Prof. Dr. Jairo Sinova - Curriculum Vitae

Institut für Physik
Johannes Gutenberg University Mainz
Tel. +49 6131 39 23340
Fax. +49 6131 39 24345
Email. sinova@Uni-Mainz.de
Web Group: www.inspire.uni-mainz.de
Web SPICE: www.spice.uni-mainz.de

Nationality: Spain and USA
Marital status: Married

Last update: 15th of November 2021

Professional Life and Work Experience

Johannes Gutenberg Universität Mainz Alexander von Humboldt Professor (W3)	2014 to Present
Johannes Gutenberg Universität Mainz Director of the Spin Phenomena Interdisciplinary Center (SPICE)	2014 to Present
Inst. of Physics of the Academy of Sciences of the Czech Republic Independent Researcher	2007 to Present
Texas A&M University Associate Head for Undergraduate Programs	2012 to 2014
Texas A&M University Professor of Physics	2010 to 2014
Texas A&M University Associate Professor of Physics	2007 to 2010
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 Summer Researcher	1993

Education

Indiana University	Ph.D. Physics	August 1999
Indiana University	M.S. Physics	August 1995
Ohio University	B.S. Physics (Magna Cum Laude)	June 1994

Major Honors and Awards

2014:	Alexander von Humboldt Professorship
2014:	Johannes Gutenberg Research Fellowship
2014:	ERC Synergy award
2011:	Fellow of the American Physical Society
2011:	Student Lead Award for Teaching Excellence
2011:	Distinguished Achievement University Wide Award in Research
2008:	Distinguished Achievement College Level Award in Teaching (Award donated to the Texas A&M University Physics Department)
2007:	Big XII Research Fellowship

2006: NSF CAREER Award
2006: Cottrell Scholar Award from the Research Corporation
2006: Montague-Center for Teaching Excellence Scholar

Professional Activities and Services to the Community

Scientific Focus:

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

Professional Activities, Research and Mentoring Highlights:

● Publications and Impact Summary: >192 reviewed publications (over 16500 citations and h-factor 55 in Web of Science; 23260 citations and h-factor 64 in Google Scholar)

● Predicted the 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).

● Predicted the Néel Spin-Orbit Torque effect (Phys. Rev. Lett. 2014), which was observed in 2016 (Science 2016) starting the Antiferromagnetic Spintronics field.

● Conferences: >186 invited presentations at universities and conferences;

● Mentoring: Supervision of >46 Postdocs, PhD and Master students and interns. 14 former group members have become faculty members at leading institutions. Within the SPICE center he promotes the concept of Young Research Leaders Workshops – an invitation only top junior researchers conference.

● Funding: >7.6 Mio. € third party funding in the last 5 years.

● Services to the Community:

- founder of the **Spin Phenomena Interdisciplinary Center (SPICE) in 2015**, with over 40 international conferences organized (https://www.spice.uni-mainz.de/) .
- Vice-chair of the Gordon Conference on Nanomagnetism, July 2019.
- Chair of Gordon Conference on Nanomagnetism, July 2021 (postponed to 2023)
- **Organizer of the Joint European Magnetic Symposia (JEMS), September 2018**
- Organizer of the Spintronics Tutorial session at the APS March Meeting, March 2013 and at the DFG Spring Meeting 2016 (with Karin Everschor-Sitte).
- Member of the ERC Advance Panel Review, 2016 – Present.
- Co-organizer of the first German-USA Fulbright-Cottrell workshop in Germany on innovative teaching and junior researcher's leadership.
- **Physical Review Letters Associate Divisional Editor, 2020-Present.**
- Reviewer for various journals (Nature Physics, Nature Materials, PRL).
- Reviewer for project and laboratories (NSF, ANR, AERES, etc.)

Ten Selected Publications

1. S. Yu Bodnar; Libor Smejkal, I. Turek, T. Jungwirth, O. Gomonay, Jairo Sinova, A.A. Sapozhnik, H.-J. Elmers, M. Kläui, M. Jourdan, Writing and reading antiferromagnetic Mn2Au by Néel spin-orbit torques and large anisotropic magnetoresistance, Nature Communications 9, 24 (2018).
2. T. Jungwirth, Jairo Sinova, A. Manchon, X. Marti, J. Wunderlich, C. Felser, The multiple directions of antiferromagnetic spintronics, Nature Physics 14, 200–203 (2018).
3. C. Ciccarelli, L. Anderson, V. Tshitoyan, A. J. Ferguson, F. Gerhard, C. Gould, L. W. Molenkamp, J. Gayles, J. Zelezny, L. Smejkal, Z. Yuan, Jairo Sinova, F. Freimuth, T. Jungwirth, Room-temperature spin-orbit torque in NiMnSb, Nature Phys. 12, 855-860 (2016).
4. J. Železný, H. Gao, K. Výborný, J. Zemen, J. Mašek, A. Manchon, J. Wunderlich, Jairo Sinova, T. Jungwirth, Relativistic Néel-order fields induced by electrical current in antiferromagnets, Physical Review Letters 113, 157201 (2014).
5. H. Kurebayashi, Jairo Sinova, D. Fang, A. C. Irvine, T. D. Skinner, J. Wunderlich, V. Novák, R. P. Campion, B. L, Gallagher, E. K. Vehstedt, L. P. Zârbo, K. Výborný, A. J. Ferguson, T. Jungwirth, An antidamping spin-orbit torque originating from the Berry curvature, Nature Nanotechnology 9, 211 (2014).
6. Libor Smejkal, J. Zelezny, Jairo Sinova, Tomas Jungwirth, Electric Control of Dirac Quasiparticles by Spin-Orbit Torque in an Antiferromagnet, Physical Review Letters 118, 106402 (2017).
7. J. Wunderlich, B. G. Park, A. C. Irvine, L. P. Zarbo, E. Rozkotova, P. Nemec, V. Novak, Jairo Sinova, T. Jungwirth, Spin Hall effect transistor, Science 330, 1801 (2010).
8. J. Wunderlich, A. C. Irvine, Jairo Sinova, B. G. Park, X. L. Xu, B. Kaestner, V. Novak, T. Jungwirth, Spin-injection Hall effect in a planar photovoltaic cell, Nature Phys. 5, 675 (2009).
9. J. Wunderlich, B. Kaestner, Jairo Sinova, T. Jungwirth, Experimental observation of the spin-Hall effect in a two-dimensional spin-orbit coupled semiconductor system, Phys. Rev. Lett. 94, 047204 (2005).
10. Jairo Sinova, D. Culcer, Q. Niu, N. A. Sinitsyn, T. Jungwirth, A.H. MacDonald, Universal Intrinsic Spin-Hall Effect, Phys. Rev. Lett. 92, 126603 (2004).