

Steven Johnston

📍 502 Nielsen Physics Building, 1408 Circle Drive · Knoxville TN · 37996-1200

✉ sjohn145@utk.edu · 📞 865-200-9079

Website: <https://volweb.utk.edu/~sjohn145/members.html>

GitHub: <https://github.com/JohnstonResearchGroup/>

Google Scholar: <https://tinyurl.com/5n6ujkh8>

🆔 0000-0002-2343-0113

EDUCATION

- 📅 10/2006–06/2010 **Ph.D. in Physics**
University of Waterloo 📍 Waterloo, ON, Canada
» Dissertation: *Electron-phonon coupling in strongly correlated quasi-two-dimensional correlated systems.*
» Ph.D. Advisor: Prof. Thomas P. Devereaux
- 📅 09/2003–09/2006 **M.Sc. in Physics**
University of Waterloo 📍 Waterloo, ON, Canada
» Thesis: *Signatures of anisotropic electron-phonon coupling in high-temperature superconductors.*
» Thesis Advisor: Prof. Thomas P. Devereaux
- 📅 09/1998–04/2003 **B. Eng. in Engineering Physics**
McMaster University 📍 Hamilton, ON, Canada

ACADEMIC APPOINTMENTS

- 📅 08/2019–Present **Associate Professor**
The University of Tennessee, Knoxville 📍 Knoxville, TN, USA
- 📅 01/2014–07/2019 **Assistant Professor**
The University of Tennessee, Knoxville 📍 Knoxville, TN, USA
- 📅 07/2012–12/2013 **Post-Doctoral Fellow**
The University of British Columbia 📍 Vancouver, BC, Canada
» Research fellow in the Department of Physics & Astronomy and (Stewart Blusson) Quantum Matter Institute, working with Profs. Mona Berciu & George Sawatzky
- 📅 07/2010–06/2012 **Post-Doctoral Fellow**
Leibniz Inst. for Solid State and Materials Research 📍 Dresden, Germany
» Research Fellow in the Institute for Theoretical Solid State Physics, working under Prof. Jeroen van den Brink.
- 📅 09/2007–06/2010 **Visiting Researcher**
SLAC National Accelerator Laboratory 📍 Menlo Park, CA, USA

INDUSTRY EXPERIENCE

- 📅 05/2004–04/2005 **Assistant Analyst**
Nuclear Safety Solutions Ltd. 📍 Toronto, ON, Canada
- 📅 05/2003–08/2003 **Assistant Analyst**
Nuclear Safety Solutions Ltd. 📍 Toronto, ON, Canada
- 📅 05/2002–08/2002 **Summer Co-op student**
Ontario Power Generation 📍 Toronto, ON, Canada

AWARDS AND HONOURS

1. Chancellor's Citation Award for Extraordinary Professional Promise. The University of Tennessee, 2020.
2. NSF CAREER Award 2019-2024.
3. Max Planck Institute - University of British Columbia Post-Doctoral Fellowship, 2012-2014. (\$50K annually)
4. NSERC Postgraduate Scholarship, 2008-2010. (\$21K annually)
5. SHARCNET Graduate Fellowship, 2009. (\$13K)

PUBLICATIONS

Co-author of 111 papers published in the peer-reviewed literature including Nature (×1), and Science (×1), Physical Review X (×2), PNAS (×3), Nature Communications (×6), Physical Review Letters (×18), and npj Quantum Materials (×4).

1. Y. Tseng, J. Thomas, W. Zhang, E. Paris, P. Puphal, R. Bag, G. Deng, T. C. Asmara, V. N. Strocov, S. Singh, E. Pomjakushina, U. Kumar, A. Nocera, H. M. Rønnow, **S. Johnston**, and T. Schmitt. *Crossover of high-energy spin fluctuations from collective triplon excitations to incoherent gapped magnetic modes in the cuprate ladders of $Sr_{14-x}Ca_xCu_{24}O_{41}$* . npj Quantum Materials, in press (2022). [arXiv:2201.05027](https://arxiv.org/abs/2201.05027).
2. U. Kumar, A. Nag, J. Li, H. C. Robarts, A. C. Walters, M. García-Fernández, R. Saint-Martin, A. Revcolevschi, J. Schlappa, T. Schmitt, **S. Johnston**, and K.-J. Zhou, *Unraveling higher-order corrections in the spin dynamics of RIXS spectra*. In press, Physical Review B Letters (2021). [arXiv:2110.03186](https://arxiv.org/abs/2110.03186).
3. P. M. Dee, **S. Johnston**, and T. A. Maier, *Enhancing T_c in a composite superconductor/metal bilayer system: a dynamical cluster approximation study*. [Physical Review B **105**, 214502 \(2022\)](https://doi.org/10.1103/PhysRevB.105.214502).
4. K. Bieniasz, **S. Johnston**, and M. Berciu. *Theory of dispersive optical phonons in resonant inelastic x-ray scattering experiments*. [Physical Review B **105**, L180302 \(2022\)](https://doi.org/10.1103/PhysRevB.105.L180302).
5. A. Nag, A. Nocera, S. Agrestini, M. García-Fernández, A. C. Walters, S.-W. Cheong, **S. Johnston**, and K.-J. Zhou. *Quadrupolar magnetic excitations in an isotropic spin-1 antiferromagnet*. [Nature Communications **13**, 2327 \(2022\)](https://doi.org/10.1038/s41467-022-2327-2).
6. C. Miles, B. Cohen-Stead, O. Bradley, **S. Johnston**, R. Scalettar, and K. Barros, *Dynamical tuning of the chemical potential to achieve a target particle number in grand canonical Monte Carlo simulations*. [Physical Review E **105**, 045311 \(2022\)](https://doi.org/10.1103/PhysRevE.105.045311).
7. T. Keen, Bo. Peng, K. Kowalski, P. Lougovski, and **S. Johnston**, *Hybrid quantum-classical approach for coupled-cluster Green's function theory*. [Quantum **6**, 675 \(2022\)](https://doi.org/10.1038/s41534-022-00675-2).
8. Y. Shen, J. Sears, G. Fabbris, J. Li, J. Pellicciari, I. Jarrige, Xi He, I. Božović, M. Mitrano, J. Zhang, J. F. Mitchell, A. S. Botana, V. Bisogni, M. R. Norman, **S. Johnston**, and M. P. M. Dean, *Role of oxygen states in the low valence nickelate $La_4Ni_3O_8$* . [Physical Review X **12**, 011055 \(2022\)](https://doi.org/10.1103/PhysRevX.12.011055).
9. Y. Peng, L. Martinelli, Q. Li, M. Rossi, M. Mitrano, R. Arpaia, M. Moretti Sala, Q. Gao, X. Guo, G. M. DeLuca, A. Walters, A. Nag, A. Barbour, G. Gu, J. Pellicciari, N. B. Brookes, P. Abbamonte, M. Salluzzo, X. Zhou, K.-J. Zhou, V. Bisogni, L. Braicovich, **S. Johnston**, and G. Ghiringhelli, *Doping-dependence of the electron-phonon coupling in two families of bilayer superconducting cuprates*. [Physical Review B **105**, 115105 \(2022\)](https://doi.org/10.1103/PhysRevB.105.115105). **Selected as an Editors' Choice**.
10. P. Mai, S. Karakuzu, G. Balduzzi, **S. Johnston**, and T. A. Maier, *Intertwined spin, charge and pair correlations in the two-dimensional Hubbard model in the thermodynamic limit*. [Proceedings of the National Academy of Sciences **119**, e2112806119 \(2022\)](https://doi.org/10.1073/pnas.2112806119).
11. S. Karakuzu, **S. Johnston**, and T. A. Maier, *Superconductivity in the bilayer Hubbard model: two Fermi surfaces better than one*. [Physical Review B **104**, 245109 \(2021\)](https://doi.org/10.1103/PhysRevB.104.245109).

