Publications

- 25. W. Yao, Q. Huang, T. Xie, A. Podlesnyak, A. Brassington, C. Xing, R. S. Dissanayaka Mudiyanselage, W. Xie, S. Zhang, M. Lee, V. S Zapf, **X. Bai**, D. A. Tennant, J. Liu, H. Zhou, "Continuous spin excitations in the three-dimensional frustrated magnet $K_2Ni_2(SO_4)_3$ ", *Physical Review Letters* **131**, 146701 (2023). [DOI] [arXiv]
- 24. **X. Bai**, S.-S. Zhang, H. Zhang, Z. L. Dun, W. A. Phelan, V. O. Garlea, M. Mourigal, C. D. Batista, "Instabilities of heavy magnons in an anisotropic magnet", *Nature Communications* 14, 4199 (2023). [DOI] [arXiv]
- 23. Q. Ma, **X. Bai**, E. Feng, G. Zhang, H. Cao, "CrysFieldExplorer: a software for rapid optimization of crystal field Hamiltonian", *Journal of Applied Crystallography* **65** (4) (2023). [DOI] [arXiv]
- 22. M. Marshall, B. R. Billingsley, **X. Bai**, Q. Ma, T. Kong, H. Cao, "Field-Induced Partial Disorder in a Shastry-Sutherland Lattice", *Nature Communications* **14** (1), 4199 (2023). [DOI] [arXiv]
- 21. D. Dahlbom, H. Zhang, C. Miles, **X. Bai**, C. D. Batista, K. Barros, "Geometric integration of classical spin dynamics via a mean-field Schrödinger equation", *Physical Review B* **106**, 054423 (2022). [DOI]
- 20. J. Zhou, G. Quirion, J. A. Quilliam, H. Cao, F. Ye, M. B. Stone, Q. Huang, H. Zhou, J. Cheng, X. Bai, M. Mourigal, Y. Wan, Z. Dun, "Anticollinear order and degeneracy lifting in square lattice antiferromagnet LaSrCrO4", *Physical Review B* 105, L180411 (2022). [DOI] (Letter)
- 19. **X. Bai**, F. Lechermann, Y. Liu, Y. Cheng, A. I. Kolesnikov, F. Ye, T. J. Williams, S. Chi, G. E. Granroth, A. F. May, S. Calder, "Antiferromagnetic fluctuations and orbital-selective Mott transition in the van der Waals ferromagnet $Fe_{3-x}GeTe_2$ ", *Physical Review B* **106**, L180409 (2022). [DOI] (Editors' Suggestion)
- 18. L. Ding, X. Xu, H. O. Jeschke, **X. Bai**, E. Feng, A. S. Alemayehu, J. Kim, F. Huang, Q. Zhang, X. Ding, N. Harrison, V. Zapf, D. Khomskii, I. I. Mazin, S.-W. Cheong, H. Cao, "Field-tunable toroidal moment in a chiral-lattice magnet", *Nature Communications* **12**, 5339 (2021). [DOI]
- 17. **X. Bai**, R. S. Fishman, G. Sala, D. M. Pajerowski, V. O. Garlea, T. Hong, M. Lee, J. A. Fernandez-Baca, H. Cao, and W. Tian, "Magnetic excitations of the hybrid multiferroic (ND₄)₂FeCl₅·D₂O", *Physical Review B* **103**(22), 224411, (2021). [DOI]
- 16. Z. L. Dun, **X. Bai**, M. B. Stone, H. D. Zhou, M. Mourigal, "Effective point-charge analysis of crystalelectric fields application to rare earth pyrochlores and tripod kagome magnets R₃Mg₂Sb₃O₁₄", *Physical Review Research* **3**(2), 023012 (2021). [DOI]
- 15. A. Legros, S.-S. Zhang, **X. Bai**, H. Zhang, Z. L. Dun, W. A. Phelan, C. D. Batista, M. Mourigal, and N. P. Armitage, "Observation of 4- and 6-magnon bound-states in the spin-anisotropic frustrated antiferromagnet FeI₂", *Physical Review Letters* **127**(26), 267201 (2021). [DOI]
- 14. Y. Wu, L. Ding, N. Su, N. Ma, K. Zhai, X. Bai, B. C. Chakoumakos, Y. Sun, Y. Cheng, J. Cheng, W. Tian, H. Cao, "Reentrance of spin-driven ferroelectricity", *Submitted* (November 2020). [arXiv]
- 13. **X. Bai**, S.-S. Zhang, Z. L. Dun, H. Zhang, Q. Huang, H. D. Zhou, M. B. Stone, A. I. Kolesnikov, F. Ye, C. D. Batista, M. Mourigal, "Hybridized quadrupolar excitations in the frustrated and spin-anisotropic magnet FeI₂", *Nature Physics* **17**(4), 467-472 (2020). [DOI] [ORNL news] [Phys.org] [Tech Explorist]
- 12. **X. Bai**, Z. L. Dun, J. A. M. Paddison, E. Hollingworth, N. P. Butch, C. D. Cruz, M. B. Stone, T. Hong, M. Mourigal, H. D. Zhou, "Quantum Versus Classical Spin Fragmentation in Kagome Ice Ho₃Mg₂Sb₃O₁₄", *Physical Review X* **10**, 031069 (2020). [DOI]
- 11. **X. Bai**, J. A. M. Paddison, 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 MgCr₂O₄", *Physical Review Letters* **122** (9), 097201 (2019). [DOI]
- 10. N. Jiang, **X. Bai**, J. Bacsa, M. Mourigal, and H. S. La Pierre, "Synthesis and Magneto-Structural Characterization of $Yb_3(OH)_7SO_4\cdot H_2O$: a Frustrated Quantum Magnet with Tunable Stacking Disorder", *Inorganic Chemistry* **58**, 10417-10423 (2019). [DOI]
- 9. J. A. M. Paddison, P. Mukherjee, X. Bai, Z. L. Dun, C. R. Wiebe, H. D. Zhou, J. S. Gardner, M. Mourigal,

