

# Curriculum Vitae

## Prof. Dr. Jairo Sinova

Univ. Professor (W3)

**Present Address:** Johannes Gutenberg University of Mainz, Institute of Physics, Staudinger Weg 7, 55128 Mainz, Germany

**e-mail:** sinova@uni-mainz.de

**Telephone:** +49(0)6131-39-23340

**Group home-page:** <http://www.sinova-group.physik.uni-mainz.de/>

**SPICE home-page:** <http://www.spice.uni-mainz.de/>

**Last Update:** 12<sup>th</sup> of December 2025

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## Academic Education

1999	Ph.D. Physics, Indiana University, (advisor Prof. Dr. S. M. Girvin)
1995	M. S. Physics, Indiana University
1994	B. S. Physics, Ohio University

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## Professional Career

Since 2014	Alexander von Humboldt Professor (W3), JGU Mainz
Since 2014	Director of the Spin Phenomena Interdisciplinary Center (SPICE)
Since 2023	Senior Professor for Physics, Texas A&M University
2007 – 2023	Independent Researcher, Institute of Physics of the Academy of Sciences of the Czech Republic
2010 – 2014	Professor for Physics, Texas A&M University
2007 – 2010	Associate Professor for Physics, Texas A&M University
2003 – 2007	Assistant Professor for Physics, Texas A&M University
2001 – 2003	Postdoctoral research at the University of Texas at Austin
1999 – 2001	Postdoctoral research at the University of Tennessee

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## Research Highlights

- Over 250 publications in top peer-reviewed journals such as Science (1), Nature (1), Science Advance (3), Nature Physics (5), Nature Materials (4), Nature Electronics (6), Nature Communications (20), Nature Nanotechnology (1), Nature Reviews Materials (1), Newton (1), npj Spintronics (2), Physical Review X (3), Physical Review Letters (46), Physical Review Materials (2), Applied Physics Lett. (10), APL Materials (1), Review of Modern Physics (4), and Physical Review B (94).
- Predicted a novel magnetically order phase (Altermagnetism) (Phys. Rev. X 2022), now having been experimentally verified. The discovery is recently highlighted in [The Economist](#) and [Science Magazine](#), in January 2024, and selected as [Physics Breakthrough of the Year 2024 by Science Magazine](#).
- 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 2006 (Science 2016) and ignited the Antiferromagnetic Spintronics field.
- Biographic indices: Over **30,400** citations with an h-factor of **74** (Web of Science) – h-factor of **86** and over **45000** citations in Google Scholar.
- Over 239 invited talks and colloquia

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## Current Research Areas

- Altermagnetic and Antiferromagnetic Spintronics, and unconventional magnetism.
- Semiconductor and metallic spintronic; spin-orbitronics.
- Emergent phenomena in strongly correlated systems revealed in transport phenomena.
- Thermoelectric effects in topological insulator and ferromagnetic materials.

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- Current driven magnetization-dynamics in magnetic and strongly spin-orbit coupled systems.
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### Awards / Honors

- 2025: Robert H. Meservey Memorial Lecture Massachusetts Institute of Technology
  - 2025: Clarivate Highly Cited Researcher award 2025
  - 2024: Clarivate Highly Cited Researcher award 2024
  - 2024: Keynote Speaker DPG March Meeting 2024
  - 2021: Alexander von Humboldt Scout
  - 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
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### Activities of Service to the Community

- **Coordinator of the SPP2558 program on Unconventional Magnetism: Beyond the S-wave Magnetism Paradigm**
  - Founder of the **Spin Phenomena Interdisciplinary Center (SPICE)**, with over 60 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 2023
  - **Organizer of the Joint European Magnetic Symposia (JEMS), September 2018**
  - Steering Committee of Elasto-Q-Mat, 2020 – Present
  - Gutenberg Forschung Kollegium, 2016 - 2023
  - Steering Committee of SFB-SPIN+X, 2015 – Present
  - TopDyn Steering Committee Member, 2019 – Present
  - Organizer of the Spintronics Tutorial session at the APS March Meeting, March 2013 and Altermagnetism Tutorials in 2024, and at the DFG Spring Meeting 2016.
  - Member of the ERC Advance Panel Review, 2016 – 2023.
  - Member of the Cottrell Scholar Advisory Group 2010-2014
  - Member of the Editorial Advisory Panel for Nature Communications 2010-2015
  - Member of the Research Corporation Advisory Board 2009-2014
  - 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.)
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### Mentoring and training of young scientists

- **Graduate students:** supervised 26 graduate students (8 are now professors or permanent position scientists)
- **Postdoctoral and Group Leaders researchers:** 24 (11 are now professors or permanent position scientists)

**Undergraduates:** 19

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## **CURRICULUM VITAE ADDENDUM**

### **MAJOR RESEARCH FUNDING:**

**Funding summary (German and European based): Total funding € 9.452.124**

Title: “Elasto-Q-Mat SFB Center” – project A03 and B05

Agency: DFG, co-speaker, multiple PIs. (co-speaker)

Amount and period for Sinova: **€ 444.800,00, July 2024-June 2028**

Title: “Spin+X SFB Center” – projects A03, A11, B15

Agency: DFG, multiple PIs.

Amount and period for Sinova’s group: **€ 889.600,00, January 2024-December 2027**

Title: “TOPSTONE - Topological Solitons in Frustrated Magnets”

Agency: DFG (with Dr. Ricardo Zarzuela)

Amount and period for Sinova: **€ 208.850,00, September 2021-September 2024**

Title: “Quench-switching of antiferromagnets explored with high spatial and temporal resolution”

Agency: DFG (with Czech Republic group)

Amount and period for Sinova: **€ 212.200,00, July 2021-June 2024**

Title: “Ab-initio discovery of high-temperature topological magnetic materials”

Agency: DFG (with Chinese group)

Amount and period for Sinova: **€ 217.500,00, January 2021-December 2023**

Title: “Magneto-Thermo-Electric Effects in Antiferromagnetic Spintronics”

Agency: DFG (with French group)

Amount and period for Sinova: **€ 214.450,00, January 2021-December 2023**

Title: “Elasto-Q-Mat SFB Center” – project A03 and B05

Agency: DFG, co-speaker, multiple PIs. (co-speaker)

Amount and period for Sinova: **€ 405.000,00, July 2020-June 2024**

Title: “Spin+X SFB Center”

Agency: DFG, multiple PIs.

Amount and period for Sinova: **€ 410.400,00, January 2020-December 2023**

Title: “Dynamical control of photocurrents, band structure topology, and topological transport via antiferromagnetic order manipulation”

Agency: TopDyn, Rheinland-Pfalz Excellence Initiative-JGU.

Amount and period for Sinova: **€ 75.000,00, January 2020-June 2021**

Title: “Controlled creation of topological magnetic texture in ferro- and antiferromagnets”

Agency: DFG, two PIs.

Amount and period: **€ 169.200,00, January 2019-February 2021**

Title: “CHIME: Chiral Induced Dynamics in Magnetic Systems”

Agency: DFG, single PI.

Amount and period: **€ 185.000,00, February 2018-December 2021**

Title: “ASPIN: Antiferromagnetic Spintronics”

Agency: European Commission Future Emergent Technologies, co-PI.

Amount and period: **€ 397.020,00, October 2017-September 2022**

Title: “Spin-charge conversion and spin caloritronics at hybrid organic-inorganic interfaces”

Agency: European Research Council, Synergy Grants, four PIs.

Amount and period: **€ 1.509.504 for Sinova (award total: € 9.651.489), March 2014-June 2021**

Title: “Alexander von Humboldt Award”

Agency: Alexander von Humboldt Foundation, single PI.

Amount and period: **€ 3.500.000, January 2014-December 2018 (ext. to December 2020)**

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Title: "Theoretical studies of spin caloritronics"  
Agency: DFG, single PI.  
Amount and period: **€ 250.000, August 2014-September 2017**

Title: "Spin+X SFB Center"  
Agency: DFG, multiple PIs.  
Amount and period for Sinova: **€ 363.600, January 2016-December 2019**

**Funding summary (US based):** Total cumulative external US based funding **\$2.591.479** for Sinova's group. \$1.698.979 in external funding as a single PI or PI (funded from 2006-2014) and \$892.500 external funding for Sinova's group as co-PI of larger projects. (Bold indicates active grants)

Title: "NRI Center: South West Academy for Nanoelectronics 2.0"  
Agency: NERC, multiple PIs. Coordinator S. Banerjee from UT  
Amount and period: \$350.000 (for Sinova), April 2013-December 2017

Title: "Topological effects and quantum pumping in complex systems with strong spin-orbit coupling"  
Agency: Weizman-Texas A&M Research Program, PI (Finkelstein and Yuval Oreg co-PI).  
Amount and period: \$100.000 Sept 2012-August 2014

Title: "Spin-dependent transport and thermoelectric phenomena in multi-band systems"  
Agency: National Science Foundation, Single PI.  
Amount and period: \$300.000 July 2011-December 2014

Title: "Realistic spin-FETs and efficient spin-logic architectures for low power logic computing"  
Agency: Office of Naval Research, Single PI.  
Amount and period: \$266.001 May 2011-April 2014