12. H. Y. Huang, A. Singh, C. Y. Mou, **S. Johnston**, A. F. Kemper, J. van den Brink, P. J. Chen, T. K. Lee, J. Okamoto, Y. Y. Chu, J. H. Li, S. Komiya, A. C. Komarek, A. Fujimori, C. T. Chen, D. J. Huang, *Quantum fluctuations of charge order induce phonon softening in a superconducting cuprate*. [Physical Review X **4**, 041038 \(2021\)](#).
13. S. Ideta, **S. Johnston**, T. Yoshida, K. Tanaka, M. Mori, H. Anzai, A. Ino, M. Arita, H. Namatame, M. Taniguchi, S. Ishida, K. Takashima, K. M. Kojima, T. P. Devereaux, S. Uchida, and A. Fujimori. *Hybridization of Bogoliubov-quasiparticles between adjacent CuO₂ layers in the triple-layer cuprate Bi₂Sr₂Ca₂Cu₃O_{10+δ} studied by ARPES*. [Physical Review Letters **127**, 217004 \(2021\)](#).
14. K. Bieniasz, **S. Johnston**, and M. Berciu, *Beyond single-site approximation modelling of electron-phonon coupling in resonant inelastic X-ray scattering*. [SciPost Phys. **11**, 062 \(2021\)](#).
15. S. Li, A. Nocera, U. Kumar, and **S. Johnston**, *Particle-hole asymmetry in the dynamical spin and charge structure factors of the corner-shared one-dimensional cuprates*. [Communications Physics **4**, 217 \(2021\)](#).
16. B. Nosarzewski, E. W. Huang, P. M. Dee, I. Esterlis, B. Moritz, S. A. Kivelson, **S. Johnston**, and T. P. Devereaux. *Superconductivity, charge-density-waves, and bipolarons in the Holstein model*. [Physical Review B **103**, 235156 \(2021\)](#).
17. J. Pelliciari, S. Karakuzu, Q. Song, R. Arpaia, A. Nag, M. Rossi, J. Li, T. Yu, X. Chen, R. Peng, M. Garcia-Fernandez, A. C. Walters, Q. Wang, J. Zhao, G. Ghiringhelli, D. Feng, T. A. Maier, K.-J. Zhou, **S. Johnston**, and R. Comin. *Evolution of spin excitations from bulk to monolayer FeSe*. [Nature Communications **12**, 3122 \(2021\)](#).
18. E. Paris, C. W. Nicholson, **S. Johnston**, Y. Tseng, M. Rumo, G. Coslovich, S. Zohar, M.F. Lin, V. N. Strocov, R. Saint-Martin, A. Revcolevschi, A. Kemper, W. Schlotter, G. Dakovski, C. Monney, and T. Schmitt, *Probing the interplay between lattice dynamics and local magnetic correlations with femtosecond RIXS*. [npj Quantum Materials **6**, 51 \(2021\)](#).
19. P. Mai, G. Balduzzi, **S. Johnston**, and T. A. Maier, *Pairing correlations in the cuprates: a numerical study of the three-band Hubbard model*. [Physical Review B **103**, 144514 \(2021\)](#).
20. P. Werner, **S. Johnston**, and M. Eckstein, *Nonequilibrium-DMFT based RIXS investigation of the two-orbital Hubbard model*. [Europhysics Letters **133**, 57005 \(2021\)](#). **Selected as an editor's choice.**
21. L. Rademaker, G. Alvarez-Suchini, K. Natatsukasa, Y. Wang, and **S. Johnston**, *Enhanced superconductivity in FeSe/SrTiO₃ from the combination of forward scattering phonons and spin fluctuations*. [Physical Review B **103**, 144504 \(2021\)](#).
22. P. Mai, G. Balduzzi, **S. Johnston**, and T. A. Maier, *Orbital structure of the Cooper pairs in the high-temperature superconducting cuprates*. [npj Quantum Materials **6**, 26 \(2021\)](#).
23. M. Jiang, G. A. Sawatzky, M. Berciu, and **S. Johnston**. *Polaron and bipolaron tendencies in a semiclassical model for hole-doped bismuthates*. [Physical Review B **103**, 115129 \(2021\)](#).
24. U. Kumar, G. Price, K. Stiwinter, A. Nocera, **S. Johnston**, T. Datta, *Spectroscopic signatures of next-nearest-neighbor hopping in the charge and spin dynamics of doped one-dimensional antiferromagnets*. [Physical Review B **102**, 075134 \(2020\)](#).
25. X. Wu, F. Ming, T. S. Smith, G. Liu, F. Ye, K. Wang, **S. Johnston**, and H. H. Weitering. *Superconductivity in a hole-doped Mott-insulating triangular adatom layer on a silicon surface*. [Physical Review Letters **125**, 117001 \(2020\)](#).
26. P. M. Dee, J. Coulter, K. Kleiner, and **S. Johnston**, *Relative importance of nonlinear electron-phonon coupling and vertex corrections in the Holstein model*. [Communications Physics **3**, 145 \(2020\)](#).
27. J. Li, A. Nag, J. Pelliciari, H. Robarts, A. Walters, M. Garcia-Fernandez, H. Eisaki, D. Song, H. Ding, **S. Johnston**, R. Comin, K.-J. Zhou. *Multi-orbital charge density wave excitations and concomitant phonon anomalies in Bi₂Sr₂LaCuO_{6+δ}*. [Proceedings of the National Academy of Sciences **117**, 16219 \(2020\)](#).
28. S. Li and **S. Johnston**, *Quantum Monte Carlo study of lattice polarons in the two-dimensional multi-orbital Su-Schrieffer-Heeger model*. [npj Quantum Materials **5**, 40 \(2020\)](#).

29. L. Braicovich, M. Rossi, R. Fumagalli, Y. Peng, T. Wang, R. Arpaia, D. Betto, G. M. De Luca, D. Di Castro, K. Kummer, M. Moretti Sala, M. Pagetti, G. Balestrino, N. B. Brookes, M. Salluzzo, **S. Johnston**, J. van den Brink, and G. Ghiringhelli, *Determining the electron-phonon coupling in superconducting cuprates by resonant inelastic x-ray scattering: Methods and results on $Nd_{1+x}Ba_{2-x}Cu_3O_{7-\delta}$* . [Physical Review Research **2**, 023231 \(2020\)](#).
30. T. Keen, T. Maier, **S. Johnston**, and P. Lougovski, *Quantum-classical simulation of two-site dynamical mean-field theory on noisy quantum hardware*. [Quantum Science and Technology **5**, 035001 \(2020\)](#).
31. S. Li, P. M. Dee, E. Khatami, and **S. Johnston**, *Accelerating lattice quantum Monte Carlo simulations using artificial neural networks: Application to the Holstein model*. [Physical Review B **100**, 020302 \(2019\)](#).
32. U. Kumar, N. Nocera, E. Dagotto, and **S. Johnston**, *Theoretical study of the spin and charge dynamics of two-leg ladders as probed by resonant inelastic x-ray scattering*. [Physical Review B **99**, 205130 \(2019\)](#).
33. N. D. Patel, A. Nocera, G. Alvarez, A. Moreo, **S. Johnston**, and E. Dagotto, *Fingerprints of an orbital-selective Mott phase in the block magnetic state of $BaFe_2Se_3$ ladders*. [Communications Physics **2**, 64 \(2019\)](#).
34. P. M. Dee, K. Nakatsukasa, Y. Wang, and **S. Johnston**, *Temperature-filling phase diagram of the two-dimensional Holstein model in the thermodynamic limit by self-consistent Migdal approximation*. [Physical Review B **99**, 024514 \(2019\)](#).
35. A. Kumar, **S. Johnston**, and A. F. Kemper, *Identifying a forward scattering superconductor through pump-probe spectroscopy*. [Europhysics Letters **124**, 67002 \(2018\)](#).
36. J. Schlappa, U. Kumar, K. J. Zhou, S. Singh, M. Mourigal, V. N. Strocov, A. Revcolevschi, L. Patthey, H. M. Rønnow, **S. Johnston**, and T. Schmitt, *Probing multi-spinon excitations outside of the two-spinon continuum in the antiferromagnetic spin chain cuprate Sr_2CuO_3* . [Nature Communications **9**, 5394 \(2018\)](#).
37. D. Meyers, K. Nakatsukasa, S. Mu, L. Hao, J. Yang, Y. Cao, G. Fabbris, H. Miao, J. Pellicciari, D. McNally, M. Dantz, E. Paris, E. Karapetrova, Y. Choi, D. Haskel, P. Shafer, E. Arenholz, T. Schmitt, T. Berlijn, **S. Johnston**, J. Liu, and M. P. M. Dean, *Decoupling carrier concentration and electron-phonon coupling in oxide heterostructures*. [Physical Review Letters **121**, 236802 \(2018\)](#).
38. E. Perret, C. Monney, **S. Johnston**, J. Khmaladze, F. Lyzwa, R. Gaina, M. Dantz, J. Pellicciari, C. Piamonteze, B. P. P. Mallet, M. Minola, B. Keimer, T. Schmitt, C. Bernhard, *Coupled Cu- and Mn-charge and orbital orders in $YBa_2Cu_3O_7/Nd_{0.65}(Ca_{1-y}Sr_y)_{0.35}MnO_3$ multilayers*. [Communications Physics **1**, 45 \(2018\)](#).
39. A. Nocera, U. Kumar, N. Kaushal, G. Alvarez, E. Dagotto, and **S. Johnston**, *Computing resonant inelastic x-ray scattering spectra using the density matrix renormalization group method*. [Scientific Reports **8**, 11080 \(2018\)](#).
40. U. Kumar, A. Nocera, E. Dagotto, and **S. Johnston**, *Multi-spinon and holon excitations probed by resonant inelastic x-ray scattering on doped one-dimensional antiferromagnets*. [New Journal of Physics **20**, 073019 \(2018\)](#).
41. A. Nocera, Y. Wang, N. D. Patel, G. Alvarez, T. A. Maier, E. Dagotto, and **S. Johnston**, *Doping evolution of charge and spin excitations in two-leg Hubbard ladders: comparing DMRG and RPA+FLEX results*. [Physical Review B **97**, 195156 \(2018\)](#).
42. S. Li, Y. Tang, T. A. Maier, and **S. Johnston**, *Phase competition in a one-dimensional three-orbital Hubbard-Holstein model*. [Physical Review B **97**, 195116 \(2018\)](#).
43. R. O. Kuzian, R. Klingeler, W. E. A. Lorenz, N. Wizen, S. Nishimoto, U. Nitzsche, H. Rosner, D. Milosavljevic, L. Hozoi, R. Yadav, J. Richter, A. Hauser, J. Geck, R. Hayn, V. Yushankhai, L. Siurakshina, C. Monney, T. Schmitt, G. Roth, T. Ito, H. Yamaguchi, M. Matsuda, **S. Johnston**, J. Málek, and S.-L. Drechsler, *Comment on 'Oxygen vacancy-induced magnetic moment in edge-sharing CuO_2 chains of Li_2CuO_2 '*. [New Journal of Physics **20**, 058001 \(2018\)](#).
44. F. Ming, T. S. Smith, **S. Johnston**, P. C. Snijders, H. H. Weitering, *Zero-bias anomaly in nanoscale hole-doped Mott insulators on a triangular silicon surface*. [Physical Review B **97**, 075403 \(2018\)](#).
45. A. G. Swartz, H. Inoue, T. A. Merz, Y. Hikita, S. Raghu, T. P. Devereaux, **S. Johnston**, and H. Y. Hwang, *Strong polaronic behavior in a weak coupling superconductor*. [Proceedings of the National Academy of Sciences **115**, 1475 \(2018\)](#).

