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## Liang Wu

### Affiliation

Department of Physics & Astronomy  
University of Pennsylvania

### Contact

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### Employment

**Assistant Professor** Department of Physics & Astronomy July 2018 - Present  
University of Pennsylvania, Philadelphia, PA, USA  
(Two semester parental leave in Fall 2018 and Fall 2020)

**Postdoctoral Fellow** Department of Physics 2016 - 2018  
University of California, Berkeley, CA, USA  
Materials Science Division, Lawrence Berkeley National Lab  
Advisor: Joseph W. Orenstein

**Graduate Research Assistant** Department of Physics & Astronomy 2011 - 2015  
The Johns Hopkins University, Baltimore, MD, USA  
Thesis Advisor: N. Peter Armitage

### Education

**Ph.D.** Physics December 2015  
The Johns Hopkins University, Baltimore, MD, USA

**B.Sc.** Physics May 2010  
Nanjing University, Nanjing, Jiangsu, China  
Graduate with Highest Honor (GPA: 1/80 in condensed matter physics. Required course works completed within 3 years.)

### Honors & Awards

- **Outstanding Young Researcher Award (Macronix Prize)**, International Organization of Chinese Physicists and Astronomers (OCPA) 2020
- **William L. McMillan Award for outstanding contributions in condensed matter physics**, University of Illinois 2019
- **Young Investigator Program (YIP) Award**, Army Research Office 2019
- **30 Under 30 in Science**, Forbes Magazine 2018
- **Michelson Postdoctoral Prize Lectureship**, Case Western Reserve University 2017
- **Richard L. Greene Dissertation Award in Experimental Condensed Matter Physics or Materials Physics**, American Physical Society 2017
- **National Scholarship**, Nanjing University 2008

### Publications

#### *Peer-reviewed Journals*

28. Z. Ni, A. Haglund, H. Wang, B. Xu, C. Bernhard, X. Qian, D. Mandrus, E.J. Mele, C.L.

Kane and **Liang Wu\*** *Imaging the Néel vector switching in the monolayer antiferromagnet MnPSe<sub>3</sub> with strain-controlled Ising order.*

*Nature Nanotechnology* (2021) DOI:10.1038/s41565-021-00885-5

27. Z. Ni, K. Wang, Y. Zhang, O. P. Ocena, X. Han, B. Xu, K. Manna, J. Paglione, C. Felser, A. G. Grushin, F. de Juan, E. J. Mele and **Liang Wu\*** *Large topological longitudinal circular photo-galvanic effect in the chiral multifold semimetal CoSi.*

*Nature Communications*, 12, 154 (2021) **Editor's highlight**

26. Z. Ni, B. Xu, M. Sánchez-Martínez, Y. Zhang, K. Manna, C. Felser, F. de Juan, A. G. Grushin and **Liang Wu\*** *Linear and nonlinear optical responses in the chiral multifold semimetal RhSi.*

*npj Quantum Materials* 5, 96 (2020)

25. B. Xu, Z. Fang, M. Sánchez-Martínez, J. Vendobos, Z. Ni, K. Manna, K. Wang, J. Paglione, C. Felser, E. J. Mele, A. G. Grushin, A. M. Rappe and **Liang Wu\*** *Optical signatures of multifold fermions in the chiral topological semimetal CoSi.*

*Proceedings of the National Academy of Sciences* 117, 27104-27110 (2020)

24. D. Khadka, T. R. Thapaliya, S. H. Parra, X.Y. Han, J.J. Wen, J.D. Zang, J. M. Kikkawa, **Liang Wu**, S. X. Huang. *Kondo physics in antiferromagnetic Weyl semimetal Mn<sub>3+x</sub>Sn<sub>1-x</sub> films* *Science Advances*, 6, eabc1977 (2020)

23. Y. Jiang, M. M. Asmar, X. Y. Han, M. Ozerov, D. Smirnov, M. Salehi, S. Oh, Z. Jiang, W.-K. Tse, and **Liang Wu\***. *Electron-Hole Asymmetry of Surface States in Topological Insulator Sb<sub>2</sub>Te<sub>3</sub> Thin Films Revealed by Magneto-Infrared Spectroscopy.*

