

# Nirmal J. Ghimire

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## EDUCATION

<b>PhD, Physics:</b>	University of Tennessee, Knoxville, TN	2013
<b>MSc, Physics:</b>	Tribhuvan University, Kathmandu, Nepal	2005
<b>BSc, Physics:</b>	Tribhuvan University, Kathmandu, Nepal	2003

## PROFESSIONAL EXPERIENCE

<b>Associate Professor</b>	<i>University of Notre Dame, Notre Dame, IN</i>	<i>2023-present</i>
<b>Assistant Professor</b>	<i>George Mason University, Fairfax, VA</i>	<i>2018-2023</i>
<b>Director's Postdoctoral Fellow</b>	<i>Argonne National Laboratory, Lemont IL</i>	<i>2015 – 2018</i>
<b>Postdoctoral Research Associate</b>	<i>Los Alamos National Laboratory, Los Alamos, NM</i>	<i>2013 - 2015</i>
<b>Graduate Research Assistant</b>	<i>Oak Ridge National Laboratory, Oak Ridge, TN</i>	<i>2010 – 2013</i>
<b>Graduate Research Assistant</b>	<i>University of Tennessee, Knoxville, TN</i>	<i>2010 – 2013</i>
<b>Graduate Teaching Assistant</b>	<i>University of Tennessee, Knoxville, TN</i>	<i>2008 - 2010</i>
<b>Lecturer of Physics</b>	<i>Kantipur Engineering College, Kathmandu, Nepal</i>	<i>2006 - 2008</i>

## Affiliations

<b>Guest Researcher</b>	<i>NIST Center for Neutron Research, Gaithersburg MD</i>	<i>2020 - present</i>
<b>Resident Collaborator</b>	<i>Argonne National Laboratory, Lemont, IL</i>	<i>2019 – 2020</i>

## AWARDS

- National Science Foundation CAREER Award 2021
- Dean's Award for Early Career Excellence, College of Science, George Mason University 2020
- Director's Postdoctoral Fellowship, *Argonne National Laboratory* 2015
- Seaborg Fellowship, *Seaborg Institute, Los Alamos National Laboratory*
- Chancellor's Citation for Extraordinary Professional Promise, *University of Tennessee* 2013
- Outstanding Graduate Teaching Assistant, *Department of Physics and Astronomy, The University of Tennessee* 2009

