

Keith M. Taddei

Curriculum Vitae

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Passionate researcher specializing in neutron scattering, motivated by collaborative exploration of novel physics in quantum materials. Enthusiastic scientific leader and mentor, proselytizer of the neutron scattering technique.

Education

- Ph.D.: Northern Illinois University** May 2016
Department of Physics, Advisor: Prof. Omar Chmaissem
Dissertation: Magnetism in the iron-based superconductors: the determination of spin-nematic fluctuations as the primary order parameter and its implications for unconventional superconductivity
- B.S.: Lewis University** May 2010
Department of Physics
- magna cum laude

Roles & Responsibilities

Oak Ridge National Laboratory

- Staff Scientist on WAND² and POWDER neutron diffractometers June 2019 – Present
Summary: Run independent research program on quantum materials. Operate, maintain and develop the WAND² and POWDER diffractometers of the High Flux Isotope Reactor. Build collaborative research projects across Neutron scattering and Materials Science & Technology Divisions. Mentor post-docs, graduate and undergraduate students
- Highlights:
- First authored or co-authored ~8 publications/yr
 - Co-wrote funded LDRD on studying high-pressure superconductivity
 - Co-founded ‘Quantum entanglement’ journal club
 - Co-authored proposal for funding from Canadian Foundation for Innovation
 - Participate in Quantum Science Center led research effort
 - Performed 30+ neutron scattering experiments
 - Co-authored >20 beamtime proposals
 - Lecturer at annual Neutron and X-ray Scattering School
 - Co-Developed and commissioned instrument upgrades
 - Built Monte Carlo Instrument models for instrument performance and upgrades (McStas)
 - Co-organized Magnetic Structure Determination from Neutron Scattering workshop
 - Worked on data reduction workflows and tasks
 - Part of ‘Think Tank’ developing next generation powder diffractometer

- Post-Doctoral Associate, Neutron Scattering Division June 2016- June 2019
Summary: Perform independent research in quantum materials (75%), Operate POWDER diffractometer of the High Flux Isotope Reactor (25%).
- Highlights:
- First authored or co-authored 13 publications
 - Co-authored write-up of the 2019 ‘Inaugural Oak Ridge Quantum Materials Workshop’
 - Developed high-pressure program for neutron scattering
 - Local contacted 30+ user experiments
 - Lecturer at annual Neutron and X-ray Scattering School

Argonne National Laboratory (via NIU)

- Guest Graduate Researcher, Neutron and X-Ray Scattering Group Dec. 2012 – May 2016
Summary: Perform research on the mechanism of unconventional superconductivity in Iron-Based superconductors using neutron and x-ray scattering techniques. Grow single crystal and powder samples. Use lab-based characterization techniques (resistivity, magnetization, table-top x-ray.)

Teaching Experience

Instrument Scientist

- Lecturer and proctor of guided hands-on tutorials on the technique of neutron powder diffraction, theory of magnetic structure solution and use Rietveld refinement code for nuclear and magnetic structural modeling for the 2019, 2020, 2021, and 2022 Neutron and X-ray Scattering Summer Schools
- Continuous instruction of new neutron scattering users (from undergraduate to professors) on the theory, operation and data handling of a neutron powder diffractometer
- Annual lecturer at the Magnetic Structure Solution Workshop

Post-Doctoral

- Lecturer and proctor of guided hands-on tutorials for the 2016, 2017 and 2018 Neutron and X-ray Scattering Summer Schools
- Instruction of new neutron scattering users
- Hosted informal sessions for Oak Ridge National Laboratory's post-graduate community on using neutrons in research

Graduate Student

- Teaching assistant for calculus-based Electricity and Magnetism laboratory: guided recitations, taught laboratory coursework, proctored lab work and graded reports (1 semester)
- Tutoring center for all undergraduate physics coursework (1 semester)
- Teaching assistant for Advanced Physics Laboratory (Senior level), helped students run experiments, learn experimental techniques (daq, labview coding, circuit troubleshooting etc), guided students in the design and implementation of senior lab projects (2 semesters)
- Volunteer at STEM Fest – community outreach teaching physics concepts to non-technical visitors

