Martin Mourigal

Assistant Professor, School of Physics, Georgia Institute of Technology

Contact Information
School of Physics, 837 State Street, Atlanta, GA 30332, USA
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Howey Physics Building
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Research Themes

Condensed matter physics, quantum materials, frustrated and low-dimensional magnets, spin liquids, iron- and copper-based superconductors, magnetic excitations, inelastic neutron scattering, spin-wave theory, materials modeling, strong magnetic fields, low temperatures, neutron and x-ray diffraction, materials synthesis.

Personal Information

Birth:	October 1984 in Limoges, France	Citizenship:	French, U.S. permanent resident
Status:	Married, 1 child born March 2016	Address:	325 Lindbergh Dr NE, Atlanta, GA 30305

Employement

2015-Current	Assistant Professor, Georgia Institute of Technology (GT), Atlanta, USA. *Appointment:* January 2015.
2011-2014	Postdoctoral Research Fellow, The Johns Hopkins University (JHU), Baltimore, USA, *Advisor:* Collin L. Broholm.
2008-2011	Graduate Student, Institut Laue-Langevin (ILL), Grenoble, France, *Advisor:* Mechthild Enderle.
2008-2011	Graduate Student, École Polytechnique Fédérale de Lausanne (EPFL), Switzerland, *Advisor:* Henrik M. Rønnow.
2007-2008	Master Student, Commissariat à l'Énergie Atomique (CEA), Grenoble, France, *Advisor:* Mike E. Zhitomirsky.

Education

2006-2011	École Polytechnique Fédérale de Lausanne (EPFL), Switzerland, Ph.D., Physics, June 2011, M.Sc., Physics, February 2008.
2004-2007	École des Mines de Nancy, France, B.Sc. (Equiv.), Materials, September 2007, *"Diplôme d'Ingénieur Civil des Mines"*.
2002-2004	Lycée Gay-Lussac, Limoges, France, Undergraduate coursework, Physics, *"Classes Préparatoires aux Grandes Écoles"*.

Awards and Fellowships

2019 Cullen-Peck Faculty Scholar Award (GT, College of Sciences).
2019 Sigma Xi Young Faculty Award, ΣΞ Scientific Research Honor Society (GT, University wide).
2019 BP Junior Faculty Teaching Excellence Award, Center for Teaching and Learning (GT, University wide).
2018 CAREER Award, National Science Foundation (NSF).
2017 Class of 1969 Teaching Fellow, Center for Teaching and Learning (GT).
2016 Ralph E. Powe Junior Faculty Enhancement Award, Oak Ridge Associated Universities (ORAU).
2015 Thank a Teacher Certificate, Center for Teaching and Learning (GT) (+1 in 2018).
2011 Johns Hopkins–Princeton Institute for Quantum Matter Postdoctoral Fellowship (2011-2014).
2010 Institut Laue-Langevin Directors' Award.

Publications

Group Website	http://mourigal.gatech.edu
Profiles	[Web of Science], [Scopus], [Google Scholar], [Orcid].
Citations	Web of Science: **824** and h=**14**; Scopus: **815** and h=**14**; Google Scholar: **1172** and h=**16**;
Authorship	$*$ indicates Georgia Tech research *i.e.* work done partly or wholly at Georgia Tech. **boldface** indicates postdocs$^{\mathbf{PD}}$, grad students$^{\mathbf{G}}$, or undergrads$^{\mathbf{UG}}$ supervised by Mourigal.

Submitted Journal Articles (2 from GT research)

∗36. J. A. M. Paddison, P. Mukherjee, **X. Bai**[G], **Z. L. Dun**[PD], C. R. Wiebe, H. Zhou, J. S. Gardner, **M. Mourigal**, S. E. Dutton, "Modeling Spin Dynamics in the Singlet Ground State Garnet $Ho_3Ga_5O_{12}$", *Submitted* (August 9, 2019), https://arxiv.org/abs/1908.03530.

∗35. **Z. L. Dun**[PD], **X. Bai**[G], J. A. M. Paddison[PD], **E. Hollingworth**[UG], N. P. Butch, C. D. Cruz, M. B. Stone, T. Hong, M. Mourigal, H. D. Zhou, "Quantum Spin Fragmentation in Kagome Ice $Ho_3Mg_2Sb_3O_{14}$", *Submitted* (June 2, 2018), https://arxiv.org/abs/1806.04081.

Published and Accepted Journal Articles (16 from GT research)

∗34. N. Jiang, **X. Bai**[G], J. Bacsa, **M. Mourigal**, and H. S. La Pierre, "Synthesis and magneto-structural characterization of $Yb_3(OH)_7SO_4{\cdot}1.5H_2O$: a frustrated quantum magnet with tunable stacking disorder", *Inorganic Chemistry* **58**, 10417-10423 (2019); [DOI].