Title: "Room temperature spin-field effect transistor for post-CMOS technologies"  
Agency: Norman Hackerman Advanced Research Program, Texas, PI (Finkelstein co-PI)  
Amount and period: \$145.110, June 2010-May 2013

Title: "Towards Spin-Preserving, Heterogeneous Spin Networks"  
Agency: National Science Foundation, co-PI, part of Ohio State-MRSEC  
Amount and period: \$252.500, May 2010-August 2014

Title: "Winter School and Workshop on spin physics and topological effects in cold atoms, condensed matter, and beyond"  
Agency: National Science Foundation, Single PI  
Amount and period: \$7.000 December 2011-December 2012

Title: "Winter School and Workshop on spin physics and topological effects in cold atoms, condensed matter, and beyond"  
Agency: Office of Naval Research, Single PI  
Amount and period: \$10.000 July 2011-December 2012

Title: "NRI Center: Southwest Academy for Nanoelectronics"  
Agency: State of Texas and NERC, multiple PIs. Coordinator S. Banerjee from UT  
Amount and period: \$140.000 (for Sinova), January 2011-December 2012

Title: "CAREER: Spin Dependent Phenomena in Semiconductors"  
Agency: National Science Foundation, Single PI  
Amount and period: \$400.000, July 2006-June 2011

Title: "Spin-Hall effect in semiconductors and related phenomena in nano-spintronics" Agency: Cottrell Scholar (Research Corporation for the Advancement of Science), Single PI  
Amount and period: \$100.000, June 2006-June 2011.

Title: "NRI Center: Southwest 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 2010

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: "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: "Research in semiconductor nano-spintronics"

Agency: Texas A&M University, College of Science and Vice President for Research

Amount and period: \$96.000, January 2007-December 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 PROFESSIONAL ACTIVITIES**

### **Other professional activities:**

- Physical Review Letters Division Editor November 2020 – Present
- Vice-chair/Chair of the Gordon Conference on Nanomagnetism, July 2019/2021
- Member of the Cottrell-Fulbright Selection Panel, 2015 – Present
- Member of the ERC Advance Panel Review, 2016 – Present
- Co-organizer of KTIP conference, Fall 2019
- Organizer of the Joint European Magnetic Symposia (JEMS), September 2018
- Co-organizer of the Tutorial session at the DPG meeting 2016
- Co-Organizer of the Newspin3 Winter School and Conference, April 2013
- Organizer of the Spintronics Tutorial session at the APS March Meeting, March 2013
- Principal Organizer of the Newspin2 Winter School and Conference, December 2011
- Co-Chair of the Cottrell Scholars Conference 2011
- Member of the Cottrell Scholar Advisory Group 2010-2014
- Member of the Editorial Advisory Panel for Nature Communications 2010-2015
- Member of the Research Corporation Advisory Board 2009-2014
- Organizer of the Condensed Matter Seminar Series at Texas A&M University, 2003-Present
- Onsite NSF reviewer 2009
- Reverse sight MRSEC-NSF panelist reviewer 2008, 2011
- Organizer of the international Workshop on Semiconductor Nano-Spintronics: Spin-Hall Effect and Related Issues, Korea, August 2005
- 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 2003-2004

### **Committees:**

- Steering Committee of Elasto-Q-Mat, 2020 – Present
- Gutenberg Forschung Kollegium, 2016 - 2023
- Steering Committee of SFB-SPIN+X, 2015 – Present
- TopDyn Steering Committee Member, 2019 – Present
- Undergraduate Curriculum Committee (Chair) 2012-2013
- Undergraduate College Committee 2012-2013
- Advisory Committee 2011-2013
- Colloquium Committee 2011-2013
- Qualifying examination Committee 2008-2013
- Junior faculty mentor 2010-2013
- Budget Committee 2011
- Promotions, Tenure, and Appointments Committee 2010-2011
- Evaluation Committee 2010-2011 (Chair)
- Evaluation Committee 2009-2010 (Chair)
- Evaluation Committee 2008-2009 (Chair)
- Undergraduate Curriculum Committee 2007-2009
- Building Committee 2006-2009
- 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

## **SELECTED AND FULL PUBLICATIONS LIST**

**Over 250 publications, including:** Science (1), Nature (1), Science Advance (3), Nature Physics (5), Nature Materials (4), Nature Electronics (6), Nature Communications (20), Nature Nanotechnology (1), Nature Reviews Materials (1), Newton (1), npj Spintronics (2), Physical Review X (3), Physical Review Letters (46), Physical Review Materials (2), Applied Physics Lett. (10), APL Materials (1), Review of Modern Physics (4), and Physical Review B (94). **Biographic indices: h-index 74 WS/86 GS; citations:30,400 (WS)/ 45,000 (GS)**

### **Top 20 cites publications (citations from Web of Science/Google Scholar indicated):**

1. “*Anomalous Hall Effect*”, N. Nagaosa, Jairo Sinova, S. Onoda, A. H. MacDonald, and P. Ong, Rev. of Mod. Phys. **82**, 1539 (2010). [3925 WS/ 5800 GS]
2. “*Spin Hall Effects*”, Jairo Sinova, S. O. Valenzuela, J. Wunderlich, C. H. Back, T. Jungwirth, Review of Modern Physics **87**, 1213 (2015). [Highly-Cited 🏆 2500 WS/ 3630 GS]
3. “*Universal Intrinsic Spin-Hall Effect*”, Jairo Sinova, D. Culcer, Q. Niu, N. A. Sinitsyn, T. Jungwirth, and A.H. MacDonald, Phys. Rev. Lett. **92**, 126603 (2004). [1925 WS/ 2820 GS]
4. “*Experimental observation of the spin-Hall effect in two-dimensional spin-orbit coupled semiconductor systems*”, J. Wunderlich, B. Kaestner, Jairo Sinova, and T. Jungwirth, Phys. Rev. Lett. **94**, 047204 (2005). [1335 WS/ 1975 GS]
5. “*Theory of ferromagnetic (III,Mn)V Semiconductors*”, T. Jungwirth, Jairo Sinova, J. Masek, J. Kucera, and A. H. MacDonald, Rev. of Mod. Phys. **78**, 809 (2006). [1260 WS/ 1629 GS]
6. “*Current-induced spin-orbit torques in ferromagnetic and antiferromagnetic systems*”, A. Manchon, J. Zelezny, I.M. Miron, T. Jungwirth, Jairo Sinova, A. Thiaville, K. Garello, P. Gambardella Review of Modern Physics **91**, 035004 (2019). [Highly-Cited 🏆 1140 WS/ 1755 GS]
7. “*First Principles Calculation of Anomalous Hall Conductivity in Ferromagnetic bcc Fe*”, Yugui Yao, L. Kleinman, A. H. MacDonald, Jairo Sinova, T. Jungwirth, D.-S. Wang, E. Wang, and Q. Niu, Phys. Rev. Lett. **92**, 037204 (2004). [870 WS/ 1125 GS]
8. “*Emerging Research Landscape of Altermagnetism*”, L. Šmejkal, Jairo Sinova, T. Jungwirth Phys. Rev. X **12**, 040501 (2022). [Highly-Cited 🏆 816 WS/ 1376 GS]
9. “*Beyond Conventional Ferromagnetism and Antiferromagnetism: A Phase with Nonrelativistic Spin and Crystal Rotation Symmetry*”, L. Šmejkal, Jairo Sinova, T. Jungwirth, Phys. Rev. X **12**, 031042 (2022). [Highly-Cited 🏆 725/ 1210 GS]
10. “*Crystal time-reversal symmetry breaking and spontaneous Hall effect in collinear antiferromagnets*”, L. Šmejkal, R. González-Hernández, T. Jungwirth and J. Sinova, Science Adv. **6**, 23 (2020). [576 WS/ 810 GS]
11. “*The multiple directions of antiferromagnetic spintronics*”, T. Jungwirth, Jairo Sinova, A. Manchon, X. Marti, J. Wunderlich, C. Felser Nature Physics **14**, 200–203 (2018). [469 WS/ 660 GS]
12. “*Relativistic Neel-Order Fields Induced by Electrical Current in Antiferromagnetics*”, J. Železný, H. Gao, K. Vyborny, Jairo Sinova, T. Jungwirth, Phys. Rev. Letts. **113**, 157201 (2014). [433 WS/ 630 GS]
13. “*Writing and reading antiferromagnetic Mn2Au by Néel spin-orbit torques and large anisotropic magnetoresistance*”, S. Yu Bodnar, L. Šmejkal, I. Turek, T. Jungwirth, O. Gomonay, Jairo Sinova, A.A. Sapozhnik, H.-J. Elmers, M. Kläui, M. Jourdan, Nat. Comm. **9**, 24 (2018). [425 WS/ 570 GS]
14. “*An anomalous Hall effect in altermagnetic ruthenium dioxide*”, Z. Feng, X. Zhou, L. Šmejkal, L. Wu, Z. Zhu, H. Guo, R. González-Hernández, X. Wang, H. Yan, P. Qin, X. Zhang, H. Wu, H. Chen, Z. Meng, L. Liu, Z. Xia, Jairo Sinova, T. Jungwirth, and Z. Liu, Nature Electronics **5**, 904 (2022). [Highly-Cited 🏆 398/ 565 GS]
15. “*Altermagnetic lifting of Kramers spin degeneracy*”, J. Krempaský, L. Šmejkal, S.W. D'Souza, M. Hajlaoui, G. Springholz, K. Uhlířová, F. Alarab, P.C. Constantinou, V. Stokov, D. Usanov, W.R. Pudelko, R. González-Hernández, A. Birk Hellenes, Z. Jansa, H. Reichlová, Z. Šobáň, R. D. Gonzalez Betancourt, P. Wadley, Jairo Sinova, D. Kriegner, J. Minár, J.H. Dil, T. Jungwirth, Nature **626**, 517 (2024). [Highly-Cited 🏆 354/585 GS]
16. “*Prospects of high temperature ferromagnetism in (Ga,Mn)As semiconductors*”, T. Jungwirth, K.Y. Wang, J. Masek, K.W. Edmonds, J. König, 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, Phys. Rev. B **72**, 165204 (2005). [352 WS/ 547 GS]

