

## Curriculum Vitae

Nirmal J. Ghimire

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### Employment and Education:

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- Assistant Professor, 08/2018 – present. George Mason University, Fairfax, VA
- Argonne Scholar-Director's Fellow, 10/2015 – 08/2018. Argonne National Lab, Lemont, IL
- Postdoctoral Research Associate, 08/2013 – 10/2015. Los Alamos National Lab, Los Alamos, NM
- Graduate Research Assistant, 05/2010 – 08/2013. Oak Ridge National Lab/University of Tennessee
- Graduate Teaching Assistant 08/2008 – 04/2010. University of Tennessee, Knoxville, TN
- PhD (Condensed Matter Physics), 2008 – 2013, University of Tennessee, Knoxville, TN. (Advisor Prof. David Mandrus)
- Lecturer (Physics) 2006 – 2008, Kantipur Engineering College, Lalitpur, Nepal
- MSc (Physics), 2003 – 2005, Tribhuvan University, Kathmandu, Nepal

### Awards and Fellowships

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- Director's Postdoctoral Fellowship, Argonne National Laboratory 10/2015
- Seaborg Fellowship, Seaborg Institute, Los Alamos National Laboratory 03/2015
- Chancellor's Citation for Extraordinary Professional Promise, The University of Tennessee, 04/2013
- Outstanding Graduate Teaching Assistant, Department of Physics and Astronomy, The University of Tennessee, 04/2009

### Patent

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[Hf-Co-B Alloys as Permanent Magnet Materials](#). Michael Alan McGuire, Orlando Rios, Nirmal Jeevi Ghimire, US, 9552911, Jan. 24, 2017.

### Publications

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URL: <https://scholar.google.co.uk/citations?user=OCzObToAAAAJ> (Google Scholar)

- [45] 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).
- [44] [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>](#). Accepted to *Nature Communications* 9, 3280 (2018). (Highlighted by the editor, Featured in Argonne National Laboratory)

- [43] [Nirmal 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)**
- [42] 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).
- [41] 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>](#). *Applied Physics Letters* 113, 032404 (2018).
- [40] 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).
- [39] 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>](#). *Physical Review B* 96, 245132 (2017).
- [38] 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>](#). *Physical Review B* 96, 174413 (2017).
- [37] 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](#). *Physical Review B* 96, 075159 (2017).
- [36] 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).
- [35] 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<sub>4</sub>Si<sub>2</sub>](#). *Journal of Physics: Conference Series* 868, 012012 (2017).
- [34] 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).
- [33] K. Chen, F. Strigari, M. Sundermann, S. Agrestini, [N. J. Ghimire](#), S.-Z. Lin, C. D. Batista, E. D. Bauer, J. D. Thompson, E. Otero, A. Tanaka, and A. Severing. [Exchange field effect in the crystal-field ground state of CeMAl<sub>4</sub>Si<sub>2</sub>](#). *Physical Review B* 94, 115111 (2016).
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- [30] Yongkang Luo, RD McDonald, PFS Rosa, B Scott, N Wakeham, NJ Ghimire, ED Bauer, JD Thompson, F Ronning. [Anomalous electronic structure and magnetoresistance in  \$\text{TaAs}\_2\$](#) . *Scientific Report* 6, 27294 (2016).
- [29] N. J. Ghimire, D. Phelan, H. Zheng, and J. F. Mitchell. [Magnetotransport of single crystalline YSb](#). *Journal of Physics: Condensed Matter* 28, 235601 (2016).
- [28] 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  \$\text{Ce}\_2\text{MAI}\_7\text{Ge}\_4\$  \(M = Co, Ir, Ni, Pd\) heavy fermion compounds](#). *Physical Review B* 93, 205141 (2016).
- [27] 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).
- [26] 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  \$\text{CeRhAl}\_4\text{Si}\_2\$ : An  \$^{27}\text{Al}\$  NMR Study](#). *Physical Review B* 93, 014402 (2016).
- [25] 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)
- [24] N. J. Ghimire, S. Calder, M. Janoschek and E. D. Bauer. [Magnetic structure of the Kondo lattice compounds  \$\text{CeRhAl}\_4\text{Si}\_2\$  and  \$\text{CeIrAl}\_4\text{Si}\_2\$](#) . *Journal of Physics: Condensed Matter* 27, 245603 (2015).
- [23] 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  \$\text{Cr}\_{1/3}\text{NbS}\_2\$](#) . *Physical Review B* 91, 184401 (2015).
- [22] David S. Parker, Nirmal Ghimire, R. Baumbach, Ling Li, John Singleton, Eric D. Bauer, David Mandrus, David J. Singh. [Magnetocrystalline anisotropy in  \$\text{UMn}\_2\text{Ge}\_2\$  and related Mn-based actinide ferromagnets](#). *Physical Review B* 91, 174401 (2015).
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- Bauer. Investigation of the physical properties of the tetragonal  $\text{CeMAl}_4\text{Si}_2$  ( $M = \text{Rh, Ir, Pt}$ ) compounds. *Journal of Physics: Condensed Matter* 27, 025601 (2015).
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- [17] 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).
- [16] Benjamin J. Chapman, Alexander C. Bornstein, Nirmal J. Ghimire, David Mandrus and Minhyea Lee. Spin structure of the anisotropic helimagnet  $\text{Cr}_{1/3}\text{NbS}_2$  in a magnetic field. *Applied Physics Letters* 105, 072405(2014).
- [15] 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  $\text{MoSe}_2$ . *Physical Review Letters* 112, 216804 (2014).
- [14] 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  $\text{WSe}_2$  p- and n-Type Field-Effect Transistors Contacted by Highly Doped Graphene for Low-Resistance Contacts. *Nano Letters* 14, 3594-3601 (2014).
- [13] 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).
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- [8] 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).
- [7] 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](#). *Proceedings of SPIE* 8813, 88132I (2013).
- [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<sub>1/3</sub>NbS<sub>2</sub>](#). *Physical Review B* 87, 104403 (2013).
- [3] Michael A. McGuire, Orlando Rios, [Nirmal J. Ghimire](#) and Michael Koehler. [Hard ferromagnetism in melt-spun Hf<sub>2</sub>Co<sub>11</sub>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<sub>11</sub>Ge<sub>19</sub>](#). *Physical Review B* 85, 224405 (2012).
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