46. S. Zhang, J. Guan, Y. Wang, T. Berlijn, **S. Johnston**, X. Jia, B. Liu, Q. Zhu, Q. An, S. Xue, Yanwei Cao, F. Yang, W. Wang, J. Zhang, E. W. Plummer, X. Zhu, and J. Guo, *Lattice dynamics of ultrathin FeSe films on SrTiO₃*. [Physical Review B **97**, 035408 \(2018\)](#).
47. S.-L. Drechsler, H. Rosner, V. Grinenko, S. Aswartham, I. Morozov, M. Liu, A. Boltalin, K. Kihou, C. H. Lee, T. Kim, D. Evtushinsky, J. M. Tomczak, **S. Johnston**, and S. Borisenko, *Mass enhancements and band shifts in strongly hole-overdoped Fe-based pnictide superconductors: KFe₂As₂ and CsFe₂As₂*. [Journal of Superconductivity and Novel Magnetism **31**, 777 \(2018\)](#).
48. J. Shamblin, M. Heres, H. Zhou, J. Sangoro, M. Lang, J. Neuefeind, A. J. Alonso, and **S. Johnston**, *Experimental evidence for bipolaron condensation as a mechanism for the metal-insulator transition in rare-earth nickelates*. [Nature Communications **9**, 86 \(2018\)](#).
49. F. Ming, **S. Johnston**, D. Mulugeta, T. S. Smith, P. Vilmercati, G. Lee, T. A. Maier, P. Snijders, and H. H. Weitering, *Realization of a hole-doped Mott insulator on a triangular silicon lattice*. [Physical Review Letters **119**, 266802 \(2017\)](#).
50. S. Choi, H. J. Choi, J. M. Ok, Y. Lee, W.-J. Jang, A. T. Lee, Y. Kuk, S. Lee, A. J. Heinrich, S.-W. Cheong, Y. Bang, **S. Johnston**, J. S. Kim, and J. Lee, *Switching magnetism and superconductivity with spin-polarized current in iron-based superconductor*. [Physical Review Letters **119**, 227001 \(2017\)](#). **Selected as an Editors' Choice & for a Viewpoint in Physics**.
51. E. W. Huang, C. B. Mendl, S. Liu, **S. Johnston**, H.-C. Jiang, B. Moritz, and T. P. Devereaux, *Numerical evidence of fluctuating stripes in the normal state of high-T_c cuprate superconductors*. [Science **358**, 1161 \(2017\)](#).
52. C. B. Mendl, E. A. Nowadnick, E. W. Huang, **S. Johnston**, B. Moritz, and T. P. Devereaux, *Doping dependence of ordered phases and emergent quasiparticles in the doped Hubbard-Holstein model*. [Physical Review B **96**, 205141 \(2017\)](#).
53. J. Shamblin, Z. Dun, M. Lee, **S. Johnston**, E. S. Choi, K. Page, Y. Qiu, and H. Zhou, *Structural and magnetic short-range order in fluorite Yb₂TiO₅*. [Physical Review B **96**, 174418 \(2017\)](#).
54. Y. Wang, L. Rademaker, E. Dagotto, and **S. Johnston**, *Phonon linewidth due to electron-phonon interactions with strong forward scattering in FeSe thin films on oxide substrates*. [Physical Review B **96**, 054515 \(2017\)](#).
55. S. Choi, **S. Johnston**, W.-J. Jang, K. Koepf, K. Nakatsukasa, J. Mok Ok, H.-J. Lee, H. W. Choi, A. Taekyung Lee, A. Akbari, Y. K. Semertzidis, Y. Bang, J. S. Kim, and J. Lee, *Correlation of Fe-based superconductivity and electron-phonon coupling in an FeAs/oxide heterostructure*. [Physical Review Letters **119**, 107003 \(2017\)](#).
56. Y. F. Kung, C. Bazin, K. Wohlfeld, Yao Wang, C.-C. Chen, C. J. Jia, **S. Johnston**, B. Moritz, F. Mila, and T. P. Devereaux, *Numerically exploring the 1D-2D dimensional crossover on spin dynamics in the doped Hubbard model*. [Physical Review B **96**, 195106 \(2017\)](#).
57. S.-L. Drechsler, **S. Johnston**, V. Grinenko, J. M. Tomczak, and H. Rosner, *Constraints on the total coupling strength to bosons in the iron based superconductors*. [Physica Status Solidi B **254**, 1700006 \(2017\)](#).
58. S. Li, E. Khatami, and **S. Johnston**, *Competing phases and orbital-selective behaviors in the two-orbital Hubbard-Holstein model*. [Physical Review B **95**, 121112\(R\) \(2017\)](#).
59. S. Li, N. Kaushal, Y. Wang, Y. Tang, G. Alvarez, A. Nocera, T. A. Maier, E. Dagotto, and **S. Johnston**, *Non-local correlations in the orbital-selective Mott phase of a one-dimensional multi-orbital Hubbard model*. [Physical Review B **94**, 235126 \(2016\)](#).
60. A. Tytarenko, K. Nakatsukasa, Y. Huang, **S. Johnston**, and E. Van Heumen, *From bad metal to Kondo insulator: temperature evolution of the optical properties of SmB₆*. [New Journal of Physics **18**, 123003 \(2016\)](#).
61. P. Vilmercati, S.-K. Mo, A. Fedorov, M. McGuire, A. Sefat, B. Sales, D. Mandrus, D. J. Singh, W. Ku, **S. Johnston**, and N. Mannella, *Nonrigid band shift and nonmonotonic electronic structure changes upon doping in the normal state of the pnictide high-temperature superconductor Ba(Fe_{1-x}Co_x)₂As₂*. [Physical Review B **94**, 195147 \(2016\)](#).