17. "Efficient Electrical Spin Splitter Based on Nonrelativistic Collinear Antiferromagnetism", R. González-Hernández, L. Šmejkal, K. Výborný, Y. Yahagi, J. Sinova, T. Jungwirth, and J. Železný, *Phys. Rev. Lett.* **126**, (2021). [Highly-Cited 🏆 346/ 526 GS]
18. "Anomalous Hall antiferromagnets", L. Šmejkal, A. H. McDonald, Jairo Sinova, S. Nakatsuji and T. Jungwirth, *Nature Reviews Materials* **7**, 482 (2022). [Highly-Cited 🏆 331 WS/ 404 GS]
19. "Spin Hall effect transistor", J. Wunderlich, B. G. Park, A. C. Irvine, L. P. Zarbo, E. Rozkotova, P. Nemeč, V. Novak, Jairo Sinova, T. Jungwirth, *Science* **330**, 1801 (2010). [303 WS/ 430 GS]
20. "Giant and Tunneling Magnetoresistance in Unconventional Collinear Antiferromagnets with Nonrelativistic Spin-Momentum Coupling", L. Šmejkal, A. B. Hellenes, R. González-Hernández, Jairo Sinova, and T. Jungwirth *Phys. Rev. X* **12**, 011028 (2022). [Highly-Cited 🏆 300 WS/ 473 GS]

**Most important publications related to altermagnetism (ordered by Google Scholar citations):**

1. "[Crystal time-reversal symmetry breaking and spontaneous Hall effect in collinear antiferromagnets](#)", L. Šmejkal, R. González-Hernández, T. Jungwirth and J. Sinova, *Science Adv.* **6**, 23 (2020). [Highly-Cited 🏆 576 WS/810 GS]
2. "[Emerging Research Landscape of Altermagnetism](#)", L. Šmejkal, Jairo Sinova, T. Jungwirth *Phys. Rev. X* **12**, 040501 (2022). [Highly-Cited 🏆 816 WS/ 1376 GS]
3. "[Beyond Conventional Ferromagnetism and Antiferromagnetism: A Phase with Nonrelativistic Spin and Crystal Rotation Symmetry](#)", L. Šmejkal, Jairo Sinova, T. Jungwirth, *Phys. Rev. X* **12**, 031042 (2022). [Highly-Cited 🏆 725/ 1210 GS]
4. "[Anomalous Hall antiferromagnets](#)", L. Šmejkal, A. H. McDonald, Jairo Sinova, S. Nakatsuji and T. Jungwirth, *Nature Reviews Materials* **7**, 482 (2022). [Highly-Cited 🏆 331 WS/ 404 GS]
5. "[Efficient Electrical Spin Splitter Based on Nonrelativistic Collinear Antiferromagnetism](#)", R. González-Hernández, L. Šmejkal, K. Výborný, Y. Yahagi, J. Sinova, T. Jungwirth, and J. Železný, *Phys. Rev. Lett.* **126**, (2021). [Highly-Cited 🏆 346/ 526 GS]
6. "[Giant and Tunneling Magnetoresistance in Unconventional Collinear Antiferromagnets with Nonrelativistic Spin-Momentum Coupling](#)", L. Šmejkal, A. B. Hellenes, R. González-Hernández, Jairo Sinova, and T. Jungwirth *Phys. Rev. X* **12**, 011028 (2022). [Highly-Cited 🏆 300 WS/ 473 GS]
7. "[An anomalous Hall effect in altermagnetic ruthenium dioxide](#)", Z. Feng, X. Zhou, L. Šmejkal, L. Wu, Z. Zhu, H. Guo, R. González-Hernández, X. Wang, H. Yan, P. Qin, X. Zhang, H. Wu, H. Chen, Z. Meng, L. Liu, Z. Xia, Jairo Sinova, T. Jungwirth, and Z. Liu, *Nature Electronics* **5**, 904 (2022). [Highly-Cited 🏆 398/ 565 GS]
8. "[Spontaneous Anomalous Hall Effect Arising from an Unconventional Compensated Magnetic Phase in a Semiconductor](#)", R. D. Gonzalez Betancourt, J. Zubáč, R. Gonzalez-Hernandez, K. Geishendorf, Z. Šobáň, G. Springholz, K. Olejník, L. Šmejkal, Jairo Sinova, T. Jungwirth, S. T. B. Goennenwein, A. Thomas, H. Reichlová, J. Železný, and D. Kriegner, *Phys. Rev. Lett.* **130**, 036702 (2023). [Highly-Cited 🏆 246/ 373 GS]
9. "[Crystal Thermal Transport in Altermagnetic RuO<sub>2</sub>](#)", Xiaodong Zhou, Wanxiang Feng, Run-Wu Zhang, Libor Šmejkal, Jairo Sinova, Yuriy Mokrousov, and Yugui Yao, *Phys. Rev. Lett.* **132**, 05670 (2024) [Highly-Cited 🏆 63/ 232 GS]
10. "[Chiral magnons in altermagnetic RuO<sub>2</sub>](#)", Libor Šmejkal, Alberto Marmodoro, Kyo-Hoon Ahn, Rafael Gonzalez-Hernandez, Ilja Turek, Sergiy Mankovsky, Hubert Ebert, Sunil W. D'Souza, Ondřej Šipr, Jairo Sinova and Tomas Jungwirth, *Phys. Rev. Lett.* **131**, 256703 (2023). [Highly-Cited 🏆 141/ 223 GS]
11. "[Altermagnetic lifting of Kramers spin degeneracy](#)", J. Krempaský, L. Šmejkal, S.W. D'Souza, M. Hajlaoui, G. Springholz, K. Uhlířová, F. Alarab, P.C. Constantinou, V. Stokov, D. Usanov, W.R. Pudelko, R. González-Hernández, A. Birk Hellenes, Z. Jansa, H. Reichlová, Z. Šobáň, R. D. Gonzalez Betancourt, P. Wadley, Jairo Sinova, D. Kriegner, J. Minár, J.H. Dil, T. Jungwirth, *Nature* **626**, 517 (2024). [Highly-Cited 🏆 354/ 585 GS]
12. "[Observation of time-reversal symmetry breaking in the band structure of altermagnetic RuO<sub>2</sub>](#)", O. Fedchenko, J. Minar, A. Akashdeep, S. W. D'Souza, D. Vasilyev, O. Tkach, L. Odenbreit, Q. L. Nguyen, D. Kutnyakhov, N. Wind, L. Wenthaus, M. Scholz, K. Rosnagel, M. Hoesch, M. Aeschliemann, B. Stadtmueller, M. Klauui, G. Schoenhense, G. Jakob, T. Jungwirth, L. Šmejkal, Jairo Sinova, H. J. Elmers, *Science Advances* **10**, eadj4883 (2024). [Highly-Cited 🏆 207/ 310 GS]
13. "[Saturation of anomalous Hall effect at high magnetic fields in altermagnetic RuO<sub>2</sub>](#)", T. Tschirner, P. Keßler, R. D. G. Betancourt, T. Kotte, D. Kriegner, B. Büchner, J. Dufouleur, M. Kamp, V. Jovic, L. Šmejkal, J. Sinova, R. Claessen, T. Jungwirth, S. Moser, H. Reichlova, L. Veyrat, *APL Mater.* **11**, 101103 (2023). [60 WS/ 102 GS]
14. "[Observation of a spontaneous anomalous Hall response in the Mn<sub>5</sub>Si<sub>3</sub> d-wave altermagnet candidate](#)", Helena Reichlova, Rafael Lopes Seeger, Rafael González-Hernández, Ismaila Kounta, Richard Schlitz, Dominik Kriegner, Philipp Ritzinger, Michaela Lammel, Miina Leiviskä, Anna Birk Hellenes, Kamil Olejník, Vaclav Petříček, Petr Doležal, Lukas Horak, Eva Schmoranzero, Antonín Badura, Sylvain Bertaina, Andy Thomas, Vincent Baltz, Lisa Michez, Jairo Sinova, Sebastian T. B.