Publications

- and S. E. Dutton. "Modeling spin dynamics in the singlet ground state garnet $Ho_3Ga_5O_{12}$ ", <u>Submitted</u> (September 2019). [arXiv]
- 8. N. Blanc, J. Trinh, L. Dong, **X. Bai**, 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] [ORNL news]
- 7. J. A. M. Paddison, H. S. Ong, J. O. Hamp, P. Mukherjee, **X. Bai**, M. G. Tucker, N. P. Butch, C. Castelnovo, M. Mourigal, and S. E. Dutton, "Emergent order in the kagome Ising magnet Dy₃Mg₂Sb₃O₁₄", *Nature Communications* **7**, 13842 (2016). [DOI]
- 6. **X. Bai**, B.-H. Lee, J. Chen, T. Moon, "Chaos in Lifshitz spacetimes", <u>Journal of the Korean Physical Society</u> **68** (5), 639-644, (2016). [DOI]
- 5. **X. Bai**, B.-H. Lee, L. Li, J.-R. Sun, and H.-Q. Zhang, "Time evolution of entanglement entropy in quenched holographic superconductors", *Journal of High Energy Physics* 2015.4, 66, (2015). [DOI]
- 4. **X. Bai**, B.-H. Lee, M. Park, and S. Khimphun, "Dynamical condensation in a holographic superconductor model with anisotropy", *Journal of High Energy Physics* 2014.9, 54, (2014). [DOI]
- 3. **X. Bai**, Y.-P. Hu, B.-H. Lee, and Y.-L. Zhang, "Holographic charged fluid with anomalous current at finite cutoff surface in Einstein-Maxwell gravity", *Journal of High Energy Physics* 2012.11, 54, (2012). [DOI]
- 2. B.-H. Lee, **X. Bai**, and M. C. Wapler. "Physical response functions of strongly coupled massive quantum liquids", *Journal of High Energy Physics* 2012.10, 1-21 (2012). [DOI]
- 1. B.-H. Lee, **X. Bai**, and C. Park. "Correlation function of dyonic strings", *Physical Review D* 84.2, 026009, (2011). [DOI]