62. C. Monney, V. Bisogni, K.-J. Zhou, R. Kraus, V. Strocov, G. Behr, S.-L. Drechsler, H. Rosner, **S. Johnston**, J. Geck, T. Schmitt, *Probing inter- and intrachain Zhang-Rice excitons in Li_2CuO_2 and determining their binding energy*. [Physical Review B **94**, 165118 \(2016\)](#).
63. A. J. Macdonald, Y.-S. Tremblay-Johnston, S. Grothe, P. Chi, Dosanjh, **S. Johnston**, S. A. Burke, *Dispersing artifacts in FT-STS: a comparison of set point effects across acquisition modes*. [Nanotechnology **27**, 414004 \(2016\)](#).
64. A. Linscheid, S. Maiti, Y. Wang, **S. Johnston**, and P. J. Hirschfeld, *High T_c via spin fluctuations from incipient bands: application to monolayers and intercalates of FeSe*. [Physical Review Letters **117**, 077003 \(2016\)](#).
65. N. C. Plumb, D. J. Gawryluk, Y. Wang, Z. Ristić, J. Park, B. Q. Lv, Z. Wang, C. E. Matt, N. Xu, T. Shang, K. Conder, J. Mesot, **S. Johnston**, M. Shi, and M. Radović, *Momentum-resolved electronic structure of the high- T_c superconductor parent compound BaBiO_3* . [Physical Review Letters **117**, 037002 \(2016\)](#).
66. G. Liu, N. Kaushal, S. Li, C. B. Bishop, Y. Wang, **S. Johnston**, G. Alvarez, A. Moreo, and E. Dagotto, *Orbital-selective Mott phases of a one-dimensional three-orbital Hubbard model using computational techniques*. [Physical Review E **93**, 063313 \(2016\)](#).
67. Y. Wang, A. Linscheid, T. Berlijn, and **S. Johnston**, *Ab initio study of electron-phonon couplings of the interfacial oxygen mode in FeSe thin films on SrTiO_3 and BaTiO_3 substrates*. [Physical Review B **93**, 134513 \(2016\)](#).
68. Y. Wang, K. Nakatsukasa, L. Rademaker, T. Berlijn, and **S. Johnston**, *Aspects of electron-phonon interactions with strong forward scattering in FeSe Thin Films on SrTiO_3 substrates*. [Superconductor Science and Technology **29**, 054009 \(2016\)](#).
69. Y. F. Kung, C.-C. Chen, Yao Wang, E. W. Huang, E. A. Nowadnick, B. Moritz, R. T. Scalettar, **S. Johnston**, T. P. Devereaux, *Characterizing the three-orbital Hubbard model with determinant quantum Monte Carlo*. [Physical Review B **93**, 155166 \(2016\)](#).
70. **S. Johnston**, C. Monney, V. Bisogni, K.-J. Zhou, R. Kraus, G. Behr, V. N. Strocov, J. Málek, S.-L. Drechsler, J. Geck, T. Schmitt, and J. van den Brink, *Electron-lattice interactions strongly renormalize the charge transfer energy in the spin-chain copper oxide Li_2CuO_2* . [Nature Communications **7**, 10563 \(2016\)](#).
71. L. Rademaker, Y. Wang, T. Berlijn, and **S. Johnston**, *Enhanced superconductivity due to forward scattering in FeSe thin films on SrTiO_3 substrates*. [New Journal of Physics **18**, 022001 \(2016\)](#). **Fast Track Communication**.
72. Y. F. Kung, E. A. Nowadnick, C. J. Jia, **S. Johnston**, B. Moritz, R. T. Scalettar, and T. P. Devereaux, *Doping evolution of spin and charge excitations in the Hubbard Model*. [Physical Review B **92**, 195108 \(2015\)](#).
73. A. Tytarenko, Y. Huang, A. de Visser, **S. Johnston**, and E. van Heumen, *Direct observation of a Fermi liquid-like normal state in an iron-pnictide superconductor*. [Scientific Reports **5**, 12421 \(2015\)](#).
74. S. Li, E. A. Nowadnick, and **S. Johnston**, *Quasiparticle properties of the non-linear Holstein model at finite doping and temperature*. [Physical Review B **92**, 064301 \(2015\)](#).
75. Z. L. Dun, H. B. Cao, Y. Qiu, J. R. D. Copley, T. Hong, M. Matsuda, J. G. Cheng, M. Lee, E. S. Choi, **S. Johnston**, and H. D. Zhou, *Competition between the inter- and intra-sublattice interactions in $\text{Yb}_2\text{V}_2\text{O}_7$* . [Physical Review B **91**, 64425 \(2015\)](#).
76. E. A. Nowadnick, **S. Johnston**, B. Moritz, and T. P. Devereaux, *Renormalization of spectra by phase competition in the half-filled Hubbard-Holstein model*. [Physical Review B **91**, 165127 \(2015\)](#).
77. S. Li and **S. Johnston**, *The effects of non-linear electron-phonon interactions on superconductivity and charge-density-wave correlations*. [Europhysics Letters **109**, 27007 \(2015\)](#).
78. Y. F. Kung, C.-C. Chen, B. Moritz, **S. Johnston**, R. Thomale, T. P. Devereaux, *Numerical exploration of spontaneous broken symmetries in multi-orbital Hubbard models*. [Physical Review B **90**, 224507 \(2014\)](#). **Selected as an Editors' suggestion**.
79. A. Mukherjee, N. D. Patel, S. Dong, **S. Johnston**, A. Moreo, E. Dagotto, *Testing the Monte Carlo - mean field approximation in the one-band Hubbard model*. [Physical Review B **90**, 205113 \(2014\)](#).

80. J. J. Lee, F. T. Schmitt, R. G. Moore, **S. Johnston**, Y. T. Cui, W. Li, M. Yi, Z. K. Liu, M. Hashimoto, Y. Zhang, D. H. Lu, T. P. Devereaux, D. H. Lee, and Z. X. Shen, *Interfacial mode coupling as the origin of the enhancement of T_c in FeSe films on SrTiO₃*. [Nature](#) **515**, 245 (2014).
81. S. Chi, **S. Johnston**, G. Levy, S. Grothe, R. Szedlak, B. Ludbrook, Ruixing Liang, P. Dosanjh, S. A. Burke, A. Damascelli, D. A. Bonn, W. N. Hardy, and Y. Pennec, *Sign inversion in the superconducting order parameter of LiFeAs inferred from Bogoliubov quasiparticle interference*. [Physical Review B](#) **89**, 104522 (2014). **Editors' choice, Science magazine.**
82. **S. Johnston**, M. Abdel-Hafiez, L. Harnagea, V. B. Zabolotnyy, D. Bombor, Y. Krupskaya, C. Hess, S. Wurmehl, A. U. B. Wolter, B. Büchner, S.-L. Drechsler, and H. Rosner, *Specific heat of Ca_{0.32}Na_{0.68}Fe₂As₂ single crystals: Unconventional s_{\pm} multiband superconductivity with intermediate repulsive interband coupling and sizable attractive intraband couplings*. [Physical Review B](#) **89**, 134507 (2014).
83. **S. Johnston**, A. Mukherjee, I. Elfimov, M. Berciu, and G. A. Sawatzky, *Charge disproportionation without charge transfer in the rare-earth nickelates as a possible mechanism for the metal-insulator transition*. [Physical Review Letters](#) **112**, 106404 (2014).
84. C. J. Jia, E. A. Nowadnick, K. Wohlfeld, C.-C. Chen, **S. Johnston**, T. Tohyama, B. Moritz, and T. P. Devereaux, *Persistent spin excitations in doped antiferromagnets revealed by resonant inelastic light scattering*. [Nature Communications](#) **5**, 3314 (2014).
85. S. Grothe, **S. Johnston**, S. Chi, P. Dosanjh, S. A. Burke, and Y. Pennec, *Quantifying many-body effects by high-resolution Fourier transform scanning tunneling spectroscopy*. [Physical Review Letters](#) **111**, 246804 (2013).
86. L. Rademaker, **S. Johnston**, J. Zaanen, and J. van den Brink, *Determinant quantum Monte Carlo study of exciton condensation in the bilayer Hubbard model*. [Physical Review B](#) **88**, 235115 (2013).
87. **S. Johnston**, E. A. Nowadnick, Y. Kung, B. Moritz, R. T. Scalettar, and T. P. Devereaux, *Determinant quantum Monte Carlo study of the two-dimensional singleband Hubbard-Holstein model*. [Physical Review B](#) **87**, 235133 (2013). **Selected as an Editors' suggestion.**
88. W. S. Lee, **S. Johnston**, B. Moritz, J. Lee, M. Yi, K. J. Zhou, T. Schmitt, L. Patthey, V. Strocov, K. Kudo, Y. Koike, J. van den Brink, T. P. Devereaux, and Z. X. Shen, *The role of lattice coupling in establishing the electronic and magnetic properties of quasi-one-dimensional cuprates*. [Physical Review Letters](#) **110**, 265502 (2013).
89. M. Abdel-Hafiez, V. Grinenko, S. Aswartham, I. Morozov, M. Roslova, O. Vakaliuk, **S. Johnston**, D. V. Efremov, J. van den Brink, H. Rosner, M. Kumar, C. Hess, S. Wurmehl, A. U. B. Wolter, B. Büchner, E. L. Green, J. Wosnitza, P. Vogt, A. Reifenberger, C. Enss, M. Hempel, R. Klingeler, and S.-L. Drechsler, *Evidence of d-wave superconductivity in K_{1-x}Na_xFe₂As₂ ($x = 0, 0.1$) single crystals from low-temperature specific-heat measurements*. [Physical Review B](#) **87**, 180507(R) (2013).
90. C. Monney, V. Bisogni, K. J. Zhou, R. Kraus, V. N. Strocov, G. Behr, J. Málek, R. Kuzian, S.-L. Drechsler, **S. Johnston**, A. Revcolevschi, B. Büchner, H. Rønnow, J. van den Brink, J. Geck, and T. Schmitt, *Using Zhang-Rice singlet excitons as a probe for local spin correlations in cuprate chains*. [Physical Review Letters](#) **110**, 087403 (2013).
91. E. A. Nowadnick, **S. Johnston**, B. Moritz, R. T. Scalettar, and T. P. Devereaux, *Competition between antiferromagnetic and charge density wave order in the half-filled Hubbard-Holstein model*. [Physical Review Letters](#) **109**, 246404 (2012).
92. K. Koepnik, **S. Johnston**, E. van Heumen, Y. Huang, J. Kaas, J. B. Goedkoop, M. S. Golden, and J. van den Brink, *Surface adatom conductance filtering in scanning tunneling spectroscopy of Co-doped BaFe₂As₂ iron pnictide superconductors*. [Physical Review Letters](#) **109**, 127001 (2012).
93. R. O. Kuzian, S. Nishimoto, S.-L. Drechsler, J. Málek, **S. Johnston**, J. van den Brink, M. Schmitt, H. Rosner, M. Matsuda, K. Oka, H. Yamaguchi, and T. Ito, *Ca₂Y₂Cu₅O₁₀: the first frustrated quasi-1D ferromagnet close to criticality*. [Physical Review Letters](#) **109**, 117207 (2012).
94. **S. Johnston**, I. M. Vishik, W. S. Lee, F. Schmitt, S. Uchida, K. Fujita, S. Ishida, N. Nagaosa, Z.-X. Shen and T. P. Devereaux, *Evidence for the importance of extended Coulomb interactions and forward scattering in cuprate superconductors*. [Physical Review Letters](#) **108**, 166404 (2012).