- Goennenwein, Tomáš Jungwirth, Libor Šmejkal, Nat Commun **15**, 4961 (2024) [Highly-Cited 🏆 88/ 161 GS]
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## **CHAPTERS IN BOOKS**

1. Jairo Sinova and T. Jungwirth, "Diluted Magnetic Semiconductors", in *Frontiers in Magnetic Materials*, Edited by A. V. Narlikar, Springer, New York, 2005.
2. Jairo Sinova and A. H. MacDonald, "Theory of Spin-Orbit effects in Semiconductors", in *Spintronics included in the series of Semiconductors and Semimetals*, edited by T. Dietl, D. Awschalom, M. Kaminska, and H. Ohno, Elsevier, 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).

4. J. Wunderlich, L. P. Zarbo, Jairo Sinova, and T. Jungwirth, "Spin-injection Hall Effect", in Spin Current, edited by S. Maekawa, S. O. Valenzuela, E. Saitoh, and T. Kimura, Oxford University Press, Oxford (2012).

## **INVITED TALKS**

239. "Unconventional Magnetism: the emergence of altermagnetism and beyond", 70th Birthday Symposium for Stuart Parkin, Schloss Ringberg, 11th of December, 2025
238. "Unconventional Magnetism: the emergence of altermagnetism and beyond", International Conference on Layered Materials and Devices: From Atoms to Chips, College Station, Texas, 20th of November, 2025
237. "Unconventional Magnetism: the emergence of altermagnetism and beyond", International Conference on Layered Materials and Devices: From Atoms to Chips, Braga, Portugal 4th of November, 2025
236. "Unconventional Magnetism: the emergence of altermagnetism and beyond", QU-QuMR – International Workshop on Unconventional Magnetism in Quantum Materials, Kiev (on-line), 14th of July, 2025
235. "Unconventional Magnetism: the emergence of altermagnetism and beyond", FISMAT 2025 Venice, Italy, 9th of July, 2025
234. "Unconventional Magnetism: the emergence of altermagnetism and beyond", GRC Spin Dynamics in Nanostructures Les Diablerets, Switzerland, 2nd of July, 2025
233. "The emergence of altermagnetism: unconventional symmetry breaking and beyond", Robert H. Meservey Memorial Lectures Massachusetts Institute of Technology, 18th of April, 2025
232. "The emergence of altermagnetism: unconventional time reversal symmetry breaking and beyond", Harvard University, 17th of April, 2025
231. "Unconventional magnetism: the emergence of altermagnetism and its new variants in non-collinear systems", APS March Meeting Tutorial, 16th of March, 2025
230. "From spintronic anomalies to the discovery of altermagnetism and beyond: the emergence exchange-driven unconventional magnetism", 2025 IEEE Conference on Advances in Magnetism, 9th of February, 2025
229. "Unconventional magnetism in spintronics: the emergence of nodal altermagnetism and beyond", MPI Stuttgart, 28th of January, 2025
228. "Unconventional magnetism in spintronics: the emergence of nodal altermagnetism and beyond", Texas A&M University, 22nd of January, 2025
227. "Unconventional magnetism in spintronics: the emergence of nodal altermagnetism and beyond", MMM-INTERMAG 2025, New Orleans, 14th of January, 2025
226. "Unconventional magnetism: the emergence of altermagnetism and its new variants in non-collinear systems", PETASPIN School of Applied spintronics III, Messina, Sicily, Italy, 11th of December, 2024
225. "Unconventional magnetism in spintronics: the emergence of altermagnetism and beyond", AMATS 2024 Valladolid, 13th of November, 2024
224. "Unconventional magnetism in spintronics: the emergence of nodal altermagnetism and beyond", ETH Zürich & Universität Zürich, 23rd of October, 2024
223. "Unconventional magnetism in spintronics: the emergence of nodal altermagnetism and beyond", Spin+X Retreat, 11th of October, 2024
222. "Unconventional magnetism in spintronics: the emergence of altermagnetism and beyond", 4<sup>th</sup> of September, 2024, University of Valencia
221. "Unconventional magnetism in spintronics: the emergence of altermagnetism and beyond", 10th of July, Universität Duisburg-Essen
220. "Unconventional magnetism in spintronics: the emergence of altermagnetism and beyond", 9th of July, Universität zu Köln
219. "The new era of unconventional magnetism: the emergence of altermagnetism and its new variants", 26th of June, Ingrid Mertig's WE-Heraeus-Senior Professorship Colloquium, Martin Luther Universität Halle-Wittenberg
218. "The emergence of altermagnetism and sustainable teramagnetic IT: reaching ultimate the limits of speed, density, and efficiency beyond CMOS and ferromagnetic IT", 29th of May, ARL Seminar on Altermagnetism
217. "Unconventional magnetism: the emergence of altermagnetism and its new variants", 8th of May, 2024 QUANTUMatter2024, San Sebastian
216. "Unconventional magnetism: the emergence of altermagnetism and its new variants in non-collinear systems", 22nd of April, 2024 European School on Superconductivity and Magnetism in Quantum Materials, Gandia, Valencia
215. "Unconventional magnetism: the emergence of altermagnetism and its new variants in non-collinear systems", 18th of April, EMFL School 2024, Dresden
214. "Unconventional magnetism in spintronics: the emergence of altermagnetism and its new variants", 28th of March, Indiana University CM Seminar
213. "Altermagnetism: the emergence of unconventional even-parity collinear magnetism in spintronics", 27th of March, Indiana University Colloquium
212. "Unconventional Magnetism in Spintronics: the emergence of altermagnetism and beyond", 20th of March, 87th DPG-Frühjahrstagung 2024
211. "The Emergent Research Landscape of Altermagnetism: Unconventional Magnetism and its New Connections", 24th of January, Spanish-Germany WE-Heraeus-Seminar
210. "Hidden vs explicit magnetization: magnetic dynamics in anti- and altermagnets", 9th of January, USA-German Workshop, Bad Honnef
209. "D-wave magnetism: the emergence of altermagnetism", 7th of December, MIT NanoBio Seminar
208. "D-wave magnetism: the emergence of altermagnetism", 24th of November, Universidad Complutense de Madrid, Spain

207. "D-wave magnetism: the emergence of altermagnetism", 10th of November, TAMU, USA
206. "Hidden vs explicit magnetization: magnetic dynamics in anti- and altermagnets", 5th of October, Bad Durkheim, Spin+X Retreat Fall 2023
205. "The emergent research landscape of altermagnetism: d-wave unconventional magnetism and its new connections", 7th of September TMAG 2023, Rome
204. "The emergence of a new magnetic class: altermagnets and d-wave unconventional magnetism", 9th of August Elastq23, MPIPKS, Dresden
203. "The emergence of a new magnetic class: altermagnets and d-wave unconventional magnetism", 23rd of May Spin Caloritronics XII, Tokyo, Japan
202. "The emergence of a new magnetic class: altermagnets and d-wave unconventional magnetism", 19th of April Magnetic Frontiers, Orlando, Florida
201. "The emergence of a new magnetic class: altermagnets and d-wave unconventional magnetism", 24th of March IMPRS Seminar, MPI PKS Dresden, Germany
200. "The emergence of a new magnetic class: altermagnets and d-wave unconventional magnetism", 2nd of February 2023 GEFES Salamanca, Spain
199. "The emergence of a new magnetic class: altermagnets and d-wave unconventional magnetism", 30th of January 2023 IMDEA Nanoscience Institute, Canto Blanco, Madrid, Spain
198. "The emergence of a new magnetic class: altermagnets and d-wave unconventional magnetism", 10th of November 2022 Spin Argentina 2022, Bariloche
197. "The emergence of a new magnetic class: altermagnets and d-wave unconventional magnetism", 1st of November 2022 Ohio State University
196. "The emergent landscape of altermagnets", 13th of October 2022 MagnEFi Conference, Crete
195. "Emergence of a new non-relativistic magnetic class: the discovery of altermagnets", 30th of May 2022 Instituto de Ciencia de Materiales de Madrid, CSIC
194. "Emergence of a new non-relativistic magnetic class: the discovery of altermagnets", 26th of May 2022 CSIC - Universidad de Zaragoza
193. "Non-relativistic spin-splitter, GMR/TMR, and Crystal Anomalous Hall Effect in Altermagnets: spin transport enhanced by spin-group symmetries", 17th of February 2022 ARSM 20202 Advance Research Strategy Meeting
192. "Emergence of a new non-relativistic magnetic class: the discovery of altermagnets", 24th of January 2022 UC Riverside, USA.
191. "Altermagnetism: spin-momentum locked phase protected by nonrelativistic symmetries", 5th of January 2022, Bad Honnef, Germany.
190. "Direct Observation of Antiferromagnetic Parity Violation in the Electronic Structure of Mn<sub>2</sub>Au and Néel vector microscopy in metallic AFMs", 8th of December 2021, ICAMD 2021, South Korea.
189. "Direct Observation of Antiferromagnetic Parity Violation in the Electronic Structure of Mn<sub>2</sub>Au and Néel vector microscopy in metallic AFMs", PetaSpin Seminars, 3rd of December (2021).
188. "Direct Observation of Antiferromagnetic Parity Violation in the Electronic Structure of Mn<sub>2</sub>Au and ...", Lanna Meeting 2021, 30th of November (2021).
187. "Emergence of a new non-relativistic magnetic class: the discovery of altermagnets", Texas A&M University, 16th of November (2021).
186. "Direct Observation of Antiferromagnetic Parity Violation in the Electronic Structure of Mn<sub>2</sub>Au and ...", Texas A&M University, 12th of November (2021).
185. "Emergent Antiferromagnetic Spintronics: from Dirac quasiparticles to non-relativistic novel magnetic classes", Computational materials discovery of unconventional magnetism EPFL, Lausanne, 27th of October (2021).
184. "Topological Antiferromagnetic Spintronics and the crystal Hall effects", Trends in Magnetism 2021 PETASPIN Conference, 6-10th of September 2021.
183. "Emergent Antiferromagnetic Spintronics: from Dirac quasiparticles to non-relativistic novel magnetic classes", W2S Seminar, 2nd of September (2021).
182. "Emergent Antiferromagnetic Spintronics: from Dirac quasiparticles to non-relativistic novel magnetic classes", Quantum Materials for Modern Magnetism and Spintronics (Q3MS), 14th of Juli (2021).
181. "Emergent Antiferromagnetic Spintronics: from Dirac quasiparticles to non-relativistic novel magnetic classes", Materials for Humanity 2021, 9th of Juli (2021).
180. "Why Spintronics: From Magnetic Cats to Artificial Intelligence: The Circular Technological Revolution of Spintronics", ESPIN RED School on Spintronics (on line), 17th of May (2021).
179. "Topological Antiferromagnetic Spintronics and the crystal Hall effects", CRIM, 9th of September (2020).
178. "Topological Antiferromagnetic Spintronics and the crystal Hall effects", APCTP-KIAS Quantum Materials Symposium 2020, South Korea, 13th of February (2020).
177. "Topological Antiferromagnetic Spintronics and the crystal Hall effects", New Perspectives in Spin Conversion Science 2020, University of Tokyo, Japan, 4th of February (2020).
176. "Topological Antiferromagnetic Spintronics and the crystal Hall effects", SMS 2019, Sendai, Japan, 27th of November (2019).
175. "From Magnetic Cats to Artificial Intelligence: The Circular Technological Revolution of Spintronics", Kavli Institute of Theoretical Physics, Santa Barbara, USA, 30th of October (2019).
174. "Topological Antiferromagnetic Spintronics and the crystal Hall effects", KITP, Santa Barbara, USA, 23rd of October (2019).
173. "Topological Antiferromagnetic Spintronics and the crystal Hall effects", Texas A&M University, College Station, USA, 17th of October (2019).
172. "Topological Antiferromagnetic Spintronics and the crystal Hall effects", MPI, Halle, Germany, 9th of August (2019).
171. "Topological Antiferromagnetic Spintronics and the crystal Hall effects", Quantum Designer Physics, San Sebastian, Spain, 3rd of July (2019).