*Nano Letters* 20, 4588 (2020)

22. **Liang Wu\***, A. Farid, N. J. Laurita, T. Mueller and N. P. Armitage. *A compact broadband terahertz range quarter-wave plate*

*J Infrared Milli Terahz Waves* 41, 642 (2020)

21. N. P. Armitage and **Liang Wu**

*On the matter of topological insulators as magnetoelectrics*

*SciPost Physics* 6, 046 (2019)

20. **Liang Wu\***, A. Little, E. Aldape, D. Rees, P. Kelley, A. Banerjee, D. Mandrus, S. Nagler, E. Altman, J. Orenstein *Field evolution of magnons in  $\alpha$ -RuCl<sub>3</sub> by high-resolution polarized terahertz spectroscopy*

*Phys. Rev. B* 98, 094425 (2018) **Editor's suggestion**

19. S. Patankar, **Liang Wu**, B. Lu, M. Rai, J. D. Tran, T. Morimoto, D. Parker, A. Grushin, N.L. Nair, J. G. Analytis, J. E. Moore, J. Orenstein, D. H. Torchinsky *Resonance-enhanced optical nonlinearity in the Weyl semimetal TaAs*

*Phys. Rev. B* 98, 165113 (2018)

18. E. Thewalt, I. M. Hayes, J. P. Hinton, A. Little, S. Patankar, **Liang Wu**, T. Helm, C. Stan, N. Tamura, J. G. Analytis, and J. Orenstein

*Imaging anomalous nematic order and strain in optimally doped BaFe<sub>2</sub>(As,P)<sub>2</sub>*

*Phys. Rev. Lett.* 121, 027001 (2018)

17. R.H. Ireland<sup>†</sup>, **Liang Wu**<sup>†</sup>, M. Salehi, N. Koirala, H.E. Katz, S. Oh and N. P. Armitage. *Nonvolatile Solid-State Charged-Polymer Gating of Topological Insulators into the Topological Insulating Regime*

*Phys. Rev. Applied* 9, 044003 (2018)

16. T. Higo, H. Man, D. B. Gopman, **Liang Wu**, Y. P. Kabanov, O. M. J. van't Erve, D. Rees, Y. F. Li, S. Patankar, M. Ikhlas, C. L. Chien, R. D. Shull, J. Orenstein, and S. Nakatsuji. *Large magneto-optical Kerr effect and imaging of magnetic octupole domains in an antiferromagnetic metal.*

*Nature Photonics* **12**, 73-78 (2018)

15. A. Little<sup>†</sup>, **Liang Wu**<sup>†,\*</sup>, P. Kelley, A. Banerjee, S. Patankar, D. Rees, C. A. Bridges, J. Q. Yan, D. Mandrus, S. Nagler and J. Orenstein. *Antiferromagnetic resonance and terahertz continuum in  $\alpha$ -RuCl<sub>3</sub>*.

*Phys. Rev. Lett.* **119**, 227201 (2017)

14. **Liang Wu**<sup>\*</sup>, S. Patankar, T. Morimoto, N. L. Nair, E. Thewalt, A. Little, J. Analytis, J. E. Moore and J. W. Orenstein<sup>\*</sup>. *Giant anisotropic nonlinear optical response in transition metal mononictide Weyl semimetals*.

*Nature Physics* **13**, 350-355 (2017)

Highlighted in *Department of Energy, Office of Science, Basic Energy Sciences*

13. **Liang Wu**<sup>\*</sup>, M. Salehi, N. Koirala, J. Moon, S. Oh and N. P. Armitage<sup>\*</sup>. *Quantized Faraday and Kerr rotation and axion electrodynamics of a 3D topological insulator*.