95. M. Abdel-Hafiez, S. Aswartham, S. Wurmehl, V. Grinenko, S.-L. Drechsler, **S. Johnston**, A. U. B. Wolter-Giraud, B. Büchner and H. Rosner, *Specific heat and upper critical fields in KFe_2As_2 single crystals*. [Physical Review B **85**, 134533 \(2012\)](#).
96. **S. Johnston**, A. P. Sorini, B. Moritz, T. P. Devereaux, and D. J. Scalapino, *Coincidence between energy gaps and Kohn anomalies in conventional superconductors*. [Physical Review B **84**, 174523 \(2011\)](#).
97. B. Moritz, **S. Johnston**, T. P. Devereaux, B. Muschler, W. Prestel, R. Hackl, M. Lambacher, A. Erb, S. Komiya and Y. Ando, *An investigation of particle-hole asymmetry in the cuprates via electronic Raman scattering*. [Physical Review B **84**, 235114 \(2011\)](#).
98. F. Schmitt, B. Moritz, **S. Johnston**, S.-K. Mo, M. Hashimoto, R. G. Moore, D.-H. Lu, E. Motoyama, M. Greven, T. P. Devereaux, and Z.-X. Shen, *High-energy anomaly in $Nd_{2-x}Ce_xCuO_4$ investigated by angle-resolved photoemission spectroscopy and quantum Monte Carlo simulations*. [Physical Review B **83**, 195123 \(2011\)](#).
99. **S. Johnston**, F. Vernay, B. Moritz, T.P. Devereaux, Z.-X. Shen, N. Nagaosa, and J. Zaanen, *A systematic study of electron-phonon coupling to oxygen modes across the cuprates*. [Physical Review B **82**, 064513 \(2010\)](#).
100. B. Moritz, **S. Johnston**, and T. P. Devereaux, *Insights on the cuprate high-energy anomaly observed in ARPES*. [Journal of Electron Spectroscopy and Related Phenomena **181**, 31 \(2010\)](#).
101. **S. Johnston** and T. P. Devereaux, *Density of states modulations from oxygen phonons in d-wave superconductors: reconciling angle-resolved photoemission spectroscopy and scanning tunneling microscopy*. [Physical Review B **81**, 214512 \(2010\)](#).
102. C.-C. Chen, B. Moritz, C. J. Jia, **S. Johnston**, A. P. Sorini, L.-Q. Lee, K. Ko, and T. P. Devereaux, *Numerical studies of photo-based spectroscopies on High- T_c superconductors*. [Computer Physics Communications **182**, 106 \(2010\)](#).
103. C. C. Chen, B. Moritz, F. Vernay, J. N. Hancock, **S. Johnston**, G. Chabot-Couture, M. Greven, I. Elfimov, G. A. Sawatzky, and T. P. Devereaux, *The nature of momentum-resolved Cu K-edge charge excitations in La_2CuO_4* . [Physical Review Letters **105**, 177401 \(2010\)](#).
104. **S. Johnston**, W. S. Lee, Y. Chen, E. A. Nowadnick, B. Moritz, Z.-X. Shen, and T. P. Devereaux, *Material and doping dependence of the nodal and antinodal dispersion renormalizations in single- and multilayer cuprates*. [Advances in Condensed Matter Physics **2010**, 968304 \(2010\)](#).
105. Y. Chen, A. Iyo, W. Yang, M. Arita, **S. Johnston**, H. Eisaki, H. Namatame, M. Taniguchi, T. P. Devereaux, Z. Hussain, and Z.-X. Shen, *Unusual layer-dependent charge distribution, collective mode coupling, and superconductivity in multilayer cuprate $Ba_2Ca_3Cu_4O_8F_2$* . [Physical Review Letters **103**, 036403 \(2009\)](#).
106. C. S. Leem, C. Kim, S. R. Park, M.-K. Kim, H. J. Choi, C. Kim, B. J. Kim, **S. Johnston**, T. P. Devereaux, T. Ohta, A. Bostwick, and E. Rotenberg. *High resolution angle resolved photoemission studies of quasi-particle dynamics in graphite*. [Physical Review B **79**, 124438 \(2009\)](#).
107. **S. Johnston**, F. Vernay, and T.P. Devereaux, *The impact of an oxygen dopant in a $Bi_2Sr_2CaCu_2O_8$ crystal*. [Europhysics Letters **86**, 37007 \(2009\)](#).
108. B. Moritz, F. S. Schmitt, W. Meevasana, **S. Johnston**, E. M. Motoyama, M. Greven, D. H. Lu, C. Kim, R. T. Scalettar, Z.-X. Shen, and T. P. Devereaux, *High-energy anomaly dichotomy in electron- and hole-doped high temperature superconductors*. [New Journal of Physics **11**, 093020 \(2009\)](#).
109. W. S. Lee, W. Meevasana, **S. Johnston**, D. H. Lu, I. M Vishik, H. Easiki, N. Kaneko, T. P. Devereaux, and Z.-X. Shen, *Superconductivity-induced self-energy evolution of the nodal electron of optimally doped $Bi2212$* . [Physical Review B **77**, 140504\(R\) \(2008\)](#).
110. W. S. Lee, **S. Johnston**, T. P. Devereaux, and Z.-X. Shen, *Aspects of electron-phonon self-energy revealed from angle-resolved photoemission spectroscopy*. [Physical Review B **75**, 195116 \(2007\)](#).
111. A. P. Hitchcock, **S. Johnston**, T. Tylliszczak, C.C. Turci, M. Barbatti, A. B. Rocha, and C.E. Bielschowsky, *Generalized oscillator strengths for C 1s excitations of acetylene and ethylene*. [Journal of Electron Spectroscopy and Related Phenomena **123**, 303 \(2002\)](#).

PUBLICATIONS UNDER REVIEW

1. D. Agrawal, A. Del Maestro, **S. Johnston**, and J. Ostrowski, *A group-equivariant autoencoder for identifying spontaneously broken symmetries in the Ising model* Under review at Physical Review E (2022). [arXiv:2202.06319](https://arxiv.org/abs/2202.06319).
2. E. W. Huang, T. Liu, W. O. Wang, H.-C. Jiang, P. Mai, T. A. Maier, **S. Johnston**, B. Moritz, and T. P. Devereaux, *Fluctuating intertwined stripes in the strange metal regime of the Hubbard model*. Submitted to Science Advances (2022). [arXiv:2202.08845](https://arxiv.org/abs/2202.08845).
3. F. Ming, X. Wu, C. Chen, K. D. Wang, P. Mai, T. A. Maier, J. Stroockoz, J. W. F. Venderbos, C. Gonzalez, J. Ortega, **S. Johnston**, and H. H. Weitering, *Chiral superconductivity on a silicon surface*. Under review at Nature (2022).
4. S. Karakuzu, A. Tanjaron Ly, P. Mai, J. Neuhaus, T. A. Maier, and **S. Johnston**, *Stripe correlations in the two-dimensional Hubbard-Holstein model*. Under review at Communications Physics (2022). [arXiv:2205.15464](https://arxiv.org/abs/2205.15464).
5. S. Li and **S. Johnston**, *Suppressed superexchange interactions in the cuprates by bond-stretching oxygen phonons*. Submitted to Physical Review Letters (2022). [arXiv:2205.12678](https://arxiv.org/abs/2205.12678)
6. Y. Shen, J. Sears, G. Fabbris, J. Li, J. Pellicciari, M. Mitrano, W. He, J. Zhang, J. F. Mitchell, V. Bisogni, M. R. Norman, **S. Johnston**, and M. P. M. Dean, *Electronic character of charge order in square planar low valence nickelates*. Submitted to Nature Communications (2022).
7. **S. Johnston**, E. Khatami, and R. Scalettar, *A perspective on machine learning and data science for strongly correlated electron problems*. Submitted to Carbon Trends (2022).