∗33. R. Rawl, **L. Ge**[G], Z. Lu, Z. Evenson, C. R. Dela Cruz, Q. Huang, M. Lee, E. S. Choi, **M. Mourigal**, H. D. Zhou, and J. Ma, "$Ba_8MnNb_6O_{24}$: a model two-dimensional spin-5/2 triangular lattice antiferromagnet", *Physical Review Materials* **3**, 054412 (2019); [DOI].

∗32. **X. Bai**[G], **J. A. M. Paddison**[PD], E. Kapit, S. M. Koohpayeh, J.-J. Wen, S. E. Dutton, A. T. Savici, A. I. Kolesnikov, G. E. Granroth, C. L. Broholm, J. T. Chalker, and **M. Mourigal**, "Magnetic excitations of the classical spin liquid $MgCr_2O_4$", *Physical Review Letters* **122**, 097201 (2019); [DOI].

31. J. Schlappa, U. Kumar, K. J. Zhou, S. Singh, **M. Mourigal**, V. N. Strocov, A. Revcolevschi, L. Patthey, H. M. Rønnow, S. Johnston, and T. Schmitt, "Direct observation of multi-spinon excitations outside of the two-spinon continuum in the antiferromagnetic spin chain cuprate Sr_2CuO_3", *Nature Communications* **9**, 5394 (2018); [DOI].

∗30. H. Ying, J. Dark, A. P. Omprakash, B. R. Wier, **L. Ge**[G], U. Raghunathan, N. E. Lourenco, Z. E. Fleetwood, **M. Mourigal**, D. Davidović, and J. D. Cressler, "Collector Transport in SiGe HBTs Operating at Cryogenic Temperatures", *IEEE Trans. on Electron Devices* **65**, 3697 (2018); [DOI].

∗29. Y. Kamiya, **L. Ge**[G], Tao Hong, Y. Qiu, D. L. Quintero-Castro, Z. Lu, H. B. Cao, M. Matsuda, Z. Lu, E. Choi, C. D. Batista, **M. Mourigal**, H. D. Zhou, and J. Ma, "The nature of spin excitations in the one-third magnetization plateau phase of $Ba_3CoSb_2O_9$", *Nature Communications* **9**, 2666 (2018); [DOI].

∗28. X. Zhang, F. Mahmood, **M. Daum**[G], Z. L. Dun, **J. A. M. Paddison**[PD], N. J. Laurita, T. Hong, H. D. Zhou, N. P. Armitage, and **M. Mourigal**, "Hierarchy of exchange interactions in the triangular-lattice spin-liquid $YbMgGaO_4$", *Physical Review X* **8**, 031001 (2018); [DOI].

∗27. Nora Hassan, S. Cunningham, **M. Mourigal**, E. I. Zhilyaeva, S. Turunova, R. N. Lyubovskaya, J. Schlueter, and N. Drichko, "Evidence for a quantum dipole liquid state in an organic quasi-two-dimensional material", *Science* **360**, 1101-1104 (2018); [DOI].

Perspective by B. J. Powell, "The expanding materials multiverse", *Science* **360**, 1073-1074 (2018).

26. J. Leiner, Joosung Oh, A. I. Kolesnikov, M. B. Stone, Manh Duc Le, E. P. Kenny, B. J. Powell, **M. Mourigal**, E. E. Gordon, M.-H. Whangbo, J.-W. Kim, S.-W. Cheong, and Je-Geun Park, "Magnetic excitations of the Cu^{2+} quantum spin chain in Sr_3CuPtO_6", *Physical Review B* **97**, 104426 (2018); [DOI].

∗25. J. R. Chamorro, **L. Ge**[G], J. Flynn, M. A. Subramanian, **M. Mourigal**, and T. M. McQueen, "Frustrated spin one on a diamond lattice" (Editors' Sugg.), *Physical Review Materials* **2**, 034404 (2018); [DOI].

∗24. **M. Mourigal**, "The two faces of a magnetic honeycomb" (News & Views, Non Peer-Reviewed Editorial), *Nature* **554**, 307-308 (2018); .

∗23. N. Blanc, J. Trinh, L. Dong, **X. Bai**[G], A. A. Aczel, **M. Mourigal**, L. Balents, T. Siegrist, and A. P. Ramirez, "Quantum criticality among entangled spin chains", *Nature Physics* **14**, 273-276 (2018); [DOI].

∗22. D. Davidović, H. Ying, J. Dark, B. R. Wier, **L. Ge**[G], N. E. Lourenco, A. P. Omprakash, **M. Mourigal** and J. D. Cressler, "Tunneling, current gain, and transconductance in silicon-germanium heterojunction bipolar transistors operating at milliKelvin temperatures", *Physical Review Applied* **8**, 024015 (2017); [DOI].