*Science* **354**, 1124-1127 (2016)

Highlighted in *Journal Club for Condensed Matter Physics* April 2016

Summary by the editor, “*Shining light on a peculiar coupling*”, *Science*, **354**, 1114 (2016)

Tweeted by Frank Wilczek

Discussed in Frank Wilczek’s colloquium “*Augmenting Reality: Axions, Anyons, and Entangled Histories*” (Available on YouTube)

12. B. Cheng, **Liang Wu**, S. K. Kushwaha, R. J. Cava, and N. P. Armitage *Measurement of the topological surface state optical conductance in bulk-insulating Sn-doped Bi<sub>1.1</sub>Sb<sub>0.9</sub>Te<sub>2</sub>S single crystals*

*Phys. Rev. B.* **94**, 201117(R) (2016)

11. M. Brahlek, N. Koirala, M. Salehi, **Liang Wu**, H. D. Lee, C. Xu, M. G. Han, Y. M. Zhu, J. Moon, S. J. Rhee, T. Gustafsson, N. P. Armitage, and S. Oh. *Disorder-driven topological phase transition in Bi<sub>2</sub>Se<sub>3</sub> thin films*.

*Phys. Rev. B.* **94**, 165104 (2016)

10. A. Akrap, M. Haki, S. Tchoumakov, I. Crassee, J. Kuba, M. O. Goerbig, C. C. Homes, O. Caha, J. Novak, F. Teppe, **Liang Wu**, N. P. Armitage, E. Arushanov, Q. D. Gibson, R. J. Cava, D. van der Marel, C. Faugeras, G. Martinez, M. Potemski, and M. Orlita. *Magneto-optical signature of massless Kane electrons in Cd<sub>3</sub>As<sub>2</sub>*.

*Phys. Rev. Lett.* **117**, 136401 (2016) *Editor’s suggestion*

Highlighted by the editor of *Nature Physics*, *Nature Physics* **12**, 992 (2016)

9. **Liang Wu**<sup>†</sup>, R. H. Ireland<sup>†</sup>, M. Salehi, B. Cheng, N. Koirala, S. Oh, H. E. Katz, and N. P. Armitage. *Tuning and Stabilizing Topological Insulator Bi<sub>2</sub>Se<sub>3</sub> in the Intrinsic Regime by Charge Extraction with Organic Overlayers*.

*Appl. Phys. Lett.* **108**, 221603 (2016)

8. Bing Cheng, **Liang Wu**, N. J. Laurita, H. Singh, P. Raychaudhuri and N. P. Armitage. *Anomalous gap edge dissipation in disordered superconductors on the brink of localization*.

*Phys. Rev. B.* **93**, 180511(R) (2016)

7. N. Koirala, M. Brahlek, M. Salehi, **Liang Wu**, J. Dai, J. Waugh, T. Nummy, M. G. Han, Y. Zhu, D. Dasseu, W. D. Wu, N. P. Armitage and S. Oh *Record high mobility topological insulator thin films and dissipation-less quantum Hall effect via temporal interface engineering*.

*Nano Letters* **15**, 8245-8249 (2015).

Highlighted in *Best Research of 2015 at the National MagLab*

6. **Liang Wu**<sup>\*</sup>, W. K. Tse, M. Brahlek, C. M. Morris, R. Valdés Aguilar, N. Koirala, S. Oh and N. P. Armitage<sup>\*</sup>. *High-resolution Faraday rotation and electron-phonon coupling in surface states of the bulk-insulating topological insulator Cu<sub>0.02</sub>Bi<sub>2</sub>Se<sub>3</sub>*.

*Phys. Rev. Lett.* **115**, 217602 (2015)

5. M. Salehi, M. Brahlek, N. Koirala, J. Moon, **Liang Wu**, N. P. Armitage and S. Oh. *Stability of low-carrier-density topological-insulator  $Bi_2Se_3$  thin films and effect of capping layers.*

*APL Material* **3**, 091101 (2015). *Invited article*

4. **Liang Wu**, M. Brahlek, R. Valdés Aguilar, A. V. Stier, C. M. Morris, Y. Lubashevsky, L. S. Bilbro, N. Bansal, S. Oh, N. P. Armitage. *A sudden collapse in transport lifetime through the topological phase transition in  $(Bi_{1-x}In_x)_2Se_3$ .*

*Nature Physics* **9**, 410-414 (2013).