PREPRINTS

1. M. Naamneh, M. Yao, J. Jandke, J. Ma, Z. Ristić, J. Teyssier, A. Stucky, D. van der Marel, D. J. Gawryluk, T. Shang, M. Medarde, E. Pomjakushina, S. Li, T. Berlijn, **S. Johnston**, Müller, J. Mesot, M. Shi, M. Radović, and N. C. Plumb. *Cooling a polaronic liquid: Phase mixture and pseudogap-like spectra in superconducting $Ba_{1-x}K_xBiO_3$* . [arXiv:1808.06135](https://arxiv.org/abs/1808.06135) (2018).
2. F. C. Niestemski, **S. Johnston**, A. W. Contryman, C. D. Camp, T. P. Devereaux, and H. C. Manoharan, *Local spectral inversion and bosonic extraction of the archetypal elemental superconductor with S-Vacuum-S tunneling spectroscopy*. [arXiv:1211.2244](https://arxiv.org/abs/1211.2244) (2012).
3. E. van Heumen, **S. Johnston**, J. Kaas, N. de Jong, F. Masse, J. Oen, E. Rienks, A. Varykhalov, J. B. Goedkoop, Y. Huang and M. S. Golden, *Multiband quasiparticle interference in the topological insulator $Cu_xBi_2Te_3$* . [arXiv:1110.4406](https://arxiv.org/abs/1110.4406) (2011).

RESEARCH GRANTS AND AWARDS

1. US Department of Energy, Office of Basic Energy Science DE-SC0022311. *Artificial intelligence and data science enabled predictive modeling of collective phenomena in strongly correlated quantum materials*. (PI, \$3,000,000; Sept. 2021 – Aug. 2024)
2. National Science Foundation. QLCI-CG-1937008. *Quantum software for scientific and engineering applications*. (Co-PI, \$142,080; Jan 2020 – Dec. 2020)
3. National Science Foundation DMR-1842056. CAREER: *Advancing theory of resonant inelastic x-ray scattering for materials in- and out-of-equilibrium*. (PI, \$436,898 + \$14,112 supplementary funding; Aug. 2019 – July 2024)
4. Office of Naval Research N00014-18-1-2675. *Engineering high-temperature superconductivity in semiconductor-based interfaces and heterostructures*. (Co-PI, \$501,575; Aug 2018 – July 2021)
5. US Department of Energy, Office of Basic Energy Science. SciDAC: *Computational framework for unbiased studies of correlated electron systems*. (Co-PI, \$7,500,000; Oct. 2017 – Aug. 2021)

6. Oak Ridge National Laboratory/University of Tennessee Science Alliance: Joint Directed Research and Development Grant. *Accelerating quantum Monte Carlo simulations with machine learning*. (PI, \$50K FY18)
7. Oak Ridge National Laboratory/University of Tennessee Science Alliance: Joint Directed Research and Development Grant. *Quantum Monte Carlo studies of correlated one-dimensional multi-orbital systems*. (PI, \$50K FY15, \$50K FY16)
8. University of Tennessee, Organized Research Unit. (PI, \$63K FY16, \$75K FY17, \$63K FY18)

HIGH-PERFORMANCE AND LEADERSHIP-CLASS COMPUTING ALLOCATIONS






1. Innovative and Novel Computational Impact on Theory and Experiment (INCITE) award. *Computational Modeling of Unconventional and Topological Superconductors*. (Co-PI, 740,000 Summit node hours; Jan. 2022 – Dec. 2022)
2. Innovative and Novel Computational Impact on Theory and Experiment (INCITE) award. *Computational Studies of Correlated Quantum Materials*. (Co-PI, 900,000 Summit node hours; Jan. 2021 - Dec. 2021)
3. Innovative and Novel Computational Impact on Theory and Experiment (INCITE) award. *Computational Studies of Correlated Quantum Materials*. (Co-PI, 900,000 million Summit node hours; Jan. 2020 - Dec. 2020)
4. Innovative and Novel Computational Impact on Theory and Experiment (INCITE) award. *Computational Studies of Correlated Quantum Materials*. (Co-PI, 900,000 million Summit node hours; plus 1.2 million Titan node hours; Jan. 2019 – Dec. 2019)

TEACHING EXPERIENCE







I have been the primary instructor for the following courses at the University of Tennessee:

1. Physics 672: Advanced Solid State Physics II (Graduate, Spring 2023).
2. Physics 671: Advanced Solid State Physics I (Graduate, Fall 2022).
3. Physics 321: Thermal Physics (Undergraduate, Spring 2022).
4. Physics 593: Independent Study – Mathematical Methods in Physics (Graduate, Spring 2021).
5. Physics 571: Mathematical Methods in Physics I (Graduate, Fall 2020).
6. Physics 571: Mathematical Methods in Physics I (Graduate, Fall 2019).
7. Physics 571: Mathematical Methods in Physics I (Graduate, Fall 2018).
8. Physics 342/555: Structure of Matter (Undergraduate/Graduate, Spring 2018).
9. Physics 231: Fundamentals of Physics: Electricity and Magnetism (145 Students, Undergraduate, Fall 2017).
10. Physics 342/555: Structure of Matter (Undergraduate/Graduate, Spring 2017).
11. Physics 672: Advanced Solid State Physics II (Graduate, Spring 2016).
12. Physics 671: Advanced Solid State Physics I (Graduate, Fall 2015).
13. Physics 672: Advanced Solid State Physics II (Graduate, Spring 2015).
14. Physics 231: Fundamentals of Physics: Electricity and Magnetism (117 Students, Undergraduate, Fall 2015).
15. Physics 672: Advanced Solid State Physics II (Graduate, Spring 2014).

CURRENT GRADUATE STUDENTS

- Debshikha Banerjee** (Ph.D. Student)  Aug. 2021 – Present
» **Project:** *Spectral properties of the Su-Schrieffer-Heeger model.*
» **Expected Graduation Date:** TBD.
- Sohan Malkaruge Costa** (Ph.D. Student)  Aug. 2020 – Present
» **Project:** *Monte Carlo-mean field simulations of correlated electron systems.*
» **Expected Graduation Date:** TBD.
- Andy Tanjaroony-Ly** (Ph.D. Student)  Aug. 2020 – Present
» **Project:** *Variational and Quantum Monte Carlo Simulations of competing orders in the Hubbard Model.*
» **Expected Graduation Date:** TBD.
- James Neuhaus** (Ph.D. Student)  Sept. 2019 – Oct. 2021
» **Project:** *Quantum Monte Carlo simulations of high-temperature superconductors.*
» **Expected Graduation Date:** Currently on a leave of absence from the University.
- Jinu Thomas** (Ph.D. Student)  Sept. 2019 – Present
» **Project:** *Equilibrium and nonequilibrium Resonant inelastic x-ray scattering on quasi-1D systems.*
» **Expected Graduation Date:** TBD.





FORMER GRADUATE STUDENTS

- Dr. Trevor Keen** (Ph.D. Student)  Sept. 2018 – June 2022
» **Dissertation:** *Quantum Computational Simulations for Condensed Matter Systems.*
» **Placement:** Quantum Circuits, Inc..
- Dr. Philip Dee** (Ph.D. Student)  May 2015 – April 2021
» **Dissertation:** *Numerical studies of superconductivity and charge-density-waves: progress on the 2D Holstein model and a superconductor-metal bilayer.*
» **Placement:** Post Doc. at the University of Florida with Prof. Peter Hirschfeld.
- Dr. Umesh Kumar** (Ph.D. Student)  May 2014 – July 2019
» **Dissertation:** *Resonant Inelastic X-ray Scattering Studies of quasi-1D cuprates.*
» **Placement:** Post Doc. at Los Alamos National Laboratory with Dr. Shizeng Lin.
- Dr. Ken Nakatsukasa** (Ph.D. Student)  Jan. 2015 – Dec. 2018
» **Dissertation:** *Modulation of electronic structures of unconventional superconductors due to coupling to multiple bosonic modes.*
» **Placement:** Data Scientist, Kx – A Division of First Derivatives PLC.
- Dr. Shaozhi Li** (Ph.D. Student)  May 2014 – July 2018
» **Dissertation:** *Numerical Studies of correlated multi-orbital systems with electron-lattice interactions.*
» **Placement:** Post Doc. at University of Michigan with Prof. Emanuel Gull.
- Gustavo Alvarez-Suchini** (M.Sc. Student)  Sept. 2018 – July 2021
» **Placement:** R&D Engineer at RCN Technologies.
- Aaron Kirby** (M.Sc. Student)  Sept. 2017 – Oct. 2019
» **Placement:** Unknown.