Under-graduate Student

- University tutor for Physics, Mathematics and Computer Science courses (4 semesters)
- Revised and expanded laboratory manual for algebra and calculus based 1st year physics

Technical Skills

- Extensive experience with data collection, reduction and analysis of neutron and x-ray scattering as applied through powder and single crystal diffractometers as well as spectrometers
- Rietveld refinements for both crystal and powder data
- Nuclear/magnetic structure determination through group theory and representational analysis
- Development of analytical programs (structure properties calculations, peak integration)
- Pair Distribution Function analysis as implemented in PDFgui
- Reverse Monte Carlo technique as implemented in RMCProfile
- Spin-wave modeling through linearized spin-wave theory
- Modeling and optimization of neutron diffraction instruments via MC as implemented in McStas
- Proficiency in Python and LaTeX, familiarity with C++ and Matlab
- Transport and magnetic properties measurements: resistance, heat capacity, magnetic susceptibility
- Synthesis of single crystal and powder materials through self-flux, Sn-Flux, and sintering techniques, handling of highly toxic/reactive/volatile elements for synthesis
- Experience loading and pressurizing diamond anvil, gas and clamp pressure cells
- Experience operating, troubleshooting and developing cryogenic and high magnetic field sample environments including, closed cycle, liquid helium and dilution refrigerators, ³He inserts and cryomagnets

Awards, Service and Organizations

Awards

- 2016 Graduate School Dissertation Completion Fellowship
- 2016 Outstanding Graduate Student – Physics
- 2015 ACA Annual Meeting Margaret Etter Award in the category of Neutron Scattering

Elected Leadership Roles

- ACA Neutron-SIG Chair-Elect 2022
- Executive Committee Member ORNL Postdoctoral Association 2017-2018
- Vice-Chair Research Committee ORNL Postdoctoral Association 2017-2018
- Vice-President Society of Physics Students Lewis University Chapter 2009-2010
- Secretary American Chemical Society Lewis University Chapter 2007-2008

Community and Professional Service

- Neutron and X-ray Scattering School 2022 co-organizer
- NIST Center for Neutron Research proposal reviewer
- Referee for Physical Review Letters, Physical Review B, Physical Review Materials and Solid State Chemistry
- Volunteer – ORPA donation drive to benefit the victims of hurricanes
- Volunteer – United Way Bake Sale
- Community outreach for Neutron Scattering Society of America (Booth at APS March Meeting)

Organizations

- American Crystallographic Society
- American Physical Society
- Neutron Scattering Society of America
- Pittsburgh Diffraction Society
- *Sigma Xi* research society
- *Sigma Pi Sigma*
- *Kappa Mu Epsilon*