3. R. Valdés Aguilar, **Liang Wu**, A. V. Stier, L. S. Bilbro, N. Bansal, S. Oh, N. P. Armitage. *Aging and reduced bulk conductance in thin films of the topological insulator  $Bi_2Se_3$ .*

*J. Appl. Phys.* **113**, 153702 (2013).

2. J. R. Neilson, A. Llobet, A. V. Stier, **Liang Wu**, J. J. Wen, J. Tao, Y. M. Zhu, Z. B. Tesanovic, N. P. Armitage, T. M. McQueen. *Mixed-Valence-Driven Heavy-Fermion Behavior and Superconductivity in  $KNi_2Se_2$ .*

*Phys. Rev. B.* **86**, 054512 (2012). *Editor's suggestion*

1. R. Valdés Aguilar, A. V. Stier, W. Liu, L. S. Bilbro, D. K. George, N. Bansal, **Liang Wu**, J. Cerne, A. G. Markelz, S. Oh, N. P. Armitage. *Terahertz Response and Colossal Kerr Rotation from the Surface States of the Topological Insulator  $Bi_2Se_3$*

*Phys. Rev. Lett.* **108**, 087403 (2012). *Editor's suggestion*

Highlighted in *Department of Energy, Office of Science, Basic Energy Sciences*

† denotes equal contribution. \* denotes corresponding author.

### Invited Talks

80 total invited talks since 2013. (47 invited talks since 2018.)

#### *International Conferences*

29. **2DMAT2021, France**

*Direct imaging of Néel vector switching in the monolayer antiferromagnet with strain-controlled Ising order* 2021

28. **Telluride science workshop “Enhanced functionalities in 4- and 5d-containing materials from large spin-orbit coupling”**

*High-field excitations in the Kitaev magnet  $\alpha-RuCl_3$*  2021

27. **Workshop on nonlinear electromagnetic dynamics of topological semimetals, USA**

*Nonlinear terahertz emission spectroscopy of topological chiral multifold semimetals* 2021

26. **2020 APS MAS Meeting, USA**

*Nonlinear terahertz emission spectroscopy of topological chiral multifold semimetals* 2020

25. **KITP program on “Correlated Systems with Multicomponent Local Hilbert Spaces”**

*High-field excitations in the Kitaev magnet  $\alpha-RuCl_3$*  2020

24. **XXIX: International Materials Research Congress, organized by SMM & MRS, Mexico\***

*Large topological circular photogalvanic effect in the chiral multi-fold fermions.* 2020

23. **Excitonics and Polaritonics International Conference (EPIC 2020), Singapore\***

*Large topological circularly photogalvanic effect in the chiral multi-fold fermions.* 2020