CURRENT POST DOCTORAL RESEARCHERS

- Dr. Benjamin Cohen-Stead**  April 2022 - Present

FORMER POST DOCTORAL RESEARCHERS

- Dr. Peizhi Mai** (shared with Dr. Thomas Maier, ORNL.)  Sept. 2018 – Sept. 2021
» **Placement:** Post Doc. with Prof. P. Philips, University of Illinois at Urbana-Champaign.
- Dr. Seher Karakuzu** (shared with Dr. Thomas Maier, ORNL.)  Jan. 2019 – Sept. 2021
» **Placement:** Post Doc. at the Flatiron Institute.
- Dr. Yan Wang**  Sept. 2015 – Aug. 2017
» **Placement:** Post Doc. with Prof. A. M. Trembley, Sherbrooke, Canada.
- Dr. Thomas Shamblin**  June 2016 – May 2017
» **Placement:** ProNova Solutions (Industry).

INVITED TALKS, SEMINARS, AND COLLOQUIA

1. Invited Talk at the 12th International Conference on Inelastic X-ray Scattering (IXS2022). *Resonant inelastic x-ray scattering as a probe of multipolar and nonlocal magnetic excitations.* (Aug. 2022)
2. Invited Talk at the 33rd IUPAP Conference on Computational Physics, *Intertwined spin, charge, and pairing correlations in the single-band Hubbard and Hubbard-Holstein models.* (Aug. 2022)
3. Invited Talk at the 13th International Conference on Materials and Mechanisms of Superconductivity & High Temperature Superconductors. *The crucial role of SSH interactions in the bismuthate superconductors.* (July 2022)
4. Invited Talk at the 13th International Conference on Materials and Mechanisms of Superconductivity & High Temperature Superconductors. Given on behalf of Thomas Maier. *Intertwined Spin, Charge and Pair Correlations in the Two-Dimensional Hubbard Model in the Thermodynamic Limit.* (July 2022)
5. University of Minnesota, School of Physics & Astronomy, Condensed Matter Seminar. *The role of Su-Schrieffer-Heeger-like interactions in the bismuthate family of high- T_c superconductors.* (April 2022)
6. University at Albany, State University of New York, Department of Physics Colloquium. *Studying multipolar spin excitations in quantum magnets with resonant inelastic x-ray scattering.* (March 2022)
7. Resonant Inelastic and Elastic X-ray Scattering 2021 (Conference), Brookhaven National Laboratory. *New theoretical insights into how resonant inelastic x-ray scattering probes electron-phonon interactions in solids.* (Aug. 2021)
8. Workshop on Artificial Intelligence in Multi-Fidelity, Multi-Scale and Multi-Physics Simulations of Materials, Joint Nanoscience and Neutron Scattering User Meeting at ORNL. *Artificial neural networks for accelerating lattice quantum Monte Carlo Simulations.* (Aug. 2021)
9. CIFAR Quantum Materials Canada / Matériaux quantiques Canada Seminar. *Chiral $d + id$ superconductivity on a semiconducting triangular lattice platform.* (April 2021)
10. Northeastern University, Quantum Matter Seminar. *Engineering a doped Mott insulator and chiral $d + id$ superconductivity in a triangular adatom lattice on a silicon surface.* (Feb. 2021)
11. University of British Columbia, Condensed Matter Seminar. *Doping a Mott insulator and unconventional superconductivity in a triangular adatom layer on a silicon surface.* (Oct. 2020)
12. The University of Tennessee, Condensed Matter Seminar. *Unconventional superconductivity in 1/3rd monolayers of Sn on Si(111) – The Theory Perspective.* (Sept. 2020)
13. University of Amsterdam, Quantum Matter Seminar. *Resonant inelastic scattering studies of quasiparticle fractionalization in quasi-one-dimensional antiferromagnets.* (April 2020)

14. University of Kentucky, Department of Physics and Astronomy Colloquium. *On the validity of linear models of electron-lattice coupled systems.* (Nov. 2019)
15. NSLS-II & SFN Users' Meeting. Satellite workshop on Collective Phenomenon in Quantum Materials. *Studies of collective excitations in quasi-1D cuprates using resonant inelastic x-ray scattering.* (May 2019)
16. University of Tennessee, Department of Physics and Astronomy Colloquium: *Probing competing and entangled degrees of freedom in correlated quantum materials using resonant inelastic x-ray scattering.* (Sept. 2018)
17. University of Illinois Urbana Champaign – Condensed Matter Physics Seminar. *Using resonant inelastic x-ray scattering to study quasiparticle fractionalization in quasi-one-dimensional cuprates.* (Nov. 2018)
18. Augusta University - Materials Science Seminar. *Using resonant inelastic x-ray scattering to study quasiparticle fractionalization in quasi-one-dimensional cuprates.* (Feb. 2018)
19. Joint Institute for Advanced Materials Condensed Matter Seminar, Knoxville, TN. *Probing elementary magnetic excitations in quasi-one-dimensional cuprates using RIXS.* (Sept. 2017)
20. International Workshop on Recent Progress in Superconductivity, Pyeongchang, Korea. *An overview of the possible role of strong forward scattering in the FeSe interfaces.* (July 2017)
21. Outreach Talk - UTK Saturday Morning Physics. *Studying novel quantum materials using light and computers.* (April 2017)
22. Photon Science Seminar, Paul Scherrer Institut, Switzerland. *Enhancing superconductivity in FeSe thin films using oxide substrates phonons.* (Nov. 2016)
23. Condensed Matter Seminar, University of Freiburg, Switzerland. *Enhancing superconductivity in FeSe thin films using oxide substrates phonons.* (Nov. 2016)
24. Condensed Matter Seminar, University of Zürich, Switzerland. *Enhancing superconductivity in FeSe thin films using oxide substrates phonons.* (Nov. 2016)
25. ITF Seminar, IFW Dresden, Germany. *Enhancing superconductivity in FeSe thin films using oxide substrates phonons.* (Oct. 2016)
26. NC State, Department of Physics Colloquium. *Disentangling multiple degrees of freedom in correlated 1D materials with resonant inelastic x-ray scattering.* (Sept. 2016)
27. IFW Dresden RIXS/REXS Workshop, Germany. *Probing the renormalization of electronic properties by phonons in correlated 1D materials.* (June 2016)
28. University of British Columbia, Vancouver, Canada. *Enhanced Superconductivity in FeSe Monolayers on oxide substrates.* (May 2016)
29. Society of Physics Students, Zone 8 Meeting. *Combining photons and computers: probing many-body physics in quantum materials.* (Mar. 2016)
30. University of Florida, Gainesville. *Enhanced superconductivity in FeSe thin films on SrTiO₃ substrates.* (Oct. 2015)
31. Pittsburgh Quantum Institute. *Forward scattering as a pathway to increasing T_c in unconventional superconductors.* (March 2015)
32. American Physical Society March Meeting, Invited Talk. *Forward scattering from phonons as a pathway to increasing T_c in quasi-two-dimensional unconventional superconductors.* (Mar. 2015)
33. Spectroscopy of Novel Materials Workshop, Saas-grund, Switzerland. *Probing charge, magnetic, and lattice degrees of freedom in quasi-1D cuprates with RIXS: new insights into the classification of correlated insulators.* (Jan. 2015)
34. Oak Ridge National Laboratory. *Forward scattering as a pathway to increasing T_c in unconventional superconductors.* (Oct. 2014)