170. "Topological Antiferromagnetic Spintronics: from spin-orbit torques, to Neel spin-orbit torques to Dirac fermions", International Symposium on Metallic Multilayers, Madrid, Spain, 19<sup>th</sup> of Juni (2019).
169. "A dormant giant awakens: the new era of antiferromagnetic spintronics", Würzburg Universität, Germany, 30<sup>th</sup> of April (2019).
168. "A dormant giant awakens: the new era of antiferromagnetic spintronics", Johannes Kepler Universität, Linz, Austria, 13<sup>th</sup> of March (2019).
167. "A dormant giant awakens: the new era of antiferromagnetic spintronics", Freie Universität, Berlin, Germany, 18<sup>th</sup> of January (2019).
166. "Topological Antiferromagnetic Spintronics: from spin-orbit torques, to Neel spin-orbit torques to Dirac fermions", EPFL, Lausanne, Switzerland, 19<sup>th</sup> of October (2018).
165. "Topological Antiferromagnetic Spintronics: from spin-orbit torques, to Neel spin-orbit torques to Dirac fermions", Quantum Spintronics 2018, Trondheim, Norway, 5<sup>th</sup> of October (2018).
164. "Topological Antiferromagnetic Spintronics: from spin-orbit torques, to Neel spin-orbit torques to Dirac fermions", NIST, Gaithersburg, Maryland, USA, 9<sup>th</sup> of August (2018).
163. "Topological Antiferromagnetic Spintronics: from spin-orbit torques, to Neel spin-orbit torques to Dirac fermions", Quantum Designer Physics Conference, San Sebastian, Spain, 31<sup>st</sup> of May (2018).
162. "Topological Antiferromagnetic Spintronics: from spin Hall effect to spin-orbit torques, to Neel spin-orbit torques, to tunable Dirac fermions", Nanofront-mag-cm, Madrid, Spain, 12<sup>th</sup> of June (2018).
161. "Topological Antiferromagnetic Spintronics: from spin-orbit torques, to Neel spin-orbit torques to Dirac fermions", Future Perspectives on Novel Magnetic Materials, Santorini, Greece, 31<sup>st</sup> of May (2018).
160. "Topological Antiferromagnetic Spintronics: from spin-orbit torques, to Neel spin-orbit torques to Dirac fermions", Invited talk at the APS March Meeting, Los Angeles, USA, 5<sup>th</sup> of March (2018).
159. "Topological Antiferromagnetic Spintronics: a dormant giant awakens", Köln Universität, Germany 26<sup>th</sup> of February (2018).
158. "A dormant giant awakens: the new era of antiferromagnetic spintronics", ICN2 Severo Ochoa International Conference, Barcelona, 16<sup>th</sup> of February (2018).
157. "Topological Antiferromagnetic Spintronics: from spin-orbit torques, to Neel spin-orbit torques to Dirac fermions", Gordon Research Conference, Switzerland, 17<sup>th</sup> of July (2017).
156. "Topological Antiferromagnetic Spintronics: from spin-orbit torques, to Neel spin-orbit torques to Dirac fermions", SFB 668 International Symposium, Hamburg, Germany, 28<sup>th</sup> of June (2017).
155. "Topological Antiferromagnetic Spintronics: from Neel spin-orbit torques to Dirac fermions", INTERMAG 2017, Dublin, Ireland, 28<sup>th</sup> of April (2017).
154. "Topological Antiferromagnetic Spintronics: from Neel spin-orbit torques to Dirac fermions", Spin Mechanics 4, Fairmount Chateau Lake Louise, Alberta, Canada, 22<sup>nd</sup> of February (2017).
153. "A dormant giant awakens: the new era of antiferromagnetic spintronics", Colloquium, Texas A&M University, 16<sup>th</sup> of February (2017).
152. "Can a ferromagnet behave like a cat? How the spin Hall effect and relativistic torques are opening new paths for information storage", Colloquium, Geotho University am Frankfurt, Frankfurt, Germany, 30<sup>th</sup> of November (2016).
151. "Can a ferromagnet behave like a cat? How the spin Hall effect and relativistic torques are opening new paths for information storage", Colloquium, Darmstadt University, Darmstadt, Germany, 25<sup>th</sup> of November (2016).
152. "Relativity shakes future technology: how the spin Hall effect and relativistic torques are opening new paths for information storage", ECMoS 2016, Bologna, Italy, 17<sup>th</sup> of November (2016).
151. "Can a ferromagnet behave like a cat? How the spin Hall effect and relativistic torques are opening new paths for information storage", Colloquium, Monash University, Melbourne, Australia, 4<sup>th</sup> of November (2016).
150. "Antiferromagnetic spin-orbitronics", Nanospin Conversion and Quantum Spin Dynamics Workshop, Tokyo, Japan, 13<sup>th</sup> of October (2016).
149. "Antiferromagnetic Spintronics", Nanoscience and Quantum Transport, Kiev, Ukraine, 10<sup>th</sup> of October (2016).
148. "Spin-Torques and Spin Hall Effect in ferromagnets and antiferromagnets", Nanoscience and Quantum Transport, Kiev, Ukraine, 9<sup>th</sup> of October (2016).
147. "Spin-orbitronics in ferromagnets, antiferromagnets and beyond", Antiferromagnets Spintronics Workshop, Mainz, Germany, 27<sup>th</sup> of September (2016).
146. "Spin-orbit torques, Neel spin-orbit torques, and Weyl fermions in antiferromagnets", International Spintronics and Spin Waves Workshop, San Sebastian, Spain, 19<sup>th</sup> of July (2016).
145. "Spin-orbit coupling effects and spin-orbit torques in ferromagnets and antiferromagnets", Insulitronics 2016, Longyerbyen, Svalbard, 29<sup>th</sup> of May (2016).
144. "From SHE to SOT: can a ferromagnet behave like a cat?", SPIN+X ITN Workshop, Technical University Kaiserslautern, Kaiserslautern, Germany, 24<sup>th</sup> of May (2016).
143. "El Tango de la Física: investigacion espintronica a la Humboldt", Catedra Europea, Universidad del Norte, Baranquilla, Colombia, 17<sup>th</sup> of March (2016).
142. Berry phase linked spin-orbit torques in FM and AFM systems", Invited Talk, DPG Spring Meeting, Regensburg, Germany (2016).
141. "Relativistic spin-orbit torques in antiferromagnets and related effects: from 2D to 3D", New Trends I 2D Systems, Madrid, Spain, 23<sup>rd</sup> of February (2016)
140. "Can a ferromagnet behave like a cat? How the spin Hall effect and relativistic torques are opening new paths for information storage", Colloquium, Karlsruhe Institute of Technology, Karlsruhe, Germany, 21<sup>st</sup> of January (2016).
139. "SHE and spin-orbit torques", Spintronics with Antiferromagnetism, Sendai, Japa, 17<sup>th</sup> of November (2015).
138. "Relativistic spin-orbit torques", SOC and Spin Mechanics Workshop, Mainz, Germany, 23<sup>rd</sup> of October (2015).