22. **2020 APS March Meeting\***

- Linear and nonlinear optical responses in chiral topological semimetals.* 2020
21. **PCTS workshop on The Future of Topological Materials, Princeton University, USA**
- Linear and nonlinear optical responses in chiral topological semimetals.* 2019
20. **2018 APS MAS meeting**
- Giant anisotropic nonlinear optical responses in Weyl semimetals.* 2018
19. **2018 CINT (Center for Integrated Nanotechnologies) user meeting, USA**
- Giant anisotropic nonlinear optical responses in Weyl semimetals.* 2018
18. **HFM 2018—International conference on Highly Frustrated Magnetism, USA**
- Antiferromagnetic resonance and terahertz continuum in  $\alpha$ - $RuCl_3$ .* 2018
17. **LEES 2018—International conference on Low Energy Electrodynamics in Solids, Italy**
- Band geometry and nonlinear optical studies on polar Weyl semimetals.* 2018
16. **30th Workshop on Recent Developments in Electronic Structure (ES18), USA**
- Band geometry and nonlinear optical studies on polar Weyl semimetals.* 2018
15. **Gordon Berry Moore Foundation 2nd EPiQS Postdoctoral Symposium, USA**
- Resonance-enhanced optical nonlinearity in the Weyl semimetal TaAs.* 2018
14. **Young Research Leaders Workshop on Topological Matter, Israel**
- Resonance-enhanced optical nonlinearity in the Weyl semimetal TaAs.* 2018
13. **International conference on Frontier on Electronic Science and Technology, China**
- Resonance-enhanced optical nonlinearity in the Weyl semimetal TaAs.* 2018
12. **Oxford Symposium on Dynamics and Topology in Quantum Materials, United Kingdom**
- Resonance-enhanced optical nonlinearity in the Weyl semimetal TaAs.* 2018
11. **2018 APS March Meeting, USA**
- The quantized magnetoelectric effect in topological insulators* 2018
10. **SPIE Photonic West, USA**
- Giant anisotropic nonlinear optical response in Weyl semimetals.* 2018
9. **The 3rd Conference on Condensed Matter Physics (CCMP 2017), China**
- Antiferromagnetic resonance and terahertz continuum in  $\alpha$ - $RuCl_3$ .* 2017
8. **2017 APS March Meeting Invited Talk for the Richard L. Greene Award**
- Quantized Faraday and Kerr rotation and axion electrodynamics of a 3D topological insulator.* 2017
7. **Gordon Berry Moore Foundation 1st EPiQS Postdoctoral Symposium, USA**
- Giant anisotropic nonlinear optical response in transition metal mononictide Weyl semimetals.* 2017
6. **Energy Materials & Nanotechnology (EMN) Qingdao Meeting, China**
- Low energy electrodynamics of topological insulator thin films.* 2015
5. **Optical Terahertz Science & Technology Conference, USA**
- Low energy electrodynamics of topological insulator thin films.* 2015
4. **Low Energy Electrodynamics in Solids conference, France**
- A sudden collapse in transport lifetime through the topological phase transition in  $(Bi_{1-x}In_x)_2Se_3$ .* 2014
3. **Correlated Electron Systems, Gordon Research Seminar, USA**
- A sudden collapse in transport lifetime through the topological phase transition in  $(Bi_{1-x}In_x)_2Se_3$ .* 2014
2. **Ultrafast Phenomena in Cooperative Systems, Gordon Research Seminar, USA**
- A sudden collapse in transport lifetime through the topological phase transition in  $(Bi_{1-x}In_x)_2Se_3$ .* 2014

1. **Workshop on New Trends in Topological Insulators, Spain**

*A sudden collapse in transport lifetime through the topological phase transition in  $(Bi_{1-x}In_x)_2Se_3$ .*  
2013

*Seminar & Colloquium*

51. **Condensed Matter Seminar, SUNY-Stony Brook, USA**  
*Nonlinear terahertz emission spectroscopy of topological chiral multifold semimetals* 2021
50. **Condensed Matter Seminar, Nanyang Technological University, Singapore**  
*Nonlinear terahertz emission spectroscopy of topological chiral multifold semimetals* 2021
49. **Condensed Matter Seminar, Oak Ridge National Lab, USA**  
*Nonlinear optical studies of quantum materials* 2021
48. **Physics Colloquium, Binghamton University - SUNY, USA\***  
*Topological Nonlinear Optics.* 2020
47. **Physics Colloquium, University of Pennsylvania, USA**  
*Topological Nonlinear Optics.* 2020
46. **Condensed Matter Seminar, Rutgers, The State University of New Jersey, USA**  
*Linear and nonlinear optical responses in chiral topological semimetals.* 2019
45. **Condensed Matter Seminar, Simon Fraser University, Canada**  
*Linear and nonlinear optical responses in chiral topological semimetals.* 2019
44. **Condensed Matter Seminar, University of British Columbia, Canada**  
*Linear and nonlinear optical responses in chiral topological semimetals.* 2019
43. **Physics Colloquium for the McMillan Award, University of Illinois, USA**  
*Terahertz studies on topological materials.* 2019
42. **Condensed Matter Seminar, University of Minnesota, USA**  
*How many magnetic-field-induced phase transitions in  $\alpha-RuCl_3$ ?* 2019
41. **Condensed Matter Seminar, 3M, USA**  
*Topological materials — shaping the future technology.* 2019
40. **Condensed Matter Seminar, University of Texas, Austin, USA**  
*Linear and nonlinear optical responses in chiral topological semimetals.* 2019
39. **Condensed Matter Seminar, Texas A&M University, USA**  
*Linear and nonlinear optical responses in chiral topological semimetals.* 2019
38. **Condensed Matter Seminar, Rutgers, The State University of New Jersey, USA**  
*How many magnetic-field-induced phase transitions in  $\alpha-RuCl_3$ ?* 2019
37. **Condensed Matter Seminar, Nanjing University, China**  
*Giant anisotropic nonlinear optical responses in Weyl semimetals.* 2019
36. **Physics Colloquium, University of Miami, USA**  
*Axion electrodynamics of topological insulators* 2018
35. **Physics Colloquium, University of Pennsylvania, USA**  
*Terahertz studies on symmetry and topology in quantum materials.* 2018
34. **Material Science and Engineering Seminar, Drexel University, USA**  
*Giant anisotropic nonlinear optical responses in Weyl semimetals.* 2018
33. **Condensed Matter Seminar, Penn State University, USA**  
*Giant anisotropic nonlinear optical responses in Weyl semimetals.* 2018
32. **Condensed Matter Seminar, ENS-Lyon, France**  
*Antiferromagnetic resonance and terahertz continuum in  $\alpha-RuCl_3$ .* 2018
31. **Condensed Matter Seminar, Institut Neel, France**  
*Band geometry and nonlinear optical studies on polar Weyl semimetals.* 2018