## PUBLICATIONS

- [58] Peter E. Siegfried, Hari Bhandari, Jeanie Qi, Rojila Ghimire, Jayadeep Joshi, Zachary T. Messegee, Willie B. Beeson, Kai Liu, Madhav Prasad Ghimire, Yanliu Dang, Huairuo Zhang, Albert V. Davydov, Xiaoyan Tan, Patrick M. Vora, Igor I. Mazin, **Nirmal J. Ghimire**. CoTe<sub>2</sub>: A Quantum Critical Dirac Metal with Strong Spin Fluctuations. *Advanced Materials* 2300640 (2023).
- [57] Zachary T. Messegee, Philippe Gall, Hari Bhandari, Peter E. Siegfried, Chang-Jong Kang, Benjamin Chen, Carl R. Conti, III, Banghao Chen, Mark Croft, Qiang Zhang, Syed N. Qadri, Joseph Prestigiacomo, **Nirmal J. Ghimire**, Patrick Gougeon, and Xiaoyan Tan. LiMo<sub>8</sub>O<sub>10</sub>: Polar Crystal Structure with Infinite Edge-Sharing Molybdenum Octahedra. *Inorganic Chemistry* 2022, 61, 35, 13924–13932.
- [56] Callista M. Skaggs, Andrew P. Justl, Ankita Biswas, Peter E. Siegfried, Shunshun Liu, Saul H. Lapidus, Wenqian Xu, Zachary T. Messegee, **Nirmal J. Ghimire**, Prasanna V. Balachandran, Susan M. Kauzlarich, and Xiaoyan Tan. Ultralow Lattice Thermal Conductivity in Metastable Ag<sub>2</sub>GeS<sub>3</sub> Revealed by a Combined Experimental and Theoretical Study. *Chemistry of Materials* 2022, 34, 14, 6420–6430.
- [55] Xian P. Yang, Harrison LaBollita, Zi-Jia Cheng, Hari Bhandari, Tyler A. Cochran, Jia-Xin Yin, Md. Shafayat Hossain, Ilya Belopolski, Qi Zhang, Yuxiao Jiang, Nana Shumiya, Daniel Multer, Maksim Liskevich, Dmitry A. Usanov, Yanliu Dang, Vladimir N. Strocov, Albert V. Davydov, **Nirmal J. Ghimire**, Antia S. Botana, M. Zahid Hasan. Visualizing the out-of-plane electronic dispersions in an intercalated transition metal dichalcogenide. *Physical Review B*, 105, L121107 (2022).
- [54] Peter Siegfried, Hari Bhandari, David C. Jones, Madhav Ghimire, Rebecca Dally, L Poudel, M Bleuel, Jeffrey Lynn, Igor Mazin, **Nirmal Ghimire**. Magnetization-driven Lifshitz phase transition and charge-spin coupling in the kagome metal YMn<sub>6</sub>Sn<sub>6</sub>. *Communications Physics*, 5 58 (2022).
- [53] Callista M. Skaggs, Peter E. Siegfried, Chang-Jong Kang, Craig M. Brown, Fu Chen, Lu Ma, Steven N. Ehrlich, Yan Xin, Mark Croft, Wenqian Xu, Saul H. Lapidus, **Nirmal J. Ghimire**, and Xiaoyan Tan. Iridate Li<sub>8</sub>IrO<sub>6</sub>: An Antiferromagnetic Insulator. *Inorganic Chemistry* 60, 17201–17211 (2021).
- [52] Kamal Choudhary, Kevin F. Garrity, **Nirmal J. Ghimire**, Naweena Anand, Francesca Tavazza. High-throughput search for magnetic topological materials using spin-orbit spillage, machine-learning and experiments. *Physical Review B* 103, 155131 (2021).
- [51] Rebecca L. Dally, Daniel Phelan, Nicholas Bishop, **Nirmal J. Ghimire**, Jeffrey W. Lynn. Isotropic Nature of the Metallic Kagome Ferromagnet Fe<sub>3</sub>Sn<sub>2</sub> at High Temperatures. *Crystals*, 11, 307 (2021).
- [50] Rebecca L. Dally, Dina Michel, Peter Siegfried, Igor I. Mazin, **Nirmal J. Ghimire**, Jeffrey W. Lynn. Chiral properties of the zero-field spiral state and field-induced magnetic phases of the itinerant kagome metal YMn<sub>6</sub>Sn<sub>6</sub>. *Physical Review B*, 103, 094413 (2021)
- [49] **Nirmal J. Ghimire**, Rebecca L. Dally, L. Poudel, D. C. Jones, D. Michel, N. Thapa Magar, M. Bleuel, Michael A. McGuire, J. S. Jiang, J. F. Mitchell, Jeffrey W. Lynn, I. I. Mazin. Competing magnetic phases and fluctuation-driven scalar spin chirality in the kagome metal YMn<sub>6</sub>Sn<sub>6</sub>. *Science Advances* 6, eabe2680 (2020).
- [48] Giulia Tenasini, Edoardo Martino, Nicolas Ubrig, **Nirmal J. Ghimire**, Helmuth Berger, Oksana Zaharko, Fengcheng Wu, J. F. Mitchell, Ivar Martin, László Forró, and Alberto F. Morpurgo. Giant anomalous Hall effect in quasi-two-dimensional layered antiferromagnet Co<sub>1/3</sub>NbS<sub>2</sub>. *Physical Review Research* 2, 023051 (2020).
- [47] Jason F. Khoury, Alexander J. E. Rettie, Mojammel A. Khan, **Nirmal J. Ghimire**, Iñigo Robredo, Jonathan E. Pfluger, Koushik Pal, Chris Wolverton, Aitor Bergara, J. S. Jiang, Leslie M. Schoop, Maia G. Vergniory,