137. "Relativistic spin-orbit torques in ferromagnets and antiferromagnets: connecting spin Hall effect, spin galvanic effect and spin-orbit torques", Psi-k 2015 Conference, San Sebastian, 8<sup>th</sup> of September (2015).
136. "Relativistic spin-orbit torques in ferromagnets and antiferromagnets", Spin Mechanics 3 Workshop, München, Germany, 26<sup>th</sup> of June (2015).
135. "Relativity shakes future technology: how the spin Hall effect and relativistic torques are opening new paths for information storage", Colloquium, University of Nijmegen, Nijmegen, The Netherlands, 29<sup>th</sup> of May (2015).
134. "Relativity shakes future technology: how the spin Hall effect and relativistic torques are opening new paths for information storage", Colloquium, University of Duisburg, Duisburg, Germany, 8<sup>th</sup> of April (2015).
133. "Spin-Orbit Torques in ferromagnets and antiferromagnets, DMI, and other random thoughts", Workshop of the group of Prof. Felser, Dresden, Germany, 26<sup>th</sup> of March (2015).
132. "Spintronics Research a la Humboldt: globally connecting nature, cultures, and people", Humboldt Colloquium, Sao Paulo, Brazil, 26<sup>th</sup> of February (2015).
131. "Relativity shakes future technology: how the spin Hall effect and relativistic torques are opening new paths for information storage", Colloquium at the University of Jyväskylä, Jyväskylä, Finland, 20<sup>th</sup> of February 2015.
130. "New twists and turns in the spin-orbitronics tango: from fundamental discoveries to practical applications", Klosters, Switzerland, 9<sup>th</sup> of February (2015).
129. "Intrinsic current-driven spin-orbit torques and Neel spin-orbit fields in ferromagnetic and antiferromagnetic systems", New Insights in the Physics of Magnetic Nanostructures Workshop, Tokai, Japa, 27<sup>th</sup> of January (2015)
128. "Relativity shakes future technology: how the spin Hall effect and relativistic torques are opening new paths for information storage", IMR/AIMR Tohoku University, Sendai, Japan, 22<sup>nd</sup> of January (2015).
127. "Intrinsic current-driven spin-orbit torques and Neel spin-orbit fields in ferromagnetic and antiferromagnetic systems", Zao Workshop, Japan, 18<sup>th</sup> of January (2015).
126. "Relativity shakes future technology: how the spin Hall effect and relativistic torques are opening new paths for information storage", Colloquium, Konstanz Universität, Konstanz, Germany, 25<sup>th</sup> of November (2014).
125. "Spin-Orbit Torques and Spin-Transfer Torques", SPICE Workshop on Modern Simulation Methods in Material Science, Schloß Waldhausen, Mainz, Germany, 20<sup>th</sup> of November (2014).
124. "Spintronics: a birds eye view", SPICE Workshop on Modern Simulation Methods in Material Science, Schloß Waldhausen, Mainz, Germany, 18<sup>th</sup> of November (2014).
123. "Intrinsic current-driven spin-orbit torques and Néel spin-orbit fields in ferromagnetic and antiferromagnetic systems", MMM, Honolulu, Hawaii, USA, 4<sup>th</sup> of November (2014).
122. "Relativity shakes future technology: how the spin Hall effect and relativistic torques are opening new paths for information storage", Colloquium, Texas A&M University, College Station, Texas, USA, 30<sup>th</sup> of October (2014).
121. "Relativity shakes future technology: how the spin Hall effect and relativistic torques are opening new paths for information storage", Colloquium, Regensburg Universität, Regensburg, Germany, 13<sup>th</sup> of October (2014).
120. "Spin Orbit-Torques", SpinCat School, Bielefeld, Germany, 1<sup>st</sup> of October (2014).
119. "But Nobody Told Me This", Marie Curie School on Spintronics, Paris, France, 17<sup>th</sup> of September (2014).
118. "Spin Orbit-Torques", Marie Curie School on Spintronics, Paris, France, 17<sup>th</sup> of September (2014).
117. "Joining spin-dependent transport phenomena and magnetization dynamics for future MRAM technology", SSPCM 2014, Rzeszow, Poland, 6<sup>th</sup> of September (2014).
116. "Spin Transport and Spin-Orbit Coupling: Organic Spin-Orbitronics", Organic Spintronics Workshop, JGU, Mainz, Germany, 29<sup>th</sup> of August (2014).
115. "Large Tunneling Magneto-Seebeck Effect in a CoPt/MgO/Pt Tunneling Junction", SpinCat VI, Irsee, Germany, 17<sup>th</sup> of July (2014).
114. "Spin-Orbit Torque in Ferromagnetic and Antiferromagnetic Systems", Spin Mechanics 2, Sendai, Japan, 24<sup>th</sup> of June (2014).
113. "Relativity road to future technology: exploiting spin-orbit coupling to new possibilities for information storage", Colloquium, Johannes Gutenberg Universität, Mainz, Germany, 17<sup>th</sup> of June (2014).
112. "Relativity road to future technology: exploiting spin-orbit coupling to new possibilities for information storage", ICQ Workshop in spintronics, Beijing, 3<sup>rd</sup> of June (2014).
111. "Relativity road to future technology: exploiting spin-orbit coupling to new possibilities for information storage", Colloquium, Würzburg Universität, Würzburg, Germany, May 12<sup>th</sup> (2014).
110. "Anti-damping intrinsic spin-orbit torque arising from Berry phases", 14<sup>th</sup> REIMEI Workshop on Spin Currents and Related Phenomena, ILL, Grenoble, France, February 11<sup>th</sup> (2014).
109. "Anti-damping intrinsic spin-orbit torque arising from Berry phases", Spin Transport Beyond Boltzmann, Bad Honnef, Germany, January 9<sup>th</sup> (2014).
110. "New twists in the spintronics: from anomalous Hall effect, to spin-helix transistor, to topological thermoelectrics", Ohio University, Ohio, November 22<sup>nd</sup> (2013).
109. "Anti-damping intrinsic spin-orbit torque", Concepts in Spintronics- KITP Conference, Santa Barbara, October 2<sup>nd</sup> (2013).
108. "New twists in the spintronics: from anomalous Hall effect, to spin-helix transistor, to topological thermoelectrics", University of Texas, Austin, Texas, September 11<sup>th</sup> (2013).
107. "Berry phase intrinsic anti-damping spin-orbit torque", Spin Dynamivs in Nanostructures- Gordon Conference, Hong Kong, August 20<sup>th</sup> (2013).
106. "Berry phase intrinsic anti-damping spin-orbit torque", 16<sup>th</sup> International Conference on Modulated Semiconductor Structures, Wroclaw, Poland, July 4<sup>th</sup> (2013).
105. "Berry phase intrinsic anti-damping spin-orbit torque", JGU Mainz, Mainz, Germany, July 1<sup>st</sup> (2013).
104. "New twists in the spintronics: from anomalous Hall effect, to spin-helix transistor, to topological thermoelectrics", Technical University Dresden, Dresden, Germany, June 12<sup>th</sup> (2013).
103. "Berry phase intrinsic anti-damping spin-orbit torque", Max Plank Institute, Dresden, June 11<sup>th</sup> (2013).
102. "Transverse Spin Seebeck Effect", Spin Caloritronics V, Columbus, Ohio, May 15<sup>th</sup> (2013).
101. "Spin-Orbit Effects ", NewSpin3 conference, Mainz, Germany, April 8<sup>th</sup> (2013).