30. **Condensed Matter Seminar, Oxford University, UK**  
*Band geometry and nonlinear optical studies on polar Weyl semimetals.* 2018
29. **Condensed Matter Seminar, Oak Ridge National Lab, USA**  
*Antiferromagnetic resonance and terahertz continuum in  $\alpha$ - $RuCl_3$ .* 2018
28. **Condensed Matter Seminar, University of Tennessee, USA**  
*Band geometry and nonlinear optical studies on polar Weyl semimetals.* 2018
27. **Condensed Matter Seminar, Stony Brook University, USA**  
*Band geometry and nonlinear optical studies on polar Weyl semimetals.* 2018
26. **Condensed Matter Seminar, Rutgers, The State University of New Jersey, USA**  
*Band geometry and nonlinear optical studies on polar Weyl semimetals.* 2018
25. **ABC...z Seminar, University of California, Santa Barbara, USA**  
*Band geometry and nonlinear optical studies on polar Weyl semimetals.* 2018
24. **Center for Nanophysics and Advanced Materials Colloquium, University of Maryland, College Park, USA**  
*Quantized electro-dynamical response in topological materials.* 2017
23. **Condensed Matter Seminar, Johns Hopkins University, USA**  
*Antiferromagnetic resonance and terahertz continuum in  $\alpha$ - $RuCl_3$ .* 2017
22. **Physics Colloquium, Case Reserve Western University, USA**  
*Quantized electro-dynamical response in topological materials.* 2017
21. **Michelson Lecture, Case Reserve Western University, USA**  
*Giant anisotropic nonlinear optical response in Weyl semimetals.* 2017
20. **Michelson Lecture, Case Reserve Western University, USA**  
*Low energy electrodynamics of 3D topological insulator thin films.* 2017
19. **Michelson Lecture, Case Reserve Western University, USA**  
*Antiferromagnetic resonance and terahertz continuum in  $\alpha$ - $RuCl_3$ .* 2017
18. **Physics Colloquium, University of Notre Dame, USA**  
*Quantized electro-dynamical responses in topological materials.* 2017
17. **Condensed Matter Seminar, Stanford University, USA**  
*Shining light on topological insulators and Weyl semimetals.* 2017
16. **Condensed Matter Seminar, Boston University, USA**  
*Shining light on topological insulators and Weyl semimetals.* 2017
15. **Condensed Matter Seminar, Michigan State University, USA**  
*Shining light on topological insulators and Weyl semimetals.* 2017
14. **Physics Colloquium, New York University, USA**  
*Shining light on topological insulators and Weyl semimetals.* 2017
13. **Condensed Matter Seminar, University of Pennsylvania, USA**  
*Shining light on topological insulators and Weyl semimetals.* 2017
12. **Condensed Matter Seminar, Princeton University, USA**  
*Shining light on topological insulators and Weyl semimetals.* 2017
11. **Physics Colloquium, Boston College, USA**  
*Shining light on topological insulators and Weyl semimetals.* 2017
10. **Condensed Matter Seminar, Harvard University, USA**  
*Shining light on topological insulators and Weyl semimetals.* 2016
9. **Condensed Matter Seminar, University of Notre Dame, USA**  
*Shining light on topological insulators and Weyl semimetals.* 2016
8. **Material Science Division Forum on Topological Insulators, Lawrence Berkeley National Laboratory, USA**  
*Quantized Faraday and Kerr rotation and axion electrodynamics of a 3D topological insulator.* 2016

7. **290K Condensed Matter Seminar, University of California, Berkeley, USA**  
*Low-energy electrodynamics of 3D topological insulators.* 2016
6. **Condensed Matter Seminar, Perimeter Institute for Theoretical Physics, Canada**  
*Low energy electrodynamics of 3D topological insulator thin films.* 2016
5. **Condensed Matter Seminar, Fudan University, China**  
*Low energy (Terahertz) electrodynamics of topological insulator thin films.* 2015
4. **Quantum Materials Seminar, University of California, Berkeley, USA**  
*Low energy (Terahertz) electrodynamics of topological insulator thin films.* 2015
3. **Special Condensed Matter Seminar, Massachusetts Institute of Technology, USA**  
*Low energy (Terahertz) electrodynamics of topological insulator thin films.* 2015
2. **Condensed Matter Seminar, Nanjing University, China**  
*How to ‘kill’ a topological insulator (TI) and how to ‘cook’ a bulk-insulating TI?* 2014
1. **Condensed Matter Seminar & ‘Physics in the Field’, the lecture series at the Pulsed Field Facility at Los Alamos National Laboratory, USA**  
*How to ‘kill’ a topological insulator (TI) and how to ‘cook’ a bulk-insulating TI?* 2014

(\*Cancelled/Postponed by the organizers due to COVID-19.)

### Synergistic Activities

- Chair, Workshop on New Development on Topological Materials (supported by Gordon Betty Moore Foundation) 2021, 2022
- Chair, Young Investigator Leader Workshop on Topological Materials (supported by Gordon Betty Moore & Simons Foundation) 2019
- Chair, Gordon Betty Moore Foundation EPiQS Postdoctoral Symposium 2021, 2022
- Grant Reviewer, *Department of Energy, Basic Energy Sciences; German Research Foundation (DFG); Army Research Office; Israel Science Foundation* 2018 - Present
- Journal Referees, *Nature; Nature Review Materials; Nature Photonics; Nature Electronics; Nature Communications; Science Advances; Physical Review Letters; Physical Review X; Physical Review B; etc.*

### Postdocs

Yishuai Xu (2021-); Zhaodong Chu (2021-)

### Graduate Students

Zhuoliang Ni (2018-); Jonathan Steinsberg (2019-); Xingyue Han (2019-); Qinwen Deng (2021-)

### Undergraduate Students

Xinping Yang (now graduate student at Yale); Stefano Roccasecca (optical engineer at AFRL, now graduate student at UCLA); Xingyue Han (now graduate student at Penn); Yuxuan Wang (now graduate student at Boston College); Jinsu Zhang (now graduate student at Purdue); Adithya Sriram (now graduate student at Stanford, NSF Graduate Research Fellowship); Qi Tian (now graduate student at Rochester); Pranav Mulgund (Class of 2022)

### Teaching & Outreach

Teaching

University of Pennsylvania

- Phys. 151. Principles of Physics II



*Outreach*

2019 - present

My group performs physics demonstration at the Philadelphia Materials Day annually.

I regularly give talks in Summer Experimental Physics Academy at Penn for high-school students.