- J. F. Mitchell, Duck Young Chung, Mercuri G. Kanatzidis. A New Three-Dimensional Subsulfide Ir<sub>2</sub>In<sub>8</sub>S with Dirac Semimetal Behavior. *Journal of American Chemical Society* 2019, 141, 48, 19130-19137 (2019).
- [46] **Nirmal J. Ghimire** & Igor I. Mazin. Topology and correlations on the kagome lattice. *Nature Materials* 19, 130 (2020).
- [45] Mojammel A. Khan, Po-Hao Chang, **Nirmal Ghimire**, Terence M. Bretz-Sullivan, Anand Bhattacharya, J. S. Jiang, John Singleton, and J. F. Mitchell. Fermi surface topology and nontrivial Berry phase in the flat-band semimetal Pd<sub>3</sub>Pb. *Physical Review B* 101, 245113 (2020).
- [44] H Takeda, H Yasuoka, M Yoshida, M Takigawa, **NJ Ghimire**, D Mandrus, BC Sales. 51V-NMR study on the S= 1/2 square lattice antiferromagnet K<sub>2</sub>V<sub>3</sub>O<sub>8</sub>. *Physical Review B* 100, 054406 (2019).
- [43] K. A. Modic, Maja D. Bachmann, B. J. Ramshaw, F. Arnold, K. R. Shirer, Amelia Estry, J. B. Betts, **Nirmal J. Ghimire**, E. D. Bauer, Marcus Schmidt, Michael Baenitz, E. Svanidze, Ross D. McDonald, Arkady Shekhter, Philip J. W. Moll. *Resonant torsion magnetometry in anisotropic quantum materials*, *Nature Communications* 9, 3975 (2018).
- [42] **Nirmal J. Ghimire**, A. S. Botana, J. S. Jiang, Junjie Zhang, Y.-S. Chen & J. F. Mitchell, *Large anomalous Hall effect in the chiral-lattice antiferromagnet CoNb<sub>3</sub>S<sub>6</sub>*. *Nature Communications* 9, 3975 (2018).  
[Highlighted by the editor, featured in Argonne National Lab]
- [41] **N. J. Ghimire**, Mojammel A. Khan, A. S. Botana, J. S. Jiang, and J. F. Mitchell. Anisotropic angular magnetoresistance and Fermi surface topology of the candidate novel topological metal Pd<sub>3</sub>Pb, *Physical Review Materials* 2, 081201 (2018). (*Rapid Communication, Highlighted by the editor*)
- [40] David M Fobes, S Zhang, S-Z Lin, Pinaki Das, **NJ Ghimire**, ED Bauer, JD Thompson, LW Harriger, G Ehlers, A Podlesnyak, RI Bewley, A Sazonov, V Hutanu, F Ronning, CD Batista, M Janoschek. Tunable emergent heterostructures in a prototypical correlated metal. *Nature Physics* 14, 465 (2018).
- [39] A. A. Aczel, L. M. DeBeer-Schmitt, T. J. Williams, M. A. McGuire, **N. J. Ghimire**, L. Li, and D. Mandrus. *Extended exchange interactions stabilize long-period magnetic structures in Cr<sub>1/3</sub>NbS<sub>2</sub>*, *Appl. Phys. Lett.* **113**, 032404 (2018).
- [38] B. J. Ramshaw, K. A. Modic, Arkady Shekhter, Yi Zhang, Eun-Ah Kim, Philip J. W. Moll, Maja D. Bachmann, M. K. Chan, J. B. Betts, F Balakirev, A. Migliori, **N. J. Ghimire**, E. D. Bauer, F. Ronning, R. D. McDonald. *Quantum limit transport and destruction of the Weyl nodes in TaAs*, *Nature Communications* **9**, 2217 (2018).
- [37] A. P. Dioguardi, P. Guzman, P. F. S. Rosa, **N. J. Ghimire**, S. E. Brown, J. D. Thompson, E. D. Bauer, and F. Ronning, *Nuclear magnetic resonance investigation of the heavy fermion system Ce<sub>2</sub>CoAl<sub>7</sub>Ge<sub>4</sub>*, *Phys. Rev. B* **96**, 245132 (2017).
- [36] David M Fobes, Shi-Zeng Lin, **Nirmal J Ghimire**, Eric D Bauer, Joe D Thompson, Markus Bleuel, Lisa M DeBeer-Schmitt, Marc Janoschek, *Realization of the Axial Next-Nearest-Neighbor Ising model in U<sub>3</sub>Al<sub>2</sub>Ge<sub>3</sub>*, *Phys. Rev. B* **96**, 174413 (2017).
- [35] J. Xu, **N. J. Ghimire**, J. S. Jiang, Z. L. Xiao, A. S. Botana, Y. L. Wang, Y. Hao, J. E. Pearson, W. K. Kwok, *Origin of the Extremely Large Magnetoresistance in the Semimetal YSb*, *Phys. Rev. B* **96**, 075159 (2017).
- [34] Maja D Bachmann, Nityan Nair, Felix Flicker, Roni Ilan, Tobias Meng, **Nirmal J Ghimire**, Eric D Bauer, Filip Ronning, James G Analytis, Philip JW Moll, *Inducing superconductivity in Weyl semimetal microstructures by selective ion sputtering*, *Science Advances* **3**, e1602983 (2017).
- [33] Junfeng He, Chaofan Zhang, **Nirmal J Ghimire**, Tian Liang, Chunjing Jia, Juan Jiang, Shujie Tang, Sudi Chen, Yu He, S-K Mo, CC Hwang, M Hashimoto, DH Lu, B Moritz, TP Devereaux, YL Chen, JF Mitchell, Z-X Shen, *Distinct Electronic Structure for the Extreme Magnetoresistance in YSb*, *Physical Review Letters* **117**, 267201 (2016).

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- [31] Philip JW Moll, Andrew C Potter, Nityan L Nair, BJ Ramshaw, KA Modic, Scott Riggs, Bin Zeng, Nirmal J Ghimire, Eric D Bauer, Robert Kealhofer, Filip Ronning, James G Analytis, *Magnetic torque anomaly in the quantum limit of the Weyl semi-metal NbAs*, [Nature Communications 7, 12492 \(2016\)](#).
- [30] N Sirica, S-K Mo, F Bondino, I Pis, S Nappini, P Vilmercati, J Yi, Z Gai, PC Snijders, PK Das, I Vobornik, N Ghimire, MR Koehler, L Li, D Sapkota, DS Parker, DG Mandrus, N Mannella, *Electronic structure of the chiral helimagnet and 3 d-intercalated transition metal dichalcogenide  $Cr_{1/3}NbS_2$* , [Physical Review B 94, 075141 \(2016\)](#).
- [29] Yongkang Luo, RD McDonald, PFS Rosa, B Scott, N Wakeham, NJ Ghimire, ED Bauer, JD Thompson, F Ronning, *Anomalous electronic structure and magnetoresistance in  $TaAs_2$* , [Scientific Report 6, 27294 \(2016\)](#).
- [28] N. J. Ghimire, D. Phelan, H. Zheng, and J. F. Mitchell, *Magnetotransport of single crystalline YSb*, [Journal of Physics Condensed Matter 28, 235601 \(2016\)](#).
- [27] N. J. Ghimire, S. Cary, S. Eley, N. A. Wakeham, P. R. F. S. Rosa, T. Albrecht-Schmitt, Y. Lee, L. Civale, R. Movshovich, Joe D. Thompson, F. Ronning, E. D. Bauer, *Physical properties of the  $Ce_2MAl_7Ge_4$  ( $M = Co, Ir, Ni, Pd$ ) heavy fermion compounds*, [Physical Review B 93, 205141 \(2016\)](#).
- [26] Y. Luo, N. J. Ghimire, E. D. Bauer, J. D. Thompson, F. Ronning, “Hard” crystalline lattice in the Weyl Semimetal NbAs, [Journal of Physics Condensed Matter 28, 055502\(2016\)](#).
- [25] H. Sakai, T. Hattori, Y. Tokunaga, S. Kambe, N. J. Ghimire, F. Ronning, E. D. Bauer, and J. D. Thompson, *Incommensurate to commensurate antiferromagnetism in  $CeRhAl_4Si_2$ : An  $^{27}Al$  NMR Study*, [Physical Review B 93, 014402 \(2016\)](#).
- [24] Y. Luo, N. J. Ghimire, M. Wartenbel, M. Neupane, R. D. McDonald, E. D. Bauer, J. D. Thompson, F. Ronning, *Electron-hole compensation effect between topologically trivial electrons and nontrivial holes in NbAs*, [Physical Review B 92, 205134 \(2015\)](#)
- [23] N. J. Ghimire, S. Calder, M. Janoschek and E. D. Bauer; *Magnetic structure of the Kondo lattice compounds  $CeRhAl_4Si_2$  and  $CeIrAl_4Si_2$* , [Journal of Physics: Condensed Matter 27, 245603 \(2015\)](#).
- [22] Alexander C. Bornstein, Benjamin J. Chapman, Nirmal J. Ghimire, David G. Mandrus, David S. Parker, Minhyea Lee; *Out-of-plane spin-orientation dependent magnetotransport in the anisotropic helimagnet  $Cr_{1/3}NbS_2$* , [Physical Review B 91, 184401 \(2015\)](#).
- [21] David S. Parker, Nirmal Ghimire, R. Baumbach, Ling Li, John Singleton, Eric D. Bauer, David Mandrus, David J. Singh; *Magnetocrystalline anisotropy in  $UMn_2Ge_2$  and related Mn-based actinide ferromagnets*, [Physical Review B 91, 174401 \(2015\)](#).
- [20] N. J. Ghimire, Yongkang Luo, D. J. Williams, E. D. Bauer and F. Ronning; *Magnetotransport of single crystalline NbAs*, [Journal of Physics: Condensed Matter 27, 152201 \(2015\)](#).
- [19] Pasqual Rivera, John R. Schaibley, Aaron M. Jones, Jason S. Ross, Sanfeng Wu, Grant Aivazian, Philip Klement, Nirmal J. Ghimire, Jiaqiang Yan, D. G. Mandrus, Wang Yao, Xiaodong Xu; *Observation of Long-Lived Interlayer Excitons in Monolayer  $MoSe_2$ - $WSe_2$  Heterostructures*, [Nature Communications 6, 6242 \(2015\)](#).
- [18] N. J. Ghimire, F. Ronning, D. J. Williams, B. L. Scott, Yongkang, Luo, J. D. Thompson, E. D. Bauer; *Investigation of the physical properties of the tetragonal  $CeMAl_4Si_2$  ( $M = Rh, Ir, Pt$ ) compounds*, [Journal of Physics: Condensed Matter 27, 025601 \(2015\)](#).