∗21. **L. Ge**[G], J. Flynn, **J. A. M. Paddison**[PD], M. B. Stone, S. Calder, M. A. Subramanian, A. P. Ramirez, **M. Mourigal**, "Spin order and dynamics in the diamond-lattice Heisenberg antiferromagnets $CuRh_2O_4$ and $CoRh_2O_4$" (Editors' Suggestion), *Physical Review B* **96**, 064413 (2017); [DOI].

Published and Accepted Journal Articles (Continued)

∗20. R. Rawl, **L. Ge**[G], H. Agrawal, Y. Kamiya, C. R. Dela Cruz, N. P. Butch, X. F. Sun, M. Lee, E. S. Choi, J. Oitmaa, C. Batista, **M. Mourigal**, H. D. Zhou, and J. Ma, "$Ba_8CoNb_6O_{24}$: a spin-1/2 triangular-lattice Heisenberg antiferromagnet in the 2D limit", *Physical Review B* **95**, 060412 (2017); [DOI].

∗19. **J. A. M. Paddison**[PD], **M. Daum**[G], Z. L. Dun, G. Ehlers, Y. Liu, M. B. Stone, H. D. Zhou, and **M. Mourigal**, "Continuous excitations of the triangular-lattice quantum spin liquid $YbMgGaO_4$", *Nature Physics* **13**, 117-122 (2017); [DOI].

Web of Science's Highly Cited Paper (Top 1% in its academic field). News & Views on concurrent work by L. Balents, "Condensed-matter physics: Quantum mechanics in a spin", *Nature* **540**, 534-535 (2016).
Listed as ORNL Neutron Scattering Top 10 most impactful papers of 2017.

∗18. H. Ying, B. R. Wier, J. Dark, N. E. Lourenco, **L. Ge**[G], A. P. Omprakash, **M. Mourigal**, D. Davidović, and J. D. Cressler, "Operation of SiGe HBTs down to 70 mK", *IEEE Electron Device Letters* **38**, 12-15 (2017); [DOI].

∗17. **J. A. M. Paddison**[PD], H. S. Ong, J. O. Hamp, P. Mukherjee, **X. Bai**[G], M. G. Tucker, N. P. Butch, C. Castelnovo, **M. Mourigal**, and S. E. Dutton, "Emergent order in the kagome Ising magnet $Dy_3Mg_2Sb_3O_{14}$", *Nature Communications* **7**, 13842 (2016); [DOI].

16. A. M. Fry-Petit, A. F. Rebola, **M. Mourigal**, M. Valentine, N. Drichko, J. P. Sheckelton, C. J. Fennie, and T. M. McQueen, "Direct assignment of molecular vibrations through normal mode analysis of the neutron dynamic pair distribution function technique". *Journal of Chemical Physics* **143**, 124201 (2015); [DOI].

15. D. E. MacLaughlin, O. O. Bernal, L. Shu, J. Ishikawa, Y. Matsumoto, J.-J. Wen, **M. Mourigal**, C. Stock, C. L. Broholm, G. Ehlers, K. Kimura, Y. Machida, S. Nakatsuji, Y. Shimura, and T. Sakakibara, "Unstable spin-ice order in the stuffed metallic pyrochlore $Pr_{2+x}Ir_{2-x}O_{7-\delta}$" (Editors' Suggestion), *Physical Review B* **92**, 054432 (2015); [DOI].

14. **M. Mourigal**, S. Wu, M. B. Stone, J. R. Neilson, J. M. Caron, T. M. McQueen, and C. L. Broholm, "Block magnetic excitations in the orbitally selective Mott insulator $BaFe_2Se_3$", *Physical Review Letters* **115**, 047401 (2015); [DOI].

13. M. Valentine, S. M. Koohpayeh, **M. Mourigal**, T. M. McQueen, C. L. Broholm, N. Drichko, S. Dutton, R.J . Cava, T. Birol, H. Das, and C. J. Fennie, "Raman study of magnetic excitations and magneto-elastic coupling in $SrCr_2O_4$", *Physical Review B* **91**, 144411 (2015); [DOI].

12. B. Dalla Piazza, **M. Mourigal**, N. B. Christensen, G. J. Nilsen, P. Tregenna-Piggott, T. G. Perring, M. Enderle, D. F. McMorrow, D. A. Ivanov, and H. M. Rønnow, "Fractional excitations in the square-lattice quantum antiferromagnet", *Nature Physics* **11**, 62-68 (2015); [DOI].

News & Views by F. Becca and S. Sorella, "Quantum Magnets: Break it up", *Nature Physics* **11**, 8-9 (2015).

11. **M. Mourigal**, W. T. Fuhrman, J. P. Sheckelton, A. Wartelle, J. A. Rodriguez-Rivera, D. L. Abernathy, T. M. McQueen, and C. L. Broholm, "Molecular quantum magnetism in $LiZn_2Mo_3O_8$", *Physical Review Letters*, **112**, 027202 (2014); [DOI].