Publications

48. K.M. Taddei, V.O. Garlea, A.M. Samarakoon, L.D. Sanjewa, J. Xing, T.W. Heitmann, C dela Cruz, A.S. Sefat, D. Parker, “Zigzag magnetic order and possible Kitaev interactions in the spin-1 honeycomb lattice KNiAsO₄” Phys. Rev. Research 5, 013022 (2023)
47. L.M. Whitt, T.C. Douglas, S. Chi, K.M. Taddei, J.M. Allred, “Magnetic excitation linking quasi-one-dimensional Chevrel-type selenide and arsenide superconductors” Phys. Rev. Mater. 6, 124804 (2022)
46. Shang Gao, Ganesh Pokharel, Andrew F May, Joseph AM Paddison, Chris Pasco, Yaohua Liu, Keith M Taddei, Stuart Calder, David G Mandrus, Matthew B Stone, Andrew D Christianson, “Line-Graph Approach to Spiral Spin Liquids” Phys. Rev. Lett. 129, 237202 (2022)
45. Kelly J Neubauer, Feng Ye, Yue Shi, Paul Malinowski, Bin Gao, Keith M Taddei, Philippe Bourges, Alexandre Ivanov, Jiun-Haw Chu, Pengcheng Dai, “Spin structure and dynamics of the topological semimetal Co₃Sn_{2-x}In_xS₂” npj Quantum Materials 7, 112 (2022)
44. Jin-Ke Bao, Huibo Cao, Matthew J Krogstad, Keith M Taddei, Chenfei Shi, Shixun Cao, Saul H Lapidus, Sander van Smaalen, Duck Young Chung, Mercouri G Kanatzidis, Stephan Rosenkranz, Omar Chmaissem, “Spin and charge density waves in quasi-one-dimensional KMn₆Bi₅” Phys. Rev. B 106, L201111 (2022)
43. G. Johnstone, M. González-Rivas, K.M. Taddei, R. Sutarto, G.A. Sawatzky, R.J. Green, M. Oudah, A.M. Hallas, “Entropy Engineering and Tunable Magnetic Order in the Spinel High-Entropy Oxide” J. Am. Chem. Soc. 2022, 144, 45, 20590
42. R. Salazar-Rodriguez, D.A. Guerra, J.-M. Greneche, K.M. Taddei, N.-R. Checca-Huaman, E.C. Passamani, J.A. Ramos-Guivar, “Presence of Induced Weak Ferromagnetism in Fe-Substituted YFe_xCr_{1-x}O₃ Crystalline Compounds” Nanomaterials 19, 3516 (2022)
41. L.D. Sanjewa, T.M.S. Pellozzeri, C.D. McMillen, K.M. Taddei, T. Heitmann, H. Kaiser, J.W. Kolis, “SrNi(VO₄)(OH): The High-Temperature Hydrothermal Synthesis and Magnetic Properties of an Adelite-Descloizite-Type Structure” Crystals, 10, 12, 1360 (2022)