100. "Cottrell Scholars Collaborative: Integrating Research and Teaching ", March Meeting 2013, Baltimore, March 22<sup>nd</sup> (2013).
99. "New twists in the spintronics: from anomalous Hall effect, to spin-helix transistor, to topological thermoelectrics", University of Michigan, Ann Arbor, February 19<sup>th</sup> (2013).
98. "New twists in the spintronics: from anomalous Hall effect, to spin-helix transistor, to topological thermoelectrics", Temple University, Philadelphia, January 29<sup>th</sup> (2013).
97. "New twists in the spintronics: from anomalous Hall effect, to spin-helix transistor, to topological thermoelectrics", Syracuse University, New York, January 25<sup>th</sup> (2013).
96. "New twists and turns in the spintronics tango: from anomalous Hall effect, to spin-helix transistor, to topological thermoelectrics", University of Mainz, Mainz, December 6<sup>th</sup> (2012).
95. "Present and future challenges in Berry's phase induced Hall effects ", Workshop on spin-orbit driven transverse transport phenomena, Bad Honnef, Germany, December 4<sup>th</sup> (2012).
94. "Theory of the anomalous Hall effect: from metallic to insulating hopping regime", SFB 689 Spintronics Workshop, Regensburg, Germany, September 19<sup>th</sup> (2012).
93. "But nobody told me this!", Graduate Student Mentoring colloquium, Texas A&M University, August 20<sup>th</sup> (2012).
92. "Expecting the unexpected in the spin Hall effect: from fundamental to practical!", International Workshop on Nanomagnetism & Superconductivity, Comaruga, Spain, July 1<sup>st</sup> (2012).
91. "Expecting the unexpected in the spin Hall effect: from fundamental to practical!", invited talk at the Frontiers in Materials: Spintronics workshop as part of the EMRS spring meeting, Strasbourg, May 13<sup>th</sup> (2012).
90. "New Twist in Spintronics", colloquium at University at Alabama, Tuscaloosa, April 6<sup>th</sup> (2012).
89. "Theory of the anomalous Hall effect: from metallic to insulating regime", invited talk at the German Physical Society Meeting, Berlin, Germany, March 26<sup>th</sup> (2012).
88. "Topological thermoelectrics", RIKEN-APW-APCTP joint workshop "Recent trends in condensed matter physics", RINKEN-Saitama, Japan, January 14<sup>th</sup> (2012).
87. "Spin Hall effect transistors", 2nd ASRC International Workshop on "Magnetic Materials and Nanostructures", Tokai, Japan, January 10<sup>th</sup> (2012).
86. "Transport Theory and Simulation of Hybrid Structures", International Symposium High Performance Computing in Nano-Spintronics, Hamburg, Germany, November 30<sup>th</sup> (2011).
85. "New Twist in Spin Physics", colloquium at University at Buffalo SUNY, Buffalo, October 6<sup>th</sup> (2011).
84. "Spin-injection Hall effect: a new member of the spintronics Hall family and its implications in nano-spintronics", Hamburg, Germany, May 25<sup>th</sup> (2011).
83. "Topological thermoelectrics", MRS Spring Meeting, San Francisco, April 28<sup>th</sup> (2011).
82. "Spin Hall effect and devices: anomalous and spin Hall effect, spin-helix transistors, and beyond", APS March Meeting, Dallas, March 20<sup>th</sup> (2011).
81. "Echoes of special relativity in condensed matter physics: anomalous Hall effect, spin-helix transistors, and topological thermoelectrics", NORDITA, Stockholm, Sweden March 17<sup>th</sup> (2011).
80. "Spin Hall effect transistors and topological thermoelectrics", Autonoma University, Madrid, Spain, November 18<sup>th</sup> (2010).
79. "Echoes of special relativity in condensed matter physics: anomalous Hall effect, spin-helix transistors, and topological thermoelectrics", University of Cologne, Cologne, Germany, November 12<sup>th</sup> (2010).
78. "Echoes of special relativity in condensed matter physics: anomalous Hall effect, spin-helix transistors, and topological thermoelectrics", University of Utah, Salt Lake City, November 9<sup>th</sup> (2010).
77. "Making semiconductors magnetic: new materials properties, devices, and future", University of Utah, Salt Lake City, November 9<sup>th</sup> (2010).
76. "Spin-injection Hall effect: a new member of the spintronics Hall family and its implications in nano-spintronics", SPIE Spintronics-III International Conference, San Diego, August 1<sup>st</sup> (2010).
75. "Anomalous Hall effect in multiband disordered systems: from the metallic to the hopping regime", Fudan University, Shanghai, China June 17<sup>th</sup> (2010).
74. "Spin-dependent Hall effects and other thoughts on recent progress and future challenges in spintronics", KITPC, Beijing, China, June 7<sup>th</sup> (2010).
73. "New paradigms in spin-charge coupled physics", Free University Berlin, April 12<sup>th</sup> (2010).
72. "Exploiting the echoes of special relativity in condensed matter: new paradigms in spin-charge coupled physics", Ohio State University, February 9<sup>th</sup> (2010).
71. "Spin-injection Hall effect", UC San Diego, January 10<sup>th</sup> (2010).
70. "Spin-injection Hall effect: a new paradigm towards a room temperature Datta-Das type FET", Utrecht, The Netherlands, January 8<sup>th</sup> (2010).

69. "Spin-injection Hall effect: nanoelectronics, spintronics, and materials control in multiband complex systems", University of Texas, December 3<sup>rd</sup> (2009).
68. "A road to next generation technologies through basic research: Nanoelectronics, spintronics, and materials control in multiband complex systems", Jülich, Germany, November 11<sup>th</sup> (2009).
67. "Spin-injection Hall effect: a new member of the spintronics Hall family and its implications in nano-spintronics", Optical Spintronics Meeting, Cambridge, October 27<sup>th</sup> (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 9<sup>th</sup> (2009).
65. "Spin-dependent Hall effects in strongly spin-orbit coupled systems", Ohio State University, October 5<sup>th</sup> (2009).
64. "Making Semiconductors Ferromagnetic", Ohio State University, October 2<sup>nd</sup> (2009).
63. "Spin-injection Hall effect: a new member of the spintronics Hall family and its implications in nano-spintronics", Ohio State University, October 1<sup>st</sup> (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 29<sup>th</sup> (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 4<sup>th</sup> (2009).
60. "Making Semiconductors Ferromagnetic", 125th ECS Meeting, Symposium on materials for post-CMOS, San Francisco, May 24<sup>th</sup> (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 19<sup>th</sup> (2009).
58. "Spin Injection Hall effect: a new member of the spintronic Hall family", Prairie View A&M, April 6<sup>th</sup> (2009).
57. "Spin Injection Hall effect: a new member of the spintronic Hall family", University of Maryland, March 12<sup>th</sup> (2009).
56. "New avenues in spin Hall caloritronic effects", Lorenz Center, Leiden University, Netherlands, February 10<sup>th</sup> (2009).
55. "Spin Injection Hall effect: a new member of the spintronic Hall family", Kavli Institute of Theoretical, Santa Barbara, December 18<sup>th</sup> (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 18<sup>th</sup> (2008).
53. "Anomalous Hall effects in strongly spin-orbit coupled systems" (plenary talk), Spin Transport in Condensed Matter, 23<sup>rd</sup> Nishinomiya-Yukawa Memorial International Workshop, Kyoto, Japan, November 11<sup>th</sup> (2008).
52. "Computational Studies of the Spin and Anomalous Hall Effect", Computational Magnetism and Spintronics International Workshop, Dresden, Germany, November 4<sup>th</sup> (2008).
51. "Spin and anomalous Hall effects in semiconductors and metals", Summer School 'Nanomagnetism and Spintronics', Prague, Czech Republic, September 11<sup>th</sup> (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 12<sup>th</sup> (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 15<sup>th</sup> (2008).
48. "Making Semiconductors Ferromagnetic", NRI e-workshop, from Texas A&M University via teleconferencing, April 29<sup>th</sup> (2008).
47. "Challenges and Chemical Trends Dilute Magnetic Semiconductor", Rice University, April 28<sup>th</sup> (2008).
46. "Making Semiconductors Ferromagnetic: a physics tango in spintronics", New York University, New York, March 25<sup>th</sup> (2008).
45. "Spin-Hall effect: a new adventure in condensed-matter physics", Colloquium at New York University, New York, March 24<sup>th</sup> (2008).
44. "Spin-Hall effect: new challenges", International Workshop on Future Trends of Condensed Matter Physics, Aspen Colorado, February 8<sup>th</sup> (2008).
43. "Spin-Hall effect: a new adventure in condensed-matter physics", Colloquium at Sam Houston State University, Texas, January 22<sup>nd</sup> (2008).
42. "How to make semiconductors magnetic", International Workshop on Strongly Correlated Systems, Austin, Texas, October 23<sup>rd</sup> (2007).
41. "On the character of the Fermi energy in metallic diluted magnetic semiconductors", Los Alamos National Laboratory, Los Alamos, New Mexico, July 12<sup>th</sup> (2007).

40. "Anomalous and spin Hall effect in mesoscopic systems", International Conference of Nano-Magnetism, Istanbul, Turkey, June 25<sup>th</sup> (2007).
39. "Spin dependent transport and spin-current manipulation of magnetization", ONR Spintronics Review Workshop, Denver, Colorado, March 9<sup>th</sup> (2007).
38. "Anomalous transport: the convergence of sixty years of debate", Colloquium at Kansas University, Lawrence, Kansas, March 12<sup>th</sup> (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 22<sup>nd</sup> February (2007).
36. "Spin-Hall currents and spin accumulation in strong spin-orbit coupled regime", IFCAM International Workshop on Spin Currents, Sendai, Japan, 19<sup>th</sup> 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 5<sup>th</sup> (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 2<sup>nd</sup> (2006).
33. "Do we understand (Ga,Mn)As? Prospects of high temperature magnetism in DMSs", KITP, Santa Barbara, May 25<sup>th</sup> (2006).
32. "Spin-Hall Effect in Mesoscopic Systems", Science and Application of Spin Electronics, Hong Kong University, Hong Kong, August 17<sup>th</sup> (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 8<sup>th</sup> (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", 29<sup>th</sup> 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", Texas A&M University, 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  $\nu=1$ ", 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).