35. MPI for Solid State Research, Stuttgart - Workshop on Quantum Materials. *Charge disproportionation without charge transfer in the rare-earth nickelates as a possible mechanism for the metal-insulator transition.* (Dec. 2013)
36. University of British Columbia, Vancouver, Canada - Scanning Probe Microscopy and Quantum Materials Workshop. *Theory of quasiparticle interference.* (June 2013)
37. Simon Fraser University, Vancouver, Canada - Condensed Matter Seminar. *Resonant inelastic x-ray scattering studies of quasi-1D edge shared cuprates.* (Mar. 2013)
38. University of Tennessee, Knoxville, USA - Condensed Matter Seminar. *Intertwined degrees of freedom in strongly correlated systems.* (Feb. 2013)
39. University of British Columbia, Vancouver, Canada - Correlated Electron Effects in Transition Metal Compounds Workshop. *Scanning tunneling microscopy/spectroscopy on the pnictides: A density functional theory perspective.* (Aug. 2012)
40. Leibniz Institute for Solid State and Materials Research, Dresden, Germany - Theory Seminar. *Multi-phonon excitations in quasi-1D edge-shared cuprates probed by resonant inelastic soft x-ray scattering.* (July 2012)
41. University of British Columbia, Vancouver, Canada - Condensed Matter Seminar. *A view of electron-phonon coupling in the high- T_c cuprates and its interplay with the Coulomb interaction.* (Mar. 2012)
42. Walter Meissner Institute, Garching, Germany - Complex Order and Fluctuations Workshop. *Evidence for the importance of extended Coulomb interactions, forward scattering and coupling to acoustic modes in cuprate superconductors.* (July 2011)
43. van der Waals-Zeeman Institute, Amsterdam, Netherlands - Department Colloquium. *Modeling ARPES and STM data in the High- T_c cuprates: Implications for electron-boson coupling.* (Sept. 2010)
44. Walter Meissner Institute, Garching, Germany - Complex Order and Fluctuations Workshop. *Electron-phonon coupling in the cuprates: Understanding the material and doping variations of T_c .* (July 2010)
45. Leibniz Institute for Solid State and Materials Research, Dresden, Germany - Theory Seminar. *Electron-phonon coupling in the cuprates: Understanding the material and doping variations of T_c .* (July 2010)
46. Theoretical Institute of Photon Science Workshop, Stanford University, USA. *Doping and materials dependence of the electron-phonon interaction in the cuprates.* (Mar. 2010)
47. Stanford Condensed Matter Journal Club. *Electron-phonon interactions in 2D strongly correlated systems.* (Feb. 2010)
48. Stanford-Yonsei Joint Workshop on Condensed Matter Physics, Stanford University. *Electron-phonon interactions in the High- T_c cuprates and graphene.* (Jan. 2009)
49. GCOE Workshop on High- T_c Superconductors, University of Tokyo, Japan. *Numerical Studies of the Hubbard-Holstein model.* (Jan. 2009)
50. Walter Meissner Institute, Garching, Germany – Seminar. *Inhomogeneity in the cuprates: scanning tunneling microscopy, Madelung potentials, and electron-phonon coupling.* (July 2007)

CONTRIBUTED CONFERENCE TALKS AND POSTERS

1. **S. Johnston**, C. Monney, V. Bisogni, K. J. Zhou, R. Kraus, G. Behr, V. N. Strocov, J. Málek, S.-L. Drechsler, J. Geck, T. Schmitt, and J. van den Brink, *Renormalization of electronic energy scales by electron-phonon interactions in the spin-chain cuprate Li_2CuO_2 .* American Physical Society March Meeting (2017), contributed talk.
2. **S. Johnston**, L. Rademaker, Y. Wang, and T. Berlijn, *Enhanced superconductivity due to forward scattering in FeSe thin films on SrTiO_3 substrates.* American Physical Society March Meeting (2016), contributed talk.
3. **S. Johnston**, A. Mukherjee, I. Elfimov, M. Berciu, and G. Sawatzky, *Charge disproportionation without charge transfer in the rare-earth nickelates as a possible mechanism for the metal-insulator transition.* American Physical Society March Meeting (2014), contributed talk.

4. **S. Johnston**, W. S. Lee, B. Moritz, J. van den Brink, Z.-X. Shen, and T. P. Devereaux, *Resonant inelastic soft x-ray scattering as a site-specific probe of electron-phonon coupling in one-dimensional edge-shared cuprates*. American Physical Society March Meeting (2013), contributed talk.
5. **S. Johnston**, W. S. Lee, B. Moritz, J. van den Brink, Z.-X. Shen, and T. P. Devereaux, *Electron-phonon coupling in 1D edge-shared cuprates probed by resonant soft x-ray scattering*. American Physical Society Northwest Section Meeting (2012), contributed talk.
6. **S. Johnston**, E. van Heumen, K. Koepernik, F. Masee, J. B. Goedkoop, J. van den Brink, and M. S. Golden, *Examining multiple spectroscopic techniques with multiband Eliashberg theory in $BaCo_xFe_{2-x}As_2$* . American Physical Society March Meeting (2012), contributed talk.
7. **S. Johnston**, E. van Heumen, K. Koepernik, F. Masee, J. B. Goedkoop, J. van den Brink, and M. S. Golden, *Consolidating spectroscopic techniques with multiband Eliashberg theory in $BaCo_xFe_{2-x}As_2$* . E-MRS Fall Meeting (2011), contributed talk.
8. **S. Johnston**, W. S. Lee, J. Lee, B. Moritz, Z. -X. Shen, T. P. Devereaux, and J. van den Brink, *Signatures of electron-phonon coupling in oxygen K-edge RIXS on quasi-1D edge-shared cuprates*. PSI Users Meeting (2011), poster.
9. **S. Johnston**, I. M. Vishik, W. S. Lee, F. Schmitt, S. Uchida, K. Fujita, S. Ishida, N. Nagaosa, Z.-X. Shen and T. P. Devereaux, *Evidence for strong forward scattering and coupling to acoustic phonons in the high- T_c cuprates*. American Physical Society March Meeting (2011), contributed talk.
10. **S. Johnston**, B. Moritz, E. Nowadnick, E. T. Scalettar, and T. P. Devereaux, *Determinant quantum Monte Carlo studies of the Hubbard-Holstein model*. American Physical Society March Meeting (2010), contributed talk.
11. **S. Johnston**, F. Vernay, and T. P. Devereaux, *The Impact of an oxygen dopant in an ideal $Bi_2Sr_2CaCu_2O_{8+\delta}$ crystal*. American Physical Society March Meeting (2009), contributed Talk.
12. **S. Johnston**, W. S. Lee, T. P. Devereaux, and Z.-X. Shen, *Aspects of the electron-phonon interaction in the cuprates*. American Physical Society March Meeting (2008), contributed Talk.
13. **S. Johnston** and T. P. Devereaux, *The effects of local inhomogeneity on the phonon-modulated density of states of $Bi_2Sr_2CaCu_2O_{8+\delta}$* . American Physical Society March Meeting (2007), contributed Talk.
14. **S. Johnston** and T. P. Devereaux, *Signatures of electron-phonon coupling in the BSSCO family of cuprates*. American Physical Society March Meeting (2006), contributed Talk.

OTHER TALKS

(* indicates my graduate student, ** indicates my post-doc, *** indicates my undergraduate student)

1. T. Liu, W. O. Wang, B. Moritz, **S. Johnston**, E. Huang, and T. P. Devereaux, *Fluctuating stripes in the Hubbard model*. American Physical Society March Meeting (2022).
2. A. Tanjaroon Ly*, J. Neuhaus*, **S. Johnston**, S. Karakuzu**, P. Mai**, and T. A. Maier, *Static stripe order in the two-dimensional Hubbard-Holstein model*. American Physical Society March Meeting (2022).
3. B. Cohen-Stead, R. T. Scalettar, K. M. Barros, and **S. Johnston**, *The crucial role of SSH interactions in the bismuthate superconductors $Bi_{1-x}K_xBiO_3$: A hybrid Monte Carlo study*. American Physical Society March Meeting (2022).
4. U Kumar*, A. Nag, J. Li, H. Robarts, A. Walters, M. García-Fernández, R. Saint-Martin, A. Revcolevschi, J. Schlappa, T. Schmitt, **S. Johnston**, and K.-J. Zhou, *Unraveling higher-order corrections in the spin dynamics of RIXS spectra*. American Physical Society March Meeting (2022).
5. J. Thomas*, A. Nocera, and **S. Johnston**, *Electron-phonon excitations in the 1D Hubbard-Holstein model probed by Resonant Inelastic X-Ray Scattering*. American Physical Society March Meeting (2022).

6. P. Mai**, S. Karakuzu**, G. Balduzzi, **S. Johnston**, and T. A. Maier, *Intertwined spin, charge and pair correlations in the two-dimensional Hubbard model in the thermodynamic limit*. American Physical Society March Meeting (2022).
7. J. Thomas*, Y. Yseng, W. Zhang, E. Paris, P. Puphal, R. Bag, G. Deng, T. C. Asmara, V. N. Strocov, S. Singh, E. Pomjakushina, U. Kumar*, A. Nocera, H. M. Rønnow, **S. Johnston**, and T. Schmitt, *Crossover of high-energy spin fluctuations from collective triplon excitations to incoherent gapped magnetic modes in the cuprate ladders of $Sr_{14-x}Ca_xCu_{24}O_{41}$* . American Physical Society March Meeting (2021).
8. K. Bieniasz, **S. Johnston**, and M. Berciu. *Phonon RIXS theory for a mobile electron*. American Physical Society March Meeting (2021).
9. P. Mai**, G. Balduzzi, **S. Johnston**, and T. A. Maier, *Orbital structure of the effective pairing interaction in the high-temperature superconducting cuprates*. American Physical Society March Meeting (2021).
10. P. M. Dee*, **S. Johnston**, and T. A. Maier, *Finding T_c in an attractive-U Hubbard-metallic system*. American Physical Society March Meeting (2021).
11. S. Karakuzu**, T. Maier, and **S. Johnston**, *Spin, charge and pairing correlations in a bilayer Hubbard model with an incipient band*. American Physical Society March Meeting (2021).
12. T. Keen*, B. Peