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Professional Preparation

Univ. Science and Technology of China 1999	Hefei, China	Materials Science	B.S.
Univ. Science and Technology of China 2002	Hefei, China	Materials Science	M.S.
Univ. of Texas at Austin 2005	Austin, TX	Physics	Ph.D.

Appointments

August 2018 – Present Associate Professor, Department of Physics and Astronomy, The University of Tennessee, Knoxville, TN

August 2012 – July 2018 Assistant Professor, Department of Physics and Astronomy, The University of Tennessee, Knoxville, TN

Summer, 2013-2016 Visiting Scientist, National High Magnetic Field Laboratory, Tallahassee, FL

August 2008 – July 2012, Assistant Scholar Scientist, National High Magnetic Field Laboratory, Tallahassee, FL

March 2006 – July 2008 Postdoctoral, National High Magnetic Field Laboratory, Tallahassee, FL

Awards

NSF faculty early career development award, DMR-1350002 "Emergent quantum spin-liquid in Yb-pyrochlores and Yb-spinels", (Aug. 2014-).

Excellence in Research/Creative Achievement Award, Mid-Career Faculty, College of Arts and Science/University of Tennessee, 2017

Recent Collaborators:

Adam Aczel (ORNL), A. P. Armitage (Johhs Hopkins Univ.), Cristian Batista (Univ. Tennessee), Emil Bozin (Brookhaven National Lab), L. Balicas (NHMFL), Huibo Cao (ORNL), Jianming Cao (FSU), J. G. Cheng (IP-CAS, China), G. W. Chern (Univ. Verginia), S. X. Chi (ORNL), Sorin Chiuzhaian (Univ. Paris, France), E. S. Choi (NHMFL), Kwang-Yong Choi (Chung-Ang Univ., Korea), Andy Chritianson (ORNL), L. S. Cooper (Univ. Illinois), C. R. dela Cruz (ORNL), Olivier Delaire (Duke Univ.), Georg Ehlers (ORNL), Randy Fishman (ORNL), V. O. Garlea (ORNL), Bruce Gaulin, (Macmaster Univ. Canada), M. J. P. Gingras (Univ. Waterloo, Canada), John B. Goodenough (Univ. Texas at Austin), J. E. Greedan (McMaster Univ. Canada), Stephen Hill (NHMFL), Tao Hong (ORNL), Z. Jiang (Georgia Institute of Technology), Yoshi Kamiya (RIKEN, Japan), X. Ke (Michigan State University), S. H. Lee (Univ. Virginia), David Mandrus (Univ. Tennessee), Lu Li (Univ. Michigan, Gram Luke (Macmaster Univ.), Jie Ma (Shanghai JiaoTong Univ. China), Gregory MacDougall (Univ. Illinois), M. Matsuda (ORNL), Martin

Mourigal (Geor. Tech.), Janice L. Musfeldt (Univ. Tennessee), Steve Nagler (ORNL), Joseph Paddison (Univ. Cambridge, England), Y. M. Qiu (NIST Center for Neutron Research), Jeffery Quilliam (Univ. Sherbrooke, Canada), Art Ramirez (UC Santa Cruz), Arneil Reyes (NHMFL), Francisco Rivadulla (Univ. Santiago de Compostela, Spain), B. C. Sales (ORNL), M. Shatruk (Florida State Univ.), Sriram Shastry (UC Santa Cruz), Xuefeng Sun (Univ. Science and Technology of China), L. E. Svistov (P. L. Kapitza Institute for Physical Problems, Russia), Alan Tennant (ORNL), Y. Takano (Univ. Florida), Y. Uwatoko (Univ. Tokyo, Japan), C. R. Wiebe (Univ. Winnipeg, Canada), Cenke Xu (Univ. California, Santa Barbara), J. Q. Yan (ORNL), Ren Yang (Argonne National Lab), Viven Zapf (LANL), Shixiong Zhang (Indiana Univ.), Jianshi Zhou (Univ. Texas at Austin)

Graduate and Postdoctoral Advisors
Graduate Advisor: John B. Goodenough, University of Texas at Austin
Postdoctoral Advisors**:** Chris Wiebe, National High Mangetic Field Lab/ Florida State University

Graduated Ph.D student:
Zhiling Dun, Ryan Sinclair, Ryan Rawl, Qiang Chen, Qing Huang

Present Ph.D student:
ChenKun Xing, Alexander Brassington, Seunghoon Song

Publications
Total 307 publications, 6849 citations, *h*-index 42
(https://www.webofscience.com/wos/author/record/951019)

1) A. M. Samaraknoon, A. Sokolowski, B. Klemke, R. Feyerherm, M. Meissner, R. A. Borzi, F. Ye, Q. Zhang, Z. Dun, **H. D. Zhou**, T. Egami, J. N. Hallen, L. Jaubert, C. Castelnovo, R. Messner, S. A. Grigera, and D. A. Tennant, Structural magnetic glassiness in the spin ice $Dy_2Ti_2O_7$, Physical Review Research 4, 033159(1-8) (2022)

2) A. A. Aczel, Q. Chen, J. P. Clancy, C. dela Cruz, D. Reig-i-Plessis, G. J. MacDougall, C. J. Pollock, M. H. Upton, T. J. Williams, N. LaManna, J. P. Carlo, J. Beare, G. M. Luke, and **H. D. Zhou**, *Spin orbit coupling controlled ground states in the double perovskite iridates A_2BIrO_6 (A = Ba, Sr; B = Lu, Sc)*, Physical Review Materials **6**, 094409 (2022).

3) L. Chu, S. Guang, **H. D. Zhou**, H. Zhu, and X. F. Sun, *Low temperature heat transport of the zigzag spin-chain compound $SrEr_2O_4$*, Chinese Physics B **31**, 087505(6) (2022).

4) N. Li, Q. Huang, X. Y. Xue, S. K. Guang, K. Xia, Y. Y. Wang, Q. J. Li, X. Zhao, **H. D. Zhou**, and X. F. Sun, *Low temperature transport properties of the intermetallic compound HoAgGe with a Kagome spin ice state*, Physical Review B **106**, 014416(1-8) (2022).

5) S. Pandey, H. Zhang, J. Yang, A. F. May, J. Sanchez, Z. Liu, J. H. Chu, J. W. Kim, P. J. Ryan, **H. D. Zhou**, and J. Liu, *Controllable emergent spatial spin modulation in Sr_2IrO_4 by in situ shear strain*, Physical Review Letters **129**, 027203(1-7) *(2022).*

6) J. Jiao, S. Zhang, Q. Huang, M. Zhang, M. Shu, G. Lin, C. R. dela Cruz, V. O. Garlea, N. Butch, M. Matsusa, **H. D. Zhou**, and J. Ma, *Quantum effect on the ground sate of the triple perovskite $Ba_3MNb_2O_9$ (M = Co, Ni, and Mn) with triangular lattice*, Chemistry of Materials **34**, 6617-6625 (2022).

7) N. Anand, K. Barry, J. N. Neu, D. E. Graf, Q. Huang, **H. D. Zhou**, T. Siegrist, H. J. Changlani, and C. Beekman, *Investigation of the monopole magneto-chemical potential in spin ices using capacitive torque magnetometry*, Nature Communications **13**, 3818(1-8) (2022).

8) Q. Huang, M. Lee, E. S. Choi, J. Ma, C. Dela Cruz, and **H. D. Zhou**, *Successive phase transitions*

and multiferroicity in deformed triangular-lattice antiferromagnets $Ca_3MNb_2O_9$ ((M = Co, Ni) with spatial anisotropy, ECS Journal of Solid State Science and Technology **11**, 063004(1-9) (2022).

9) M. Ozerov, N. Anand, L. J. van Burgt, Z. Lu, J. Holleman, **H. D. Zhou**, S. McGill, and C. Beekman, *Magnetic field tunning of crystal field levels and vibronic states in the spin ice compound $Ho_2Ti_2O_7$ observed with far infrared reflectometry*, Physical Review B **105**, 165102(1-8) (2022).

10) J. Zhou, Guy Quirion, Jeffrey A. Quilliam, H. Cao, F. Ye, Matthew B. Stone, Q. Huang, **H. D. Zhou**, J. Cheng, X. Bai, M. Mourigal, Y. Wan, and Z. Dun, *Anticollinear order and degeneracy lifting in square lattice antiferromagnet $LaSrCrO_4$,* Physical Review B **105**, L180411(1-7) (2022).

11) Z. Y. Zhao, S. Calder, M. H. Upton, **H. D. Zhou**, Z. Z. He, M. A. McGuire, and J. Q. Yan, *Temperature induced valence state transition in double perovskites $Ba_{2-x}Sr_xTbIrO_6$,* Physical Review Materials **6**, 054410(1-9) (2022).

12) Q. Huang, R. Rawl, W. W. Xie, E. S. Choi, V. S. Zapf, X. X. Ding, C. Mauws, C. R. Wiebe, E. X. Feng, H. B. Cao, W. Tian, J. Ma, Y. Oiu, N. Butch, and **H. D. Zhou**, *Non-magnetic ion site disorder effects on the quantum magnetism of a spin-1/2 equilateral triangular lattice antiferromagnet,* Journal of Physics: Condensed Matter **34**, 205401(1-10) (2022).

13) Z. Wei, S. Zhang, Y. Su, L. Cheng, **H. D. Zhou**, Z. Jiang, H. Wei, and J. Qi, *Extremely low-energy collective modes in a quasi-one-dimensional topological system,* Science China Physics, Mechanics, & Astronomy **65**, 257012(1-7) (2022).

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15) Yu. A. Sakhratov, O. Prokhnenko, A. Ya. Shapiro, **H. D. Zhou**, L. E. Svistov, A. P. Reyes, and O. A. Petrenko, *High field magnetic structure of the triangular antiferromagnet $RbFe(MoO_4)_2$,* Physical Review B **105**, 014431(1-12) (2022).

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21) J. Wang, Y. Jiang, T. Zhao, Z. Dun, A. L. Miettinen, X. Wu, M. Mourigal, **H. D. Zhou**, W. Pan, D. Smirnow, and Z. Jiang, *Magneto-transport evidence for strong topological insulator phase in $ZrTe_5$*, Nature Communications **12**, 6758(1-7) (2021).

22) A. M. Samarakoon, Q. Chen, **H. D. Zhou**, and V. O. Garlea, *Static and dynamic magnetic properties of honeycomb lattice antiferromagnets $Na_2M_2TeO_6$, M = Co and Ni*, Physical Review B **104**, 184415(1-11) (2021).

23) X. Gui, M. Marshall, R.S.D. Mudiyanselage, R. A. Klein, Q. Chen, Q. Zhang, W. Shelton, **H. D. Zhou**, C. M. Brown, H. B. Cao, M. Greenblatt, and W. W. Xie, *Spin reorientation in antiferromagnetic layered $FePt_5P$*, ACS Applied Electronic Materials **3**, 3051-3508 (2021).

24) N. Li, Q. Huang, A. Brassington, X. Yue, W. Chu, S. Guang, X. Zhou, P. Gao, EEE. Feng, H. Cao,

E. S. Choi, Y. Sun, Q. Li, X. Zhao, **H. D. Zhou**, and X. F. Sun, *Quantum spin state transitions in the spin-1 equilateral triangular lattice antiferromagnet $Na_2BaNi(PO_4)_2$*, Physical Review B **104**, 104403(1-9) (2021).

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28) X. Hu, Daniel M. Pajerowski, D. Zhang, Andrey A. Podlesnyak, Y. Qiu, Q. Huang, **H. D. Zhou**, I. Klich, Alexander I. Kolesnikov, Matthew B. Stone, and S. H. Lee, *Freezing of a disorder induced spin liquid with strong quantum fluctuations*, Physical Review Letters **127**, 017201(1-6) (2021).

29) Jared S. Kinyon, N. S. Dalal, R, J. Clark, **H. D. Zhou**, K. Y. Choi, *Closing the spin gap of $(NH_4)_xK_{1-x}CuCl_3$ through chemical substitution*, Physical Review Materials **5**, 054413(1-9) (2021).

30) S. Lee, W. Lee, W. Guihua, J. Ma, **H. D. Zhou**, M. Lee, E. S. Choi, and K. Y. Choi, *Experimental evidence for a valence-bond glass in the $5d^1$ double perovskite Ba_2YWO_6*, Physical Review B **103**, 224430(1-7) (2021).

31) N. A. Fortune, Q. Huang, T. Hong, J. Ma, Ee. S. Choi, S. T. Hannahs, Z. Y. Zhao, X. F. Sun, Y. Takano, **H. D. Zhou**, *Evolution of magnetic-field-induced ordering in the layered structure quantum Heisenberg triangular-lattice antiferromagnet $Ba_3CoSb_2O_9$*, Physical Review B **103**, 184425(1-10) (2021).

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33) R. J. Koch, R. Sinclair, M. T. McDonnell, R. Yu, M. Abeeykoon, M. G. Tucker, A. M. Tsvelik, S. J. L. Billinge, **H. D. Zhou,** W. G. Yin, and E. S. Bozin, *Dual orbital degeneracy lifting in a strongly correlated electron system*, Physical Review Letters **126**, 186402(1-6) (2021).

34) J. Zhang, N. Su, X. Mi, M. Pi, **H. D. Zhou**, J. G. Cheng and Y. Chai, *Probing magnetic symmetry in antiferromagnetic $Fe_4Nb_2O_9$ single crystals by linear magnetoelectric tensor*, Physical Review B **103**, L140401(1-5) (2021).

35) P. M. Sarte, K. Cruz-Kan, B. R. Ortiz, K. H. Hong, M. M. Bordelon, D. Reig-i-Pleessis, M. Lee, E. S. Choi, M. B. Stone, S. Cadleer, D. M. Pajerowski, L. Mangin-Thro, Y. Qiu, J. P. Attfield, S. D. Wilson, C. Stock, **H. D. Zhou**, A. M. Hallas, J. A. M. Paddsion, A. A. Aczel, and C. R. Wiebe, *Dynamical ground state in the XY pyrochlore Yb_2GaSbO_7*, npj Quantum Materials **6**, 42(1-9) (2021).

36) Z. Dun, M. Daum, R. Baral, H. E. Fisher, H. Cao, Y. Liu, M. B. Stone, J. A. Rodrigueex-Riveerea, E. S. Choi, Q. Huang, **H. D. Zhou**, M. Mourigal, and B. A. Frandsen, *Neutron scattering investigation of proposed Kosterlitz-Thouless transitions in the triangular-lattice Ising antifeerromagnet $TmMgGaO_4$*, Physical Review B **103**, 064424(1-9) (2021).

37) J. Jiao, H. Zhang, Q. Huang, W. Wang, R. Sinclair, G. Wang, Q. Ren, G. Lin, A. Huq, **H. D. Zhou**, N. Z. Li, and J. Ma, *Orbital competition of Mn^{3+} and V^{3+} ions in $Mn_{1+x}V_{2-x}O_4$*, Journal of Physics: Condensed Matter **33**, 134002(1-9) (2021).

38) X. J. Bai, S. S. Zhang, Z.Dun, H. Zhang, Q. Huang, **H. D. Zhou**, M. B. Stone, A. I. Kolesnikov, F. Ye, C. D. Batista, and M. Mourigal, *Hybridized quadrupolar excitations in the spin-anisotropic frustrated magnet FeI_2*, Nature Physics **17**, 467-472 (2021).

39) L. Ding, M. Lee, H. Tao. Z. Dun, R. Sinclair, S. Chi, H. K. Agrawal, E. S. Choi, B. C. Chakoumakos, **H. D. Zhou**, and H. Cao, *Noncollinear magnetic structure and magnetoelectric coupling in buckled*

honeycomb $Co_4Nb_2O_9$: a single crystal neutron diffraction study, Physical Review B **102**, 174443(1-10) (2020).

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43) Candice Kinsler-Fedon, Q. Zhang, Q. Huang, E. S. Choi, J. Yan, **H. D. Zhou**, D. Mandrus and V. Keppens, *Synthesis, characterization, and single crystal growth of a high entropy rare earth pyrochlore oxide*, Physical Review Materials **4**, 104411(1-9) (2020).

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46) M. Lee, Q. Chen, E. S. Choi, Q. Huang, Z. Wang, L. Ling, Z. Qu, G. H. Wang, J. Ma, A. A. Aczel, and **H. D. Zhou**, *Magnetoelectric effect arising from a field-induced pseudo Jahn-Teller distortion in a rare earth magnet*, Physical Review Materials **4**, 094411(1-9) (2020).

47) N. Li, Q. Huang, X. Y. Xue, W. J. Chi, Q. Chen, Ee. S. Choi, X. Zhao, **H. D. Zhou**, and X. F. Sun, *Possible itinerant excitations and quantum spin state transitions in the effective spin-1/2 triangular-lattice antiferromagnet $Na_2BaCo(PO_4)_2$*, Nature Communications **11**, 4216(1-9) (2020).

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51) Y. Jiang, J. Wang, T. Zhao, Z. L. Dun, Q. Huang, X. S. Wu, M. Mourigal, **H. D. Zhou**, W. Pan, M. Ozerov, D. Smirnov, and Z. Jiang, *Unraveling the topological phase of $ZrTe_5$ via magneto-infrared spectroscopy,* Physical Review Letters **125**, 046403(1-6) (2020).

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H. D. Zhou, and A. A. Aczel, *Realization of the orbital-selective Mott state at the molecular level in $Ba_3LaRu_2O_9$*, Physical Review Materials **4**, 064409(1-12) (2020).

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