## TEACHING AND MENTORING

At Johannes Gutenberg University Mainz I am currently with reduced teaching duties as the director of the Spin Phenomena Interdisciplinary Center and as a Gutenberg Fellow. The team (via a substitute professor) teaches one course per semester. Most of these courses are specialized courses.

The 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. The 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. While at Texas A&M I took the double teaching option as the best way to balance teaching and research several times since my second year at Texas A&M.

### Teaching experience:

#### Lectures:

- Masters-level *Advance Solid State Theory* (Fall/Winter 2025/2026).
- Masters-level *Solid State Theory* (Spring/Summer 2025).
- Masters-level *Advance Solid State Theory* (Fall/Winter 2023/2024).
- Masters-level *Solid State Theory* (Spring/Summer 2023).
- Masters-level *Advance Solid State Theory* (Fall/Winter 2022/2023).
- Masters-level *Solid State Theory* (Spring/Summer 2022).
- Masters-level *Advance Solid State Theory* (Fall/Winter 2021/2022).
- Undergraduate-level *Electrodynamics* (Spring/Summer 2021).
- Masters-level *Solid State Theory* (Spring/Summer 2021).
- Undergraduate-level *Classical Mechanics* (Fall/Winter 2020/2021).
- Undergraduate-level *Mathematical Methods for Physics* (Spring 2020).
- Graduate/Masters-level *Statistic Mechanics* (Spring 2018, Fall/Winter 2018/2019).
- Graduate *Spintronics* (Fall 2014)
- Graduate-level *Mesoscopic Transport in Multiband Systems II* (Fall 2013).
- Graduate-level *Mesoscopic Transport in Multiband Systems*: created my own lecture notes on this specialty topics course focused on multiband mesoscopic transport and spintronics, quantum pumping, and spin pumping (Fall 2012).
- Graduate-level *Mesoscopic Physics*: created my own lecture notes on this specialty topics course focused on spintronics mesoscopic transport and current induced magnetic dynamics (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](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-junior-level *Introductory to Modern Physics*: course introduces modern physics to non-physics majors. We cover the fundamentals of quantum mechanics and 20th century physics and its foundations (Spring 2012).
- 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; double teaching Spring 2010, 100

students in each class; double teaching Spring 2011, 100 students in each class; double teaching Spring 2012, 95 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 (2012)
2. Research Corporation Cottrell Scholar Conference, Tucson, Arizona, July (2011)
3. Research Corporation Cottrell Scholar Conference, Tucson, Arizona, July (2010)
4. Research Corporation Cottrell Scholar Conference, Tucson, Arizona, July (2008)
5. Research Corporation Cottrell Scholar Conference, Tucson, Arizona, July (2007)
6. Paradigms in Physics Workshop, Oregon State University, Corvallis, Oregon, June (2006)
7. Bridging the Vector Calculus Gap, Oregon State University, Corvallis, Oregon, June (2005)

### **Supervision of students and postdoctoral researchers:**

- Graduate students:
  1. Sergio Rodriguez, Johannes Gutenberg University Mainz, 2025-Present
  2. Gaspar Andres de la Barrera, Johannes Gutenberg University Mainz, 2025-Present
  3. Steven Hendrik Schoenmaker, Johannes Gutenberg University Mainz, 2021-2024
  4. Tobias Wagner, Johannes Gutenberg University Mainz, 2021-2024
  5. Bennet Karetta, Johannes Gutenberg University Mainz, 2021-Present
  6. Gizem Özcan, Johannes Gutenberg University Mainz, 2020-2023
  7. Rodrigo Jaeschke, Johannes Gutenberg University Mainz, 2020-Present
  8. Nayra Alvarez, Johannes Gutenberg University Mainz, 2020-Present
  9. Anna Birk Hellenes, Johannes Gutenberg University Mainz, 2019-2025
  10. Marie Böttcher, Johannes Gutenberg University Mainz, 2016-2020
  11. Uday Chopra, Johannes Gutenberg University Mainz, 2016-2020 (deceased 2021)
  12. Diana Prychynenko, Johannes Gutenberg University Mainz, 2015-2019
  13. Libor Smejkal, Johannes Gutenberg University Mainz, 2015-2020 (student shared with Prof. Jungwirth in Prague)
  14. Hristo Velkov, Johannes Gutenberg University Mainz, 2014-August 2017 Present Position: Consultant at d-fine company
  15. Jacob Gyles, Texas A&M University, September 2011-December 2016, Present position: Assistant Professor of Physics at University of South Florida.
  16. Vivek Amin, Texas A&M University, September 2010-August 2014; Present position: Assistant Professor at Indiana University Indianapolis.
  17. Erin Veshtedt, Texas A&M University, September 2010-May 2013
  18. Huawai Gao, Texas A&M University, January 2011-August 2015
  19. Shayan Hematian, Texas A&M University, May 2012-August 2016
  20. Xin Liu, Texas A&M University, September 2006-August 2012; Present position: Professor in China.
  21. Xiong-Jun Liu, Texas A&M University, September 2007-August 2011; Present position: Professor in China.
  22. Mario Borunda, Texas A&M University, January 2004- December 2008; Present position: Associate professor at Oklahoma State University.
  23. Sergio Rodriguez, Texas A&M University, September 2004-2006

24. Nikolai Sinitsyn, Texas A&M University, September 2003-June 2005 (Co-advised with Prof. Valery Pokrovsky); Present position: Staff member at Los Alamos National Laboratory.
  25. Hernesto Hernandez, Houston University, January 2004-May 2005; Present position: Professor in Mexico.
- Postdoctoral and Group leaders researchers:
    1. Xanthe Verbeek, Johannes Gutenberg University, 2024 – Present
    2. Atasi Chakraborty, Johannes Gutenberg University, 2023 – Present
    3. Ricardo Zarzuela; Johannes Gutenberg University, 2019 - Present
    4. Libor Smejkal, Johannes Gutenberg University, 2020 – 2024; Present position: Max Planck Research Group Leader
    5. Olena Gomonay, Johannes Gutenberg University, 2015 – Present
    6. Uday Chopra, Johannes Gutenberg University, 2020-2021(deceased 2021)
    7. Karin Everschore-Sitte; Johannes Gutenberg University, 2015- 2016 (from 2017 to 2021 she led her own Emmy Noether Group in Mainz in coordination/cooperation with my group; Present position: W3 Professor in Duisburg)
    8. Erik McNellis; Johannes Gutenberg University, 2014 – 2021
    9. Reza Mahani; Johannes Gutenberg University, 2016 – 2021
    10. Bertrand Dupe; Johannes Gutenberg University, 2016 - 2019
    11. Melanie Dupe: Johannes Gutenberg University, 2016 - 2019
    12. Kyoung-Wahn Kim, Johannes Gutenberg University, 2016- 2018; Present position: Professor in South Korea.
    13. Matthias Sitte; Johannes Gutenberg University, 2015- 2017
    14. Ulirke Ritzmann, Johannes Gutenberg University, 2016- 2017
    15. Yuta Yamane, Johannes Gutenberg University, 2014- 2017
    16. Amaury de Melo Souza, Johannes Gutenberg University, 2015- 2017
    17. Georg Schwiete, Johannes Gutenberg University, 2014-2016; Present position: Professor at University of Alabama.
    18. Zhe Yuan, Johannes Gutenberg University, 2014-2015; Present position: Professor in China (Beijing).
    19. Peng Yan, Johannes Gutenberg University, 2015; Present position: Professor in China.
    20. Xingyuan Pan, Texas A&M University, January 2012- December 2013.
    21. Ewelina Hankiewicz, Texas A&M University, August 2003-August 2005; Present position: Tenured Professor at the University of Würzburg.
    22. Nikolai Sinitsyn, Texas A&M University, June 2006-August 2006; Present position: Permanent Staff member at Los Alamos National Laboratories.
    23. Alexey Kovalev, Texas A&M University, September 2006-December 2008; Present position: Assistant Professor in Nebraska.
    24. Liviu Zarbo, Texas A&M University, July 2007-August 2009; Present position: Postdoctoral fellow at the Institute of Physics of the Academy of Sciences of the Czech Republic
  - Undergraduates:
    - Colin Lange, Johannes Gutenberg University, 2025-Present
    - Nils Keller, Johannes Gutenberg University, 2025-Present
    - Mathias Greber, Johannes Gutenberg University, 2020-2024
    - Martin Münzenberg, Johannes Gutenberg University, 2020-2023
    - Lennart Piotraschke, Johannes Gutenberg University, 2020-2024
    - Bennet Karetta, Johannes Gutenberg University, 2020- 2021
    - Tobias Wagner, Johannes Gutenberg University, 2020- 2021
    - Sebastian Müller, Johannes Gutenberg University, 2015- 2019
    - Ilja Müller, Johannes Gutenberg University, 2015- 2018
    - Cristian Cernov, Texas A&M University, May 2012 –2019.
    - David Darrow, Texas A&M University, September 2005-2007
    - Scott Adams, Texas A&M University, Fall 2004