40. K.M. Taddei, L.Y. Lin, L.D. Sanjeeva, J. Xing, C. dela Cruz, A.S. Sefat, D. Parker, “Single pair of Weyl nodes in the spin-canted structure of EuCd_2As_2 ” *Phys. Rev. B Letters* **104**, L140401 (2022)
39. L.D. Sanjeeva, J. Xing, K.M. Taddei, A.S. Sefat, “Synthesis, crystal structure and magnetic properties of KLnSe_2 ($\text{Ln} = \text{La, Ce, Pr, Nd}$) structures: a family of 2D triangular lattice frustrated magnets” *J. Solid State Chem.* **308**, 122917 (2022)
38. Duncan H. Moseley, Keith M. Taddei, Jiaqiang Yan, Michael A. McGuire, Stuart A. Calder, Daryoosh, Vashae, Huaizhou Zhao, David S. Parker, Randy S. Fishman, and Raphael P. Hermann “Giant doping response of magnetic anisotropy in MnTe ” *Phys. Rev. Mater.* **6**, 014404 (2022) *Editor’s Suggestion*
37. E.E. Oyeka, M.J. Winiarski, M. Sorolla II, K.M. Taddei, A. Scheie, T.T. Tran, “Spin and Orbital Effects on Asymmetric Exchange Interaction in Polar Magnets: $M(\text{IO}_3)_2$ ($M = \text{Cu, Mn}$)” *Inorg. Chem.* **60**, 21, 16544 (2021)
36. Y. Cao, K. Lin, S. Khmelevskiy, M. Avdeev, K.M. Taddei, Q. Zhang, Q. Huang, Q. Li, K. Kato, C.C. Tang, A. Gibbs, C.W. Wang, J. Deng, J. Chen, H. Zhang, X. Xing, “Ultrawide temperature range super-Invar behavior of $\text{R}_2(\text{Fe,Co})_{17}$ materials ($\text{R}=\text{rare earth}$)” *Phys. Rev. Lett.* **127**, 055501 (2021)
35. E.E. Oyeka, M.J. Winiarski, A. Blachowski, K.M. Taddei, A. Scheie, T.T. Tran, “Potential Skyrmion Host $\text{Fe}(\text{IO}_3)_3$: Connecting Stereoactive Lone-Pair Electron Effects to the Dzyaloshinskii-Moriya Interaction” *Chem. Mater.* **33**, 4661-4671 (2021)
34. T.J. Bullard, M. Susner, K.M. Taddei, J. Brandt, T. Haugan, Magnetic and Structural Properties of the Solid Solution $\text{CuAl}_{2(1-x)}\text{Ga}_{2x}\text{O}_4$ ” *Sci. Rep.* **11**, 1-12 (2021)
33. J. Xing*, K.M. Taddei*, L.D. Sanjeeva*, R.S. fishman, M. Daum, M. Mourigal, A.S. Sefat, “Stripe antiferromagnetic ground state of ideal triangular lattice KErSe_2 ” *Phys. Rev. B* **103**, 144413 (2021) (*shared first author)
32. X. Liu, K.M. Taddei, S. Li, W. Liu, N. Dhale, R. Kadado, D. Berman, D. dela Cruz, B. Lv, “Canted antiferromagnetism in the quasi-one-dimensional iron chalcogenide BaFe_2Se_4 ” *Phys. Rev. B* **02**, 180403 (2020)
31. M. Kauth, S. Rosenkranz, A.H. Said, K.M. Taddei, Th. Wolf, F. Weber, “Soft elastic constants from phonon spectroscopy in hole-doped $\text{Ba}_{1-x}(\text{K,Na})_x\text{Fe}_2\text{As}_2$ and $\text{Sr}_{1-x}\text{Na}_x\text{Fe}_2\text{As}_2$ ” *Phys. Rev. B* **102**,144526 (2020)
30. T. Basu, T. Zou, Z. Dun, C.Q. Xu, C. dela Cruz, T. Hong, H.B. Cao, K.M. Taddei, H.D. Zhou, X. Ke, “Magnetic field induced phase transition in spinel GeNi_2O_4 ” *Phys. Rev. B* **102**, 134421 (2020)
29. L.D. Sanjeeva*, J. Xing*, K.M. Taddei*, D. Parker, R. Custelcean, C. dela Cruz, A. S. Sefat, “Evidence of Ba-substitution induced spin-canting in the magnetic Weyl semimetal EuCd_2As_2 ” *Phys. Rev. B* **102**, 104404 (2020) (*shared first author)
28. A. Wegner, D. Louca, K.M. Taddei, J. Neufeind, “Charge density modulation and defect ordering in the Na_xMnBi_y magnetic semimetal” *Phys. Rev. B.* **102**, 020403(R) (2020)
27. Q. Chen, A. Verrier, D. Ziat, A.J. Clune, R. Rouane, X. Bazier-Matte, G. Wang, S. Calder, K.M. Taddei, D. dela Cruz, A. Kolesnikov, J. Ma, J.-G. Cheng, Z. Liu J.A. Quilliam, J.L. Musfeldt, H.D. Zhou, A.A. Aczel, “Realization of the orbital-selective Mott state at the molecular level in $\text{Ba}_3\text{LaRu}_2\text{O}_9$ ” *Phys. Rev. Mater.* **4**, 064409 (2020)
26. B. Wilfong, X. Zhou, H. Zheng, N. Babra, C.M. Brown, J.W. Lynn, K.M. Taddei, J. Paglione, E.E. Rodriguez, “Long-range magnetic order in hydroxide-layer-doped $(\text{Li}_{1-x-y}\text{Fe}_x\text{Mn}_y\text{OD})\text{FeSe}$ ” *Phys. Rev. Mater.* **4**, 034803 (2020)
25. K.M. Taddei, L.D. Sanjeeva, J. Xing, Q. Zhang, D. Parker, A. Podlesnyak, C. Dela, Cruz, A.S. Sefat, “Tunable magnetic order in low-symmetry SeO_3 ligand linked $\text{TM}_3(\text{SeO}_3)_3\text{H}_2\text{O}$ ($\text{TM} = \text{Mn, Co, and Ni}$) compounds” *Phys. Rev. Mater.* **4**, 024410 (2020)
24. D.M. Pajerowski, K.M. Taddei, L.D. Sanjeeva, A.T. Savici, M.B. Stone, J.W. Kolis, “Quantification of local-Ising magnetism in rare-earth pyrogermanates $\text{Er}_2\text{Ge}_2\text{O}_7$ and $\text{Yb}_2\text{Ge}_2\text{O}_7$ ” *Phys. Rev. B* **101**, 014420 (2020)

23. [K.M. Taddei](#), L.D. Sanjeeva, B.H. Lei, Y. Fu, Q. Zheng, D.J. Singh A.S. Sefat, D. de la Cruz, “Tuning from frustrated magnetism to superconductivity in quasi-one-dimensional KCr_3As_3 through H doping” *Phys. Rev. B* **100**, 220503 (2019)
22. [K.M. Taddei](#), L. Sanjeeva, J.W. Kolis, A.S. Sefat, C. de la Cruz, D.M. Pajerowski, “Evidence of local-Ising magnetic order and metamagnetism in the pyrogermanate $\text{Er}_2\text{Ge}_2\text{O}_7$ ” *Phys. Rev. Mat.* **3**, 014405 (2019)
21. S. Li, [K.M. Taddei](#), X. Wang, H. Wu, J. Neufeind, D. Zackaria, X. Liu, C. de la Cruz B. Lv, “Thermal expansion coefficients of high thermal conducting BAs and BP materials” *Appl. Phys. Lett.* **115**, 011901 (2019)
20. Q. Chen, S. Fan, [K.M. Taddei](#), M.B. Stone, A.I. Kolesnikov, J.-G. Cheng, J.L. Musfeldt, H.D. Zhou, A.A. Aczel, “Colossal positive zero field splitting in the cluster magnet $\text{Ba}_3\text{CeRu}_2\text{O}_9$ ” *J. Am. Chem. Soc.* **141**, 25, 9928 (2019)
19. R. Salazar-Rodriguez, D. Aliaga-Guerra, [K.M. Taddei](#), “X-ray diffraction, Mossbauer spectroscopy, neutron diffraction, optical absorption and ab-initio calculation of magnetic process in orthorhombic $\text{YFe}_x\text{Cr}_{1-x}\text{O}_3$ ($0 < x < 1$) compounds” *Hyperfine Interact.* **240**:82 (2019)
18. Y.-P. Cai, M.N. Wilson, J. Beare, C. Lygouras, G. Thomas, D.R. Yahne, K. Ross, [K.M. Taddei](#), B. Sala, H.A. Dabkowska, A.A. Aczel, G.M. Luke, “Crystal fields and magnetic structure of the Ising antiferromagnet $\text{Er}_3\text{Ga}_5\text{O}_{12}$ ” *Phys. Rev. B* **100**, 184415 (2019)
17. Virtue, X. Zhou, D. Wilfong, J.W. Lynn, [K.M. Taddei](#), E.E. Rodriguez, “Magnetization of Mixed Mn 122-Type Sulfides, KMMnS_2 ($M = \text{Cu}, \text{Li}$)” *Phys. Rev. Mat.* **3**, 044411 (2019)
16. Klimkowicz, K. Cichy, O. Chmaissem, B. Dabrowski, B. Poudel, K. Swierczek, [K.M. Taddei](#), A. Takasaki, “Reversible oxygen intercalation in hexagonal $\text{Y}_{0.7}\text{Tb}_{0.3}\text{MnO}_{3+\delta}$: toward oxygen production by temperature swing absorption in air” *J. Mater. Chem. A* DOI:10.1039/c8ta09235d (2019)
15. [K.M. Taddei](#), G.Z. Xing, J. Sun, Y. Fu, Y. Li, Q. Zheng, A.S. Sefat, D.J. Singh, C. de la Cruz. Frustrated structural instability in superconducting quasi-one-dimensional $\text{K}_2\text{Cr}_3\text{As}_3$.” *Phys. Rev. Lett.* **121**, 187002 (2018)
14. B.A. Frandsen, [K.M. Taddei](#), D.E. Bugaris, R. Stadel, M. Yi, A. Acharya, R. Osborn, S. Rosenkranz, O. Chmaissem, R.J. Birgeneau, “Widespread nematic fluctuations in the $(\text{Sr},\text{Na})\text{Fe}_2\text{As}_2$ family of superconductors” *Phys. Rev. B Rapid Comm.* **98**, 180505(R) (2018)
13. S. Calder, K. An, R. Boehler, C. de la Cruz, M. Frontzek, M. Guthrie, B. Haberl, A. Huq, S.A.J. Kimber, J. Liu, J. Molaison, J. Neufeind, K. Page, A. dos Santos, [K.M. Taddei](#), C. Tulk, M. Tucker, “A Suite-level Review of the Neutron Powder Diffraction Instruments at Oak Ridge National Laboratory.” *Rev. Sci. Inst.* **89**, 092701 (2018)
12. J.-J. Liu, J. Wang, J. Sheng, F. Ye, [K.M. Taddei](#), J.A. Fernandez-Baca, W. Luo, G.-A. Sun, Z.-C. Wang, H. Jiang, G.-H. Cao, W. Bao. “Neutron diffraction study on magnetic structures and transition in $\text{Sr}_2\text{Cr}_3\text{As}_2\text{O}_2$ ” *Phys. Rev. B* **98**, 134416 (2018)
11. N. Sangeneni, [K.M. Taddei](#), N. Bhat, S.A. Shivashankar. “Magnetic Properties of superparamagnetic, nanocrystalline cobalt ferrite thin films deposited at low temperature.” *J. Mag. Magn. Mat.* **465**, 590-597 (2018)
10. [K.M. Taddei](#), Q. Zheng, A.S. Sefat, C. de la Cruz. “Coupling of structure to magnetic and superconducting orders in quasi-one-dimensional $\text{K}_2\text{Cr}_3\text{As}_3$ ” *Phys. Rev. B. Rapid Comm.* **96**, 180506(R) (2017)
9. B.A. Frandsen, [K.M. Taddei](#), M. Yi, A. Frano, Z. Guguchia, R. Yi, Q. Si, D.E. Bugaris, R. Stadel, R. Osborn, S. Rosenkranz, O. Chmaissem, R.J. Birgeneau. “Local orthorhombicity in the magnetic C_4 phase of the hole-doped iron-arsenide superconductor $\text{Sr}_{1-x}\text{Na}_x\text{Fe}_2\text{As}_2$.” *Phys. Rev. Lett.* **119**, 187001 (2017)
8. [K.M. Taddei](#), J.M. Allred, D.E. Bugaris, S.H. Lapidus, M.J. Krogstad, H. Claus, D.Y. Chung, M.G. Kanatzidis, R. Osborn, S. Rosenkranz, O. Chmaissem. “Observation of the magnetic C_4 phase in $\text{Ca}_{1-x}\text{Na}_x\text{Fe}_2\text{As}_2$ and its universality in the hole-doped 122 superconductors” *Phys. Rev. B* **95**, 064508 (2017)

7. J.M. Allred, K.M. Taddei, D.E. Bugaris, M.J. Krogstad, S.H. Lapidus, D.Y. Chung, H. Claus, M.G. Kanatzidis, D.E. Brown, J. Kang, R.M. Fernandes, I. Eremin, S. Rosenkranz, O. Chmaissem, R. Osborn, “Double-Q spin-density wave in iron arsenide superconductors.” *Nature Phys.* DOI: 10.1038/NPHYS3629 (2016)
6. K.M. Taddei, J.M. Allred, D.E. Bugaris, M.J. Krogstad, S.H. Lapidus, D.Y. Chung, R. Stadel, M.G. Kanatzidis, D.E. Brown, S. Rosenkranz, R. Osborn, O. Chmaissem. “Detailed magnetic and structural analysis mapping a robust magnetic C_4 dome in $Sr_{1-x}Na_xFe_2As_2$ ” *Phys. Rev. B* **93**, 134510 (2016) *Editor’s Suggestion*
5. S. Jiang, C. Liu, H. Cao, T. Birol, J.M. Allred, W. Tian, L. Liu, K. Cho, M.J. Krogstad, J. Ma, K.M. Taddei, M.A. Tanatar, M. Hoesch, R. Prozorov, S. Rosenkranz, Y.J. Uemura, G. Kotliar, N. Ni. “The structural/magnetic phase transitions in $Ca_{0.73}La_{0.27}FeAs_2$ with electron overdoped FeAs layers” *Phys. Rev. B* **93**, 174413 (2016)
4. M.P. Smylie, M. Leroux, V. Mishra, L. Fang, K.M. Taddei, O. Chmaissem, H. Claus, A. Kayani, A. Snezhko, U. Welp, W.K. Kwok, “Effect of proton irradiation on superconductivity in optimally doped $BaFe_2(As_{1-x}P_x)_2$ single crystals.” *Phys. Rev. B* **93**, 115119 (2016)
3. J.M. Allred, S. Avci, D.Y. Chung, H. Claus, D.D. Khalyavin, P. Manuel, K.M. Taddei, M.G. Kanatzidis, S. Rosenkranz, R. Osborn, O. Chmaissem. “Tetragonal magnetic phase in $Ba_{1-x}K_xFe_2As_2$ from x-ray and neutron diffraction.” *Phys. Rev. B* **92**, 094515 (2015)
2. K.M. Taddei, M. Struza, D.Y. Chung, H.B. Cao, H. Claus, M.G. Kanatzidis, R. Osborn, S. Rosenkranz, O. Chmaissem, “Cesium vacancy ordering in phase-separated $Cs_xFe_{2-y}Se_2$.” *Phys. Rev. B* **92**, 094505 (2015)
1. J.M. Allred, K.M. Taddei, D.E. Bugaris, S. Avci, D.Y. Chung, H. Claus, C. dela Cruz, M.G. Kanatzidis, S. Rosenkranz, R. Osborn, O. Chmaissem, “Coincident structural and magnetic order in $BaFe_2(As_{1-x}P_x)_2$ revealed by high-resolution neutron diffraction.” *Phys. Rev. B* **90**, 104513 (2014)