10. S. M. Koohpayeh, J.-J. Wen, **M. Mourigal**, S. E. Dutton, R. J. Cava, C. L. Broholm, and T. M. McQueen, "Optical floating zone crystal growth and magnetic properties of $MgCr_2O_4$", *Journal of Crystal Growth* **384**, 39-43 (2013); [DOI].

9. **M. Mourigal**, W. T. Fuhrman, A. L. Chernyshev, and M. E. Zhitomirsky, "Dynamical structure factor of triangular lattice antiferromagnet", *Physical Review B* **88**, 094407 (2013); [DOI].

8. **M. Mourigal**, M. Enderle, A. Klöpperpieper, J.-S. Caux, A. Stunault, and H. M. Rønnow, "Fractional spinon excitations in the quantum Heisenberg antiferromagnetic chain", *Nature Physics* **9**, 435-441 (2013); [DOI].

7. **M. Mourigal**, M. Enderle, B. Fåk, R. K. Kremer, J. M. Law, A. Schneidewind, A. Hiess, and A. Prokofiev, "Evidence of a bond-nematic phase in $LiCuVO_4$", *Physical Review Letters* **109**, 027203 (2012); [DOI].

6. W. T. Fuhrman, **M. Mourigal**, M. E. Zhitomirsky, and A. L. Chernyshev, "Dynamical structure factor of quasi-2D antiferromagnet in high fields", *Physical Review B* **85**, 184405 2012); [DOI].

Published and Accepted Journal Articles (Continued)

5. S. E. Dutton, M. Kumar, **M. Mourigal**, Z. G. Soos, J.-J. Wen, C. L. Broholm, N. H. Andersen, Q. Huang, M. Zbiri, R. Toft-Petersen, and R. J. Cava, "Quantum spin liquid in frustrated one-dimensional $LiCuSbO_4$", *Physical Review Letters* **108**, 187206 (2012); [DOI].

4. J. Schlappa, K. Wohlfeld, K. Zhou, **M. Mourigal**, M. Haverkort, V. N. Strocov, L. Hozoi, C. Monney, S. Nishimoto, S. Singh, A. Revcolevschi, J.-S. Caux, L. Patthey, H. M. Rønnow, J. v.d.Brink, and T. Schmitt, "Spin-orbital separation in the quasi-1D Mott insulator Sr_2CuO_3", *Nature* **485**, 82-85 (2012); [DOI].

   Web of Science's Highly Cited Paper (Top 1% in its academic field). News & Views by R. Claessen, Solid-state physics: Electrons do the split", *Nature* **485**, 46-47 (2012).

3. B. Dalla Piazza, **M. Mourigal**, M. Guarise, H. Berger, T. Schmitt, M. Grioni, and H. M. Rønnow, "Unified quantitative model for magnetic and electronic spectra of the undoped cuprates", *Physical Review B* **85**, 100508(R) (2011); [DOI].

2. **M. Mourigal**, M. Enderle, R. K. Kremer, J. M. Law, and B. Fåk, "Ferroelectricity from spin supercurrents in $LiCuVO_4$", *Physical Review B* **83**, 100409(R) (2011); [DOI].

1. **M. Mourigal**, M. E. Zhitomirsky, and A. L. Chernyshev, "Field-induced decay dynamics in square-lattice antiferromagnets", Editors' Suggestion, *Physical Review B*, **82**(14), 144402 (2010); [DOI].

Dissertations

2. **M. Mourigal** (Dirs: H. M. Rønnow and M. Enderle), "Order and Dynamics of Model Quantum Antiferromagnets". Ph.D. Dissertation, Ecole Polytechnique Fédérale de Lausanne (June 2011); [DOI].

   Defense committee included P. Bourges (Saclay), F. Mila (Lausanne) and D. A. Tennant (Berlin).

1. **M. Mourigal** (Dir: M. E. Zhitomirsky), "Effect of Magnetic Field on Dynamics of Antiferromagnets"; Master's Thesis, Ecole Polytechnique Fédérale de Lausanne (February 2008). [DOI].

Teaching and Mentoring

Courses Taught

Grade is "Instructor Overall Effectiveness" score given by students (Response Rate, Number of respondents)

Spring 2019	PHYS 4262	Solid State Physics	30 students	4.9/5 (53%, 17 responses)
Fall 2018	PHYS 3122	Electro & Magnetostatics	55 students	5.0/5 (56%, 31 responses)
Spring 2018	PHYS 4262	Solid State Physics	16 students	5.0/5 (81%, 13 responses)
Fall 2017	PHYS 3122	Electro & Magnetostatics	61 students	5.0/5 (44%, 27 responses)
Spring 2017	PHYS 2212	Introductory Physics II	45 students	4.9/5 (67%, 30 responses)
Spring 2016	PHYS 2212	Introductory Physics II	79 students	4.9/5 (61%, 48 responses)
Spring 2015	PHYS 2212	Introductory Physics II	92 students	4.8/5 (59%, 54 responses)

Graduate Students Supervised

3. Marcus Daum GT Physics Graduate Student 01/2016-Current
   Candidacy exam passed November 12, 2018. Recipient of a DOE SCGSR award .
   Project: "Quantum Magnetism in Rare-Earth Magnets: Neutron Scattering and Instrumentation"
2. Luwei Ge GT Physics Graduate Student 01/2015-Current
   Candidacy exam passed December 15, 2017. Graduation expected May 2020.
   Project: "Anomalous Spin Dynamics in Frustrated Quantum Magnets"
1. Xiaojian Bai GT Physics Graduate Student 01/2015-Current
   Candidacy exam passed January 9, 2018. Graduation expected October 23, 2019.
   Project: "Neutron Scattering and Quantitative Modeling of Magnetic Excitations in Spin-Liquids"

Postdocs Mentored

2. Zhiling Dun Postdoctoral Research Associate 09/2017–Current
1. Joseph Paddison Postdoctoral Research Associate 06/2015–09/2016
   Subsequently: Junior Research Fellow, Churchill College & Cavendish Lab, Cambridge University (UK)
   Currently: Wigner Distinguished Staff Fellow, Oak Ridge National Laboratory (TN)

Undergraduate Students Supervised

12. Patrick Pinney — GT Physics Undergraduate Student — 05/2019–Current
11. Liam Ritchie — GT Physics Undergraduate Student — 05/2018–Current
10. Emilly Hollingworth — GT Physics Undergraduate Student — 06/2018–07/2019
    Hitohiro Fukuyo Outstanding Physics Undergraduate Award
    Subsequently: Graduate Student in Physics at the University of California, Berkeley (US)
9. Hannah Price — GT Physics Undergraduate Student — 09/2017–07/2019
    President's Undergraduate Research Award (PURA), Spring 2018 ($1,500)
    Subsequently: Master Student in Theoretical Physics at ETH Zürich (CH)
8. Zack Kennedy — GT Physics Undergraduate Student — 09/2017–07/2019
    REU Student at Johns Hopkins Crystal Growth Facility (PARADIM), Summer 2018
    Subsequently: Graduate Student in Physics at Cornell University (US)
7. Emmanuel Aneke — Summer Student (NSF REU Program) — 06/2018–07/2018
6. Darian Hartsell — GT Physics Undergraduate Student — 09/2016–06/2018
    President's Undergraduate Research Award (PURA), Spring 2018 ($1,500)
    Subsequently: Graduate Student in Physics at the University of Southern California (US)
5. Cheetan Velivela — Cornell Physics Undergraduate Student (Visiting) — 01/2017–07/2017
    Subsequently: Continued as Physics Undergraduate Student at Cornell University (US)
4. Sai Paladugu — GT Physics and Computer Science Undergraduate Student — 06/2016–05/2017
    President's Undergraduate Research Award (PURA), Spring 2017 ($1,500)
    Subsequently: Graduate Student in Physics at the University of Illinois, Urbana-Champaign (US)
3. Patrick Nave — ORNL Intern (Challenge Program) — 06/2016–08/2016
    Co-advised with Dr. Jiao Lin at Oak Ridge National Laboratory's NDAV Division
    Subsequently: Graduate Student in Mathematics at Duke University, Durham (US)
2. Michael Wadell — ORNL Intern (Challenge Program) — 06/2016–08/2016
    Co-advised with Dr. Matthew Stone at Oak Ridge National Laboratory's QCMD Division
    Subsequently: Graduate Student in Data Analytics at Columbia University, New York (US)
1. Michael Waterbury — GT Physics Undergraduate Student — 04/2015–08/2016
    Subsequently: Graduate Student in Physics at the University of California, Irvine (US)

Grants and Contracts

Currently Funded (Total: $1,509,272)

3. Acquisition of an Energy-tunable X-ray Analytical Characterization Tool (EXACT) for Measuring Local Structure and Chemistry in Materials (NSF-DMR-1925797)
   National Science Foundation, Division of Materials Research, MRI.
   Total: $332,500.
   Role: Co-PI with five GT colleagues including Faisal Alamgir (PI).
   Period: 09/2019–08/2022 (3 Years)
2. "Controlling quantum coherence in frustrated spin-orbit magnets" (DE-SC-0018660)
   Department of Energy, Office of Science, Basic Energy Sciences, Neutron Scattering Program.
   Total: $555,000 (Direct Costs: $373,913)
   Role: PI (100% Share)
   Period: 06/2018–05/2021 (3 Years)
1. "CAREER: Anomalous spin dynamics in triangular quantum magnets: from materials discovery to quantitative neutron spectroscopy" (NSF-DMR-1750186)
   National Science Foundation, Division of Materials Research, Condensed Matter Physics.
   Total: $621,772 (Direct Costs: $440,670)
   Role: PI (100% Share)
   Period: 06/2018–05/2023 (5 Years)

Professional Activities and Service

∗ indicates major service work in terms in time commitment and/or responsibilities.

Advisory Roles and Committees

∗	2020	Chair, SNS-HFIR User Group Executive Committee (SHUG-EC), ORNL.
	2019-2021	Elected Member, SNS-HFIR User Group Executive Committee (SHUG-EC), ORNL.
	2018-Current	Chair, MANTA Instrument Advisory Committee, Neutron Scattering Division, ORNL.
	2016-2017	Co-chair, Young Investigators Advisory Board, Quantum Condensed Matter Division, ORNL.

Meeting Organization

∗	2019	Focus Topic Organizer (GMAG) for the 2020 APS March Meeting
	2018	Session Chair, APS March Meeting 2018, Los Angeles (CA).
	2017	Organizer, Workshop on Early Quantum Materials Science at ORNL's Second Target Station, Georgia Tech, 20 international participants, January 05–06, 2017.
	2017	Session Chair, APS March Meeting 2017, New Orleans (LA).

Peer Review

	2019	Reviewer, Early Carreer and Neutron Scattering Programs, Office of Science, DOE.
	2019	Reviewer, ORAU's Ralph E. Powe Junior Faculty Enhancement Award Applications.
	2018-Current	Referee, *Nature Reviews*, *Journal of the Physical Society of Japan*, *Communications Physics*.
	2018	Reviewer, Small Business Innovation Research (SBIR) Program, Office of Science, DOE.
	2017-Current	Referee, *Nature*, *Science Advances*, *npj Quantum Materials*, *Physical Review Materials*.
∗	2017-Current	Member, Beam Time Allocation Committee, NIST Center for Neutron Research, NIST.
	2017	Nature Research Outstanding Peer Reviewer.
∗	2016-Current	Member, Reviewer and On-Site Science Review Committee, Neutron Scattering Division, ORNL.
	2016-Current	Referee, *Nature Communications*.
	2016	Reviewer, Condensed Matter Physics, Division of Materials Research, NSF.
	2016	Alternate Member, Beam Time Allocation Committee, NIST Center for Neutron Research.
	2015-Current	Referee, *Nature Physics*, *Physical Review Letters*, *Physical Review B*.

Service for Georgia Tech

∗	2019-Current	Co-Director, Georgia Tech Quantum Alliance (University-wide effort in quantum sci. & engineering).
	2019	Lead technical organizer, Workshop on Quantum Sciences and Technologies.
∗	2018-Current	Elected Member and Secretary, Faculty Advisory Committee, School of Physics.
	2018-2019	Member, Blue Ribbon Panel, Institute for Materials.
∗	2017-2018	Chair, Condensed Matter Faculty Search Committee, School of Physics (1 succesful hire).
	2017-2018	Member, Excellence through Diversity in Faculty Hiring Committee.
	2017	Member, Review Committee, Institute for Materials.
	2016-2019	Co-Author (with Colin Parker), White paper on *Adding $\hbar$ to Georgia Tech$\hbar$*, Strategic Plan.
	2016	Strategic Planning Committee, Institute for Materials.
	2015-2016	Member, Introductory Physics Program Committee, School of Physics.

Membership in Professional Societies

American Physical Society
Neutron Scattering Society of America
Sigma Xi, The Scientific Research Honor Society
American Association of University Professors

Oral Presentations

Invited Presentations at International Conferences & Workshops

∗25. "Spin liquids: the New Wave of magnetism", Materials Research Society (MRS) Fall Meeting 2019, Boston (MA). December 2019.

∗24. "Magnetic Materials: a gateway to quantum matter and information" (Poster), Second Japanese-American-German Frontiers of Science Symposium, Kyoto (Japan). September 27, 2019.

∗23. "Magnetic excitations in classical spin liquids: the case of MgCr2O4 and beyond", International Conference on Strongly Correlated Electron Systems (SCES) 2019, Okayama (Japan). September 25, 2019.

∗22. "Anomalous spin dynamics in triangular quantum magnets", Workshop on Quantum Matter: Dynamics of Quantum Magnetism, Tsung-Dao Lee Institute, Shanghai (China). August 29, 2019.

Invited Presentations at International Conferences & Workshops (Continued)

∗21. "Magnetic excitations in classical spin liquids: the case of $MgCr_2O_4$ and beyond". Workshop on Competing Interactions and Colossal Responses in Transition Metal Oxides, Telluride Science Research Center (CO). June 26, 2019.

∗20. "Magnetic excitations of a classical spin liquid: the case of $MgCr_2O_4$", Workshop on Constrained Many-Body Dynamics, Max Planck Institute for the Physics of Complex Systems, Dresden (Germany). March 29, 2019.

∗19. "Nature of magnetic excitations in spin liquids", Quantum Materials Workshop, Oak Ridge National Laboratory (TN). February 19, 2019.

∗18. "Nature of magnetic excitations in spin liquids", Quantum Materials Symposium 2019, YongPyong (South Korea). February 12, 2019.

∗17. "Exotic magnetic matter and the search for spin liquids", The 85th Annual Meeting of the APS Southeastern Section, Knoxville (TN). November 8, 2018.

∗16. "Anomalous spin dynamics in triangular quantum magnets", International Conference on Highly Frustrated Magnetism 2018, Davis (CA). July 14, 2018.

∗15. "Impact and future of cold neutrons for quantum materials research", Neutron Users New Instrument Workshop, American Conference on Neutron Scattering, College Park (MD). June 24, 2018.

∗14. "Spin fragmentation in kagome Ising magnets". 75th Pittsburgh Diffraction Conference, Indiana (PA). October 19, 2017.

∗13. "Kagome Ising physics realized in bulk magnets: the $RE_3Mg_2Sb_3O_{14}$ family". International Conference on Strongly Correlated Electron Systems (SCES) 2017, Prague (Czech Republic). July 17, 2017.

∗12. "Spin-liquid candidates in novel triangular and kagome rare-earth oxides". Workshop on Competing Interactions and Colossal Responses in Transition Metal Oxides, Telluride Science Research Center (US). June 28, 2017.

∗11. "Non-harmonic magnons in quantum antiferromagnets". Workshop on Larmor precession techniques for ultrahigh-resolution spectroscopy, Oak Ridge National Laboratory (US). May 25, 2017.

∗10. "Current investigations in quantum magnetism using (mostly) cold neutrons". Workshop on the MANTA spectrometer, Oak Ridge National Laboratory (US). May 4, 2017.

∗9. "Continuous magnetic excitations in the triangular-lattice quantum spin-liquid $YbMgGaO_4$". APS March Meeting, New Orleans (US). March 13, 2017.

8. "Block magnetic excitations in the orbitally selective Mott insulator $BaFe_2Se_3$". User Meeting 2015, Oak Ridge National Laboratory (US). October 27, 2015.

∗7. "Opportunities for Cold Neutrons on Quantum Materials: Bright, Focused, Extreme and Polarized". MANTA: A Next Generation Cold Triple Axis Spectrometer for the High Flux Isotope Reactor, Oak Ridge National Laboratory (US). May 19, 2015.

6. "Frustrated magnetism with magnetic molecules". American Conference on Neutron Scattering, Knoxville (US). June 2, 2014.

5. "Molecular quantum magnetism in $LiZn_2Mo_3O_8$". APS March Meeting, Denver (US). March 3, 2014.

4. "Molecular quantum magnetism in $LiZn_2Mo_3O_8$". Mott Physics Beyond Heisenberg, Monte Veritá (Switzerland). October 28, 2013.

3. "Origin of ferroelectricity and exotic magnetism in frustrated $LiCuVO_4$". APS March Meeting, Baltimore (US). March 20, 2013.

2. "Origin of ferroelectricity and exotic magnetism in frustrated $LiCuVO_4$". FLIPPER, International Workshop on Single-Crystal Diffraction with Polarised Neutrons, Institut Laue-Langevin, Grenoble (France). January 25, 2013.

1. "Neutron scattering from quantum and frustrated spin chains". SYNEMAG – International Workshop on Synchrotron and Neutron Applications of High Magnetic Fields, European Synchrotron Radiation Facility, Grenoble (France). October 19, 2012.

Invited Presentations at Universities & Institutes

∗27. "Spin Liquids: A dive into exotic magnetic matter", Physics Colloquium, Georgia Tech, Atlanta (GA). September 09, 2019.

∗26. "Nature of magnetic excitations in selected 2D and 3D spin liquids", Solid State Physics Seminar, ETH Zürich (CH). June 03, 2019.

∗25. "Spin liquids: the New Wave of Magnetism", Physics Colloquium, Emory University, Atlanta (GA). March 26, 2019.

∗24. "Exotic magnetic matter and the search for spin-liquids", Institute of Quantum Matter Seminar, Johns Hopkins University, Baltimore (MD). March 18, 2019.

∗23. "Anomalous spin dynamics in triangular quantum antiferromagnets", Condensed Matter Seminar, Texas A&M, College Station (TX). January 18, 2019.

Invited Presentations at Universities & Institutes (Continued)

∗22. "Anomalous spin dynamics in triangular quantum magnets", Condensed Matter Seminar, University of Kentucky (KY). November 13, 2018.

∗21. "Exotic magnetic matter and the search for spin-liquids", Physics Colloquium, North Carolina State University, Raleigh (NC). September 17, 2018.

∗20. "Neutron scattering from quantum materials", Quantum Café, Flatiron Institute, Simons Foundation, New York City (US); April 11, 2018.

∗19. "Spin-liquids in novel triangular and kagome rare-earth magnets", Condensed Matter Seminar, Brookhaven National Laboratory, Upton (US); April 28, 2017.

∗18. "Triangular and kagome rare-earth magnets: a new route to spin-liquids?", Quantum Matters Seminar, University of Waterloo, Waterloo (CA); April 21, 2017.

∗17. "Triangular and kagome rare-earth magnets: a new route to spin-liquids?", Brockhouse Institute for Materials Research Seminar, McMaster Univeristy, Hamilton (CA); April 20, 2017.

∗16. "Spin-liquids in novel triangular and kagome rare-earth magnets", Condensed Matter Seminar, Department of Physics and Astronomy, University of Utah, Salt Lake City (US); February 28, 2017.

∗15. "Magnetic excitations in spin-liquids: from classical to quantum", Condensed Matter Seminar, Department of Physics and Astronomy, University of California, Irvine (US); January 11, 2017.

∗14. "Novel spin-liquids in triangular and kagome rare-earth magnets", "Chez Pierre" Seminar, Department of Physics, Massachusetts Institute of Technology, Cambridge (US); December 5, 2016.

∗13. "Probing the exotic collective behavior of frustrated magnetic matter", Department of Chemistry and Physics, Augusta University, Augusta (US); September 2, 2016.

∗12. "Using neutron scattering to probe exotic magnetic excitations in quantum materials". Department of Physics, Clark Atlanta University, Atlanta (US). April 14, 2016.

11. "Interacting quasiparticles in quantum and frustrated magnets". School of Physics, Georgia Institute of Technology, Atlanta (US). March 13, 2014.

10. "Interacting quasiparticles in quantum and frustrated magnets", "Chez Pierre" Seminar, Department of Physics, Massachusetts Institute of Technology, Cambridge (US). February 12, 2014.

9. "Interacting quasiparticles in quantum and frustrated magnets", Department of Physics and Astronomy, SUNY Stony Brook (US). January 24, 2014.

8. "Counting fractional excitations in quantum and frustrated spin chains", Clarendon Laboratory, Oxford University (UK). January 28, 2013.

7. "Counting fractional magnetic excitations with neutrons", Department of Physics, Rice University, Houston (US). January 16, 2013.

6. "Excitations fractionnaires et effet de la frustration dans les chaines de spins quantiques", Laboratoire Léon Brillouin, Saclay (FR). October 22, 2012.

5. "Neutron Scattering Experiments for Quantum and Frustrated Spin Chain", Kavli Institute for Theoretical Physics, Santa Barbara (US). October 2, 2012.

4. "Neutron scattering from frustrated quantum spin chains", Spallation Neutron Source, Oak Ridge National Laboratory (US). November 10, 2011.

3. "Polarized neutron scattering from model spin-1/2 antiferromagnets", NIST Center for Neutron Research, Gaithersburg (US). February 8, 2011.

2. "Polarized neutron scattering from model spin-1/2 antiferromagnets", The Johns Hopkins University, Baltimore (US). February 7, 2011).

1. "Non-linear spin dynamics on the square-lattice: neutron scattering and theory", Niels Bohr Institute, University of Copenhagen (DK). May 5, 2010.

Outreach Activities

7. Organized the visit of 12 Georgia Tech School of Physics' REU students to Oak Ridge National Laboratory (US). June 25–26, 2019.

6. Organized and participated in the visit of 13 Georgia Tech School of Physics' REU students to Oak Ridge National Laboratory (US). June 18–19, 2018.

5. Organized and participated in the visit of 10 Georgia Tech School of Physics' REU students to Oak Ridge National Laboratory (US). June 19–20, 2017.

4. Served as "Quantum Matter Expert", *Graduate Student Lunch with the Experts*, APS March Meeting, New Orleans. March 14, 2017. [Web]

3. Co-organized and acted as faculty supervisor for the *ORNL Challenge Program*, hosting two undergraduate summer students at Oak Ridge National Laboratory (US). June 6–August 12, 2016. [Web]
2. Organized and participated in the visit of 11 Georgia Tech School of Physics' REU students to Oak Ridge National Laboratory (US). June 17–18, 2016. [Web]
1. Participated in the art show *Of the attraction of the sun* by artist Rodolphe Delaunay. The Institute of Contemporary Art Baltimore and the Current Gallery, Baltimore (US). June 16, 2013. [Web]