spintronics Hall family and its implications in nano-spintronics”, Texas A&M University, September 29th (2009).

61. “New spintronic device concept using spin injection Hall effect: a new member of the spintronic Hall family ”, NRI-teleconference, Applied Research Associates, Vermont, August 4th (2009).

60. “Making Semiconductors Ferromagnetic”, 125th ECS Meeting, Symposium on materials for post-CMOS, San Francisco, May 24th (2009).

59. “New developments in the Anomalous Hall Effect: phenomenological regimes, unified linear theories, and new members of the spintronic Hall family”, SpinAps Spin Currents Conference, Lake Tahoe, April 19th (2009).

58. “Spin Injection Hall effect: a new member of the spintronic Hall family”, Prairie View A&M, April 6th (2009).

57. “Spin Injection Hall effect: a new member of the spintronic Hall family”, University of Maryland, March 12th (2009).

56. “New avenues in spin Hall caloritronic effects”, Lorenz Center, Leiden University, Netherlands, February 10th (2009).

55. “Spin Injection Hall effect: a new member of the spintronic Hall family”, Kavli Institute of Theoretical, Santa Barbara, December 18th (2008).

54. “Spin Injection Hall effect: a new member of the spintronic Hall family”, Institute of Physics of the Academy of Science of the Czech Republic, Prague, November 18th (2008).

53. “Anomalous Hall effects in strongly spin-orbit coupled systems” (plenary talk), Spin Transport in Condensed Matter, 23rd Nishinomiya-Yukawa Memorial International Workshop, Kyoto, Japan, November 11th (2008).

52. “Computational Studies of the Spin and Anomalous Hall Effect”, Computational Magnetism and Spintronics International Workshop, Dresden, Germany, November 4th (2008).

51. “Spin and anomalous Hall effects in semiconductors and metals”, Summer School 'Nanomagnetism and Spintronics', Prague, Czech Republic, September 11th (2008).

50. “Theory of Hall effects and weak localization in strongly spin-orbit coupled systems: merging Keldysh, Kubo and Boltzmann theories”, SPIE Spintronics International Conference, San Diego, August 12th (2008).

49. “Hall effects in strongly spin-orbit coupled systems: Merging Keldysh, Kubo, and Boltzmann approaches via the chiral basis”, Spin Helicity and Chirality in Superconductors and Semiconductor Nanostructures, Karlsruhe, Germany, July 15th (2008).

48. “Making Semiconductors Ferromagnetic”, NRI e-workshop, from Texas A&M University via teleconferencing, April 29th (2008).

47. “Challenges and Chemical Trends Dilute Magnetic Semiconductor”, Rice University, April 28th (2008).

46. “Making Semiconductors Ferromagnetic: a physics tango in spintronics”, New York University, New York, March 25th (2008).

45. “Spin-Hall effect: a new adventure in condensed-matter physics”, Colloquium at New York University, New York, March 24th (2008).

44. “Spin-Hall effect: new challenges”, International Workshop on Future Trends of Condensed Matter Physics, Aspen Colorado, February 8th (2008).

43. “Spin-Hall effect: a new adventure in condensed-matter physics”, Colloquium at Sam Houston State University, Texas, January 22nd (2008).

42. “How to make semiconductors magnetic”, International Workshop on Strongly Correlated Systems, Austin, Texas, October 23rd (2007).

41. “On the character of the Fermi energy in metallic diluted magnetic semiconductors”, Los Alamos National Laboratory, Los Alamos, New Mexico, July 12th (2007).

40. “Anomalous and spin Hall effect in mesoscopic systems”, International Conference of Nano-Magnetism, Istanbul, Turkey, June 25th (2007).

39. “Spin dependent transport and spin-current manipulation of magnetization”, ONR Spintronics Review Workshop, Denver, Colorado, March 9th (2007).

38. “Anomalous transport: the convergence of sixty years of debate”, Colloquium at Kansas University, Laurence, Kansas, March 12th (2007)

37. “Challenges and Chemical Trends in Achieving a Room Temperature Dilute Magnetic Semiconductor: A Spintronics Tango Between Theory and Experiment”, Frontiers in Chemical Physics, Univ. of Tennessee, Knoxville, Tennessee 22nd February (2007).

36. “Spin-Hall currents and spin accumulation in strong spin-orbit coupled regime”, IFCAM International Workshop on Spin Currents, Sendai, Japan, 19th February (2007).

35. “Spin-Hall effect: a new twist on an old hat and other spintronics stories at TAMU”, Texas A&M University, College Station, Texas, October 5th (2006).

34. “Spin Hall effect: where we were, where we are, and where we are going”, Spin and Charge Effects at the Nanoscale**,** Scuola Normale Superiore at Pisa, Italy, July 2nd (2006).

33. “Do we understand (Ga,Mn)As? Prospects of high temperature magnetism in DMSs”, KITP, Santa Barbara, May 25th (2006).

32. “Spin-Hall Effect in Mesoscopic Systems”, Science and Application of Spin Electronics, Hong Kong University, Hong Kong, August 17th (2005).

31. “Anomalous transport and the spin Hall effect”, Workshop on Semiconductor Nano Spintronics: Spin-Hall Effect and Related Issues”, Pohang U., South Korea, August 8th (2005).

30. “Intrinsic Spin Hall effect”, Spin-Tech III, Japan, August (2005).

29. “Spin-Hall Effect in the Mesoscopic Regime”, International Workshop on the Anomalous Hall-Effect, Lyon, France July (2005).

28. “New physics in semiconductor spintronics”, Houston Univ., April 25 (2005).

27. “Spin Hall effect: theory and experiment”, Purdue University, April 8 (2005).

26. “Spin Hall effect: theory and experiment”, Berkeley University, February 14 (2005).

25. “Novel magneto-resistance effects in diluted magnetic semiconductors”, Stanford University, February 10 (2005).

24. “Experimental observation of the spin-Hall effect in two dimensional spin-orbit coupled systems”, Yale University, January 13 (2005).

23. “Spin Hall effect: theory and experiment”, University of Delaware, December 7 (2004).

22. “Magneto-optic effects and magnetization dynamics in metallic ferromagnetic semiconductors”, 29th General Conference of the Condensed Matter Division of the European Physical Society, Prague, Czech Republic, July 20 (2004).

21. “Intrinsic Spin Hall Effect”, invited talk at the March 2004 Meeting of the American Physical Society, Montreal, Canada, March (2004).

20. “Spin Hall Effect : the strange story of the anomalous Hall effect and its new trick in spintronics”, University of Buffalo, October 29, (2003).

19. “Magneto-optical properties of metallic (III,Mn)V magnetic semiconductors”, International Workshop in Diluted Magnetic Semiconductors, Lyon, France June 15 (2003)

18. “Spinning a Bose-Einstein condensate away: quantum fluctuations in 2D vortex matter”, Autonoma University, Madrid, Spain, June 10 (2003).

17. “Magneto-optical and transport properties of metallic diluted ferromagnetic semiconductors: a spintronics tango”, Ohio University, November 7 (2002).

16. “Magneto-optical properties of metallic diluted ferromagnetic semiconductors”, International Conference of the Low Energy Electrodynamics in Solids, Long Island, October 13 (2002).

15. “Spinning a Bose-Einstein condensate away: quantum fluctuations in 2D vortex matter”, University of Texas A&M, September 19 (2002).

13-14. “Superconductivity in moth balls: surprises in organic transistors”, University of Tennessee, April 9, 2002; California State University at Long Beach, April 2 (2002).

12. "Disorder and interactions in QH Ferromagnets near ν=1", invited talk at the March 2002 Meeting of the American Physical Society (2002).

6-11. “Superconductivity in moth balls: surprises in organic transistors”, Michigan State University, February 11, 2002; Rice University, January 28, 2002; Brandeis University, Yale University, and Brown University, November 14-16, 2001; University of Georgia, October 10 (2001).

5. “Surprises in organic transistors: superconductivity in moth balls and the future of plastic electronics”, Seagate Technologies, Minneapolis, September (2001).

3-4. “Nature of the spin glass phase: to RSB or not to RSB”, University of Texas, December 5, 2000; Indiana University, September (2000).

2. “Disorder and interactions in the Quantum Hall effect: How dirty are your samples?”, Universidad Autonoma de Madrid, February (2000).

1. “NMR in the Quantum Hall effect and Skyrmion diffusion”, Ohio University, September 22, (1999).

INTERNATIONAL CONFERENCES AND WORKSHOPS

1. Symposium Spin Manipulation in Solid State Systems, (Würzburg, Germany, October 2009).
2. Spintech V (Krakow, Poland, July 2009).
3. KITP Low Dimensional Electron System Workshop, (Santa Barbara, CA, May 2009).
4. SinAps Spin Currents 2009 Workshop, (Lake Tahoe, CA, April 2009).
5. Spin Caloritronics, (Lorenz Center, Leiden, Netherlands, February, 2009).
6. KITP Rapid Response Workshop on the Quantum Spin Hall Effect and Topological Insulators, (Santa Barbara, CA, December, 2008).
7. Spin Transport in Condensed Matter, 23rd Nishinomiya-Yukawa Memorial International Workshop, (Kyoto, Japan, November, 2008).
8. International Conference on Computational Magnetism and Spintronics, (Dresden Max Planck Institute for Physics of Complex Systems during November, 2008).
9. Summer School on Nano-magnetism and Spintronics (Prague, Czech Republic, September, 2008).
10. Spintronics 2008, Spin sensing and devices, SPIE Optics & Photonics Symposium (San Diego, CA, August, 2008).
11. International Workshop on Spin Helicity and Chirality in Superconductor and Semiconductor Nanostructures (University of Karlsruhe, Germany, July, 2008).
12. 14th Annual Cottrell Scholar Conference, (Tucson, AZ, July 2008).
13. International Workshop on New Horizons in Condensed Matter Physics, (Aspen, CO, February 2008).
14. International Workshop on Strongly Correlated Systems, Austin, Texas, October 23rd (2007).
15. International Conference in Nano-Magnetism (IIT, Istanbul, Turkey 2007).
16. Frontiers in Chemical Physics (Univ. of Tennessee, Knoxville, February 2007).
17. IFCAM International Workshop on Spin Currents (Sendai, Japan, February 2007)
18. Spin and Charge Effects at the Nanoscale (Scuola Normale Superiore, Pisa, Italy, July 2006).
19. Spintronics conference at the KITP (Santa Barbara, California March 2006).
20. Workshop on Semiconductor Nano Spintronics: Spin-Hall Effect and Related Issues (Pohang University, South Korea, August 2005).

21. International Workshop on the Anomalous Hall-Effect (Lyon, France, July 2005).
22. Spintech III (Awai Island, Japan, June 2005).
23. General Conference of the Condensed Matter Division of the European Physical Society (Prague, Czech Republic, June 2004).
24. International Conference on the Physics of Semiconductors (Arizona, June 2004).
25. International Workshop in Diluted Magnetic Semiconductors (Lyon, France, June 2003).
26. International Conference on the Low Energy Electrodynamics in Solids (Long Island, New York, October, 2002).
27. Gordon Research Conference on Electronic Processes in Organic Matter (New Port, Rhode Island, July 2002).
28. International School of Solid State Physics 22nd Workshop: Quantum Phases at the Nanoscale, (Erice-Sicily, July 2002).
29. Electronic Properties of Two-dimensional Systems Conference (Prague, 2001).
30. Physics and Technology at the Nanometer Scale conference (Costa Rica, 2001).
31. Boulder Summer School on Superconductivity (Boulder, July 2000).
32. Les Houches Summer of Theoretical Physics on Topological Aspects of Low Dimensional Systems (France, July 1998).

TEACHING AND MENTORING

Texas A&M University physics department serves a large engineering department and as such faculty are expected to teach a large fraction of undergraduate physics courses. Our teaching load is two courses per academic year, which is the usual case in other research universities in the United States. When teaching larger courses we are given the choice of teaching one per semester or teaching two large lectures one semester in order to dedicate the other semester to graduate student advising and research. I have taken the double teaching option as the best way to balance teaching and research since my second year at Texas A&M (academic years 2004-05, 2005-6,2006-07, and 2007-08; on the Fall of 2008 I was on sabbatical).

Teaching experience:

Lectures:

- Graduate-level *Mesoscopic Physics*: created my own lecture notes on this specialty topics course focused on multiband mesoscopic transport and spintronics (Spring 2009).
- Undergraduate-senior-level: *Advance Mechanics*: besides textbook and prepared lecture notes I prepared numerical simulations, etc. available at the course's website http://appeal.physics.tamu.edu/P302_TAMU_APPEAL_website/index.html(Fall 2007).
- Undergraduate-junior-level *Thermal Physics, Waves, and Optics*: created this course completely new with new teaching methodologies. Course sponsored by several grants. The developed program is fully shown in the website http://appeal.physics.tamu.edu/index.html. I received the Distinguished Achievement College Level Award in Teaching on 2008 for this work and we have presented it at invited talks at several teaching conferences (Fall 2007).
- Undergraduate-freshman-level: *Introductory Mechanics:* taught two large lectures using the STEPS program. http://faculty.physics.tamu.edu/sinova/courses/P218/ (double teaching Fall 2005; 100 students in each class; double taught Spring 2005, 80 students in each class).
- Undergraduate-freshman-level: *Introductory to Electricity, Magnetism, and Waves:* taught two large lectures using the introductory book and my own lectures which I posted on the course's website. (Spring 2004 70 students).
- Graduate-level *Solid State Physics*: prepared my own notes which I made available on the website: http://faculty.physics.tamu.edu/sinova/courses/oldcourses/P617/physics617.htm (Fall 2003).

- Undergraduate-level: *Introductory level laboratory courses* (1994-1998)
- Undergraduate-level *Introductory observational astronomy:* designed and taught basic experimental observational astronomy (1992-1994).

Group Lectures:

Since some of the courses are not offered within our department I have performed several group courses to train my students in the particular techniques needed for their research, these include: Mesoscopic transport theory, Keldysh-non-equilibrium techniques, many-body theory of transport and equilibrium phenomena, magneto-optical effects and spin-charge dependent transport in ferromagnetic systems.

Educational workshops attended:

1. Research Corporation Cottrell Scholar Conference, Tucson, Arizona, July (2008)
2. Research Corporation Cottrell Scholar Conference, Tucson, Arizona, July (2007)
3. Paradigms in Physics Workshop, Oregon State University, Corvallis, Oregon, June (2006)
4. Bridging the Vector Calculus Gap, Oregon State University, Corvallis, Oregon, June (2005)

Supervision of students and postdoctoral researchers:

- Postdoctoral researchers:
  - Ewelina Hankiewicz, Texas A&M University, August 2003-August 2005; Present position: University of Würzburg.
  - Nikolai Sinitsyn, Texas A&M University, June 2006-August 2006; Present position: postdoctoral fellowship at Los Alamos National Laboratories.
  - Alexey Kovalev, Texas A&M University, September 2006-December 2008 Present position: postdoctoral fellow at UCLA.
  - Liviu Zarbo, Texas A&M University, July 2007-Present
- Graduate students:
  - Mario Borunda, Texas A&M University, January 2004- December 2008; Present position: postdoctoral fellow at Harvard University.
  - Xin Liu, Texas A&M University, September 2006-Present
  - Xiong-Jun Liu, Texas A&M University, September 2007-Present
  - Sergio Rodriguez, Texas A&M University, September 2004-2006
  - Nikolai Sinitsyn, Texas A&M University, September 2003-June 2005 (Co-advised with Prof. Valery Pokrovsky).
  - Hernesto Hernandez, Houston University, January 2004-May 2005
- Undergraduates:
  - David Darrow, Texas A&M University, September 2005-2007
  - Scott Adams, Texas A&M University, Fall 2004