Selected Presentations

“Ferromagnetic $EuCd_2As_2$ as a candidate Weyl ‘Hydrogen Atom’” 2022 American Physical Society March Meeting

“The magnetic and crystal symmetries of $EuCd_2As_2$ and their role in generating a single pair of Weyl points” 2022 American Crystallographic Association Annual Meeting

“Neutron Scattering Studies in Quasi-One-Dimensional Superconducting Systems” INVITED 2021 Materials Research Society Spring Meeting

“The magnetic order, tunable spin-canting, and band structure of a candidate Weyl semi-metal” 2021 American Physical Society March Meeting

“Hidden Hydrogen and a spin-glass to superconducting transition in quasi-1D KCr_3As_3 ” 2020 American Conference on Neutron Scattering

“Using neutrons to study topological materials” INVITED 2020 Quantum Materials Over Coffee seminar series

“When electrons misbehave: quantum materials and how we study them” INVITED 2020 University of Alabama seminar series

“Local-Ising type magnetism and metamagnetism in the rare-earth pyrogermanates” 2019 American Physical Society March Meeting

“Frustrated ordering instabilities and superconductivity in quasi-one-dimensional $K_2Cr_3As_3$ ” INVITED 2019 Electronic Materials and Applications Meeting

“An unexpected tuning parameter for the quasi-one-dimensional $A_xCr_2As_3$ superconductors” 2019 Gordon Research Conference for Superconductivity AND 2019 Gordon Research Seminar for Superconductivity (Poster)

“Uncovering the interactions behind quantum phenomena” INVITED Old Dominion University 2019 Research Symposium AND 2018 Brookhaven National Laboratory Condensed Matter Physics and Materials Science Division Colloquium

“Proximate orders and spin-triplet superconductivity in the quasi-one-dimensional $A_x\text{Cr}_3\text{As}_3$ materials” 2018 Annual South Eastern Section American Physical Society Meeting

“Neutron scattering studies of the quasi-1D superconductor: $\text{K}_2\text{Cr}_3\text{As}_3$ ” 2018 Gordon Research Conference AND Gordon Research Seminar for Correlated Electron Systems (Poster)

“Using neutron diffraction to study competing orders in unconventional superconductors” INVITED 2017 Pittsburgh Diffraction Society Annual Meeting

“Neutron diffraction studies of multiferroic BiCoO_3 ” 2017 International Meeting on Ferroics

“Neutron scattering studies of the quasi-1D superconductor: $\text{K}_2\text{Cr}_3\text{As}_3$ ” 2017 Gordon Research Conference for Superconductivity AND 2017 Gordon Research Seminar for Superconductivity (Poster)