- [17] Pinaki Das, S. -Z. Lin, N. J. Ghimire, K. Huang, F. Ronning, E. D. Bauer, J. D. Thompson, C. D. Batista, G. Ehlers, M. Janoschek; The magnitude of the magnetic exchange interaction in the heavy fermion antiferromagnet CeRhIn<sub>5</sub>, [Physical Review Letters 113, 246403 \(2014\)](#).
- [16] R. Klots, A. K. M. Newaz, Bin Wang, D. Prasai, H. Krzyzanowska, Junhao Lin, D. Caudel, N. J. Ghimire, J. Yan, B. L. Ivanov, K. A. Velizhanin, A. Burger, D. G. Mandrus, N. H. Tolk, S. T. Pantelides & K. I. Bolotin; Probing excitonic states in suspended two-dimensional semiconductors by photocurrent spectroscopy, [Scientific Reports 4, 6608 \(2014\)](#).
- [15] Benjamin J. Chapman, Alexander C. Bornstein, Nirmal J. Ghimire, David Mandrus and Minhyea Lee; *Spin structure of the anisotropic helimagnet Cr<sub>1/3</sub>NbS<sub>2</sub> in a magnetic field*, [Applied Physics Letters 105, 072405\(2014\)](#).
- [14] Akshay Singh, Galan Moody, Sanfeng Wu, Yanwen Wu, Nirmal J. Ghimire, Jiaqiang Yan, David G. Mandrus, Xiaodong Xu, and Xiaoqin Li; *Coherent Electronic Coupling in Atomically Thin MoSe<sub>2</sub>*, [Physical Review Letters 112, 216804 \(2014\)](#).
- [13] Hsun-Jen Chuang, Xuebin Tan, Nirmal Jeevi Ghimire, Meeghage Madusanka Perera, Bhim Chamlagain, Mark Ming-Cheng Cheng, Jiaqiang Yan, David Mandrus, David Tománek, and Zhixian Zhou; High Mobility WSe<sub>2</sub> p- and n-Type Field-Effect Transistors Contacted by Highly Doped Graphene for Low-Resistance Contacts, [Nano Letters 14, 3594-3601 \(2014\)](#).
- [12] Junhao Lin, Ovidiu Cretu, Wu Zhou, Kazu Suenaga, Dhiraj Prasai, Kirill I. Bolotin, Nguyen Thanh Cuong, Minoru Otani, Susumu Okada, Andrew R. Lupini, Juan-Carlos Idrobo, Dave Caudel, Arnold Burger, Nirmal J. Ghimire, Jiaqiang Yan, David G. Mandrus, Stephen J. Pennycook & Sokrates T. Pantelides; *Flexible metallic nanowires with self-adaptive contacts to semiconducting transition-metal dichalcogenide monolayers*, [Nature Nanotechnology 9, 436-442 \(2014\)](#).
- [11] Bhim Chamlagain, Qing Li, Nirmal Jeevi Ghimire, Hsun-Jen Chuang, Meeghage Madusanka Perera, Honggen Tu, Yong Xu, Minghu Pan, Di Xaio, Jiaqiang Yan, David Mandrus, and Zhixian Zhou; *Mobility Improvement and Temperature Dependence in MoSe<sub>2</sub> Field-Effect Transistors on Parylene-C Substrate*, [ACS Nano 8, 5079-5088 \(2014\)](#).
- [10] Sanfeng Wu, Sonia Buckley, Aaron M. Jones, Jason S. Ross, Nirmal J. Ghimire, Jiaqiang Yan, David G. Mandrus, Wang Yao, Fariba Hatami, Jelena Vučković, Arka Majumdar and Xiaodong Xu; *Control of two-dimensional excitonic light emission via photonic crystal*, [2D Materials 1, 011001 \(2014\)](#).
- [9] R. E. Baumbach, V. A. Sidorov, Xin Lu, N. J. Ghimire, F. Ronning, B. L. Scott, D. J. Williams, E. D. Bauer, and J. D. Thompson; *Suppression of antiferromagnetism by pressure in CaCo<sub>2</sub>P<sub>2</sub>*, [Physical Review B 89, 094408 \(2014\)](#).
- [8] Jason S. Ross, Philip Klement, Aaron M. Jones, Nirmal J. Ghimire, Jiaqiang Yan, D. G. Mandrus, Takashi Taniguchi, Kenji Watanabe, Kenji Kitamura, Wang Yao, David H Cobden & Xiaodong Xu; *Electrically tunable excitonic light emitting diodes based on monolayer WSe<sub>2</sub> p-n junctions*, [Nature Nanotechnology 9, 268-272 \(2014\)](#).
- [7] Aaron M. Jones, Hongyi Yu, Jason S. Ross, Philip Klement, Nirmal J. Ghimire, Jiaqiang Yan, David G. Mandrus, Wang Yao & Xiaodong Xu; *Spin-layer locking effects in optical orientation of exciton spin in bilayer WSe<sub>2</sub>*, [Nature Physics 10, 130-134 \(2014\)](#).
- [6] Aaron M. Jones, Hongyi Yu, Nirmal Ghimire, Sanfeng Wu, Grant Aivazian, Jason S. Ross, Bo Zhao, Jiaqiang Yan, David G. Mandrus, Di Xiao, Wang Yao & Xiaodong Xu; *Optical generation of excitonic valley coherence in monolayer WSe<sub>2</sub>*, [Nature Nanotechnology 8, 634 \(2013\)](#).
- [5] Jason S. Ross, Sanfeng Wu, Hongyi Yu, Nirmal J. Ghimire, Aaron M. Jones, Grant Aivazian, Jiaqiang Yan, David G. Mandrus, Di Xiao, Wang Yao & Xiaodong Xu; *Electrical control of neutral and charged excitons in a monolayer semiconductor*, [Nature Communications 4, 1474 \(2013\)](#).

- [4] [N. J. Ghimire](#), M. A. McGuire, D. S. Parker, B. Sipos, S. Tang, J.-Q. Yan, B. C. Sales, and D. Mandrus; *Magnetic phase transition in single crystals of the chiral helimagnet  $Cr_{1/3}NbS_2$* , [Physical Review B](#) **87**, 104403 (2013).
- [3] Michael A. McGuire, Orlando Rios, [Nirmal J. Ghimire](#) and Michael Koehler; *Hard ferromagnetism in melt-spun  $Hf_2Co_{11}B$  alloys*, [Applied Physics Letters](#) **101**, 202401 (2012).
- [2] [N. J. Ghimire](#), M. A. McGuire, D. S. Parker, B. C. Sales, J.-Q. Yan, V. Keppens, M. Koehler, R. M. Latture, and D. Mandrus; *Complex itinerant ferromagnetism in noncentrosymmetric  $Cr_{11}Ge_{19}$* , [Physical Review B](#) **85**, 224405 (2012).
- [1]. Michael A. McGuire, [Nirmal Ghimire](#) and David J. Singh, *Ferromagnetism in  $ZrFe_{12-x}Al_x$  and  $HfFe_{12-x}Al_x$  ( $x=6.0, 6.5, 7.0$ )*, [Journal of Applied Physics](#) **111**, 093918 (2012).

### Conference Proceedings:

- [2]. H Sakai, T Hattori, Y Tokunaga, S Kambe, [NJ Ghimire](#), F Ronning, ED Bauer, JD Thompson, *Anisotropy of Spin Fluctuations in a Tetragonal Heavy Fermion Antiferromagnet  $CeRhAl_4Si_2$* , [Journal of Physics: Conf. Series](#) **868**, 012012 (2017).
- [1] Sanfeng Wu, Jason S Ross, Chunming Huang, Nirmal J Ghimire, Jiaqiang Yan, David G Mandrus, Di Xiao, Wang Yao, David H Cobden, Xiaodong Xu. *Optical manipulation and electrical control of valley pseudo-spins in atomically thin semiconductors*. [Proc. SPIE](#) **8813**, *Spintronics VI*, 88132I (2013).

### Patent

“Hf-Co-B Alloys as Permanent Magnet Materials”, Michael Alan McGuire, Orlando Rios, Nirmal Jeevi Ghimire, US, 9552911, Jan. 24, 2017.

## INVITED TALKS

- [24] Synthesis-Driven Approach to Quantum Materials: Opportunities and Challenges. [Physical Review X](#) virtual seminar. July 18, 2023.
- [23] Magnetotransport properties of altermagnetic materials MnTe and CrSb. Workshop on Altermagnetism: Emerging Opportunities in a New Magnetic Phase. May 9 -11 2023, Ingelheim, Germany.
- [22] Magnetic and electronic topological states in the kagome-net magnet YMn6Sn6. Materials Research Society, April Meeting, April 10-14, San Francisco. Symposium QM01-Novel Approaches to Manipulate and Detect 2D Magnetism in van der Waals Quantum and Topological Materials.
- [21] Tutorial on crystal growth and characterization of intercalated transition metal dichalcogenides. Materials Research Society, April Meeting, April 10-14, San Francisco. Symposium QM01-Novel Approaches to Manipulate and Detect 2D Magnetism in van der Waals Quantum and Topological Materials.
- [20] Crystal growth and characterization of intercalated transition metal dichalcogenides. Tutorial to be given at the Materials Research Society, April Meeting, April 10-14, San Francisco. Symposium QM01-Novel Approaches to Manipulate and Detect 2D Magnetism in van der Waals Quantum and Topological Materials.
- [19] Competing Magnetic Interactions and fluctuation driven anomalous and topological Hall effects in the RMn6Sn6 class of centrosymmetric structures, to be given at March Meeting of the American Physical Society, Las Vegas, March 5-10, 2023.
- [18] Magnetism and anomalous Hall effect in the kagome-net magnets RMn6Sn6 (R = Y, Tb), 29th Rare Earth Research Conference, Philadelphia, PA, June 26–30, 2022.

- [17] Anomalous Hall effect in  $\text{RMn}_6\text{Sn}_6$  compound, Fundamental of Quantum Materials Workshop, University of Maryland, June 24, 2022.
- [16] Tutorial on growth and characterization of kagome materials at 2022 Summer School in Fundamental of Quantum Materials, University of Maryland, June 20-24, 2022.
- [15] Electronic and magnetic topological states in the kagome-net magnet  $\text{YMn}_6\text{Sn}_6$ , Workshop on “Correlated and topological states in Kagome metals”, University of California Santa Barbara, October 20, 2021 (Virtual).
- [14] Electronic and magnetic topological states in the kagome-net magnet  $\text{YMn}_6\text{Sn}_6$ , University of Tennessee, Condensed Matter Seminar, October 20, 2021 (Virtual).
- [13] Electronic and magnetic topological states in the kagome-net magnet  $\text{YMn}_6\text{Sn}_6$ , University of Notre Dame Condensed Matter Seminar, October 7, 2021.
- [12] Topological Magnets, Central Department of Physics, Tribhuvan University, Kathmandu, Nepal, October 5, 2021 (Virtual).
- [11] Refresher course in materials science, materials synthesis and structure of crystalline solids, Central Department of Physics, Tribhuvan University, Kathmandu, Nepal, Sept 16- 17, 2021 (Virtual).
- [10] Hall effect that Edwin Hall never imagined: A probe for topological electronic and magnetic states in quantum material, Physics Colloquium, South Dakota State University, Feb 8, 2021 (Virtual).
- [9] New Quantum Magnets: Design and Discovery, Physics, Applied Physics and Astronomy Colloquia, Rensselaer Polytechnic Institute, Feb 3, 2021 (Virtual).
- [8] New Quantum Magnets: Design and Discovery, Frontiers of Energy Sciences seminar series, Idaho National Laboratory, September 14, 2020.
- [7] Magnetism and topology in Kagome lattice magnets, Quantum Materials Young Investigators Workshop at Oak Ridge National Laboratory, June 6-7, 2019.
- [6] Synthesis approach to topological states of matter, TSRC workshop on Competing Interactions and Colossal Responses in Transition Metal Oxides and Related Compounds, Telluride, Co, June 25 – 29, 2019.
- [5] Synthesis approach to topological materials, Condensed Matter Seminar, Johns Hopkins University, March 27, 2019.
- [4] A materials Driven Approach to the Novel Topological States of Matter, Condensed Matter Seminar, University of Virginia, Sept. 20, 2018.
- [3] A materials Driven Approach to Condensed Matter Physics, Physics Department Colloquium, Western Illinois University, April. 20, 2018.
- [2] Magnetism, Topology and Their Interplay in Inversion Asymmetric Crystals, LDRD Seminar Series, Argonne National Laboratory, Dec. 5, 2017 (Featured in Argonne National Lab).
- [1] New magnets for energy and spintronics, Condensed Matter Seminar, University of Colorado, Boulder, May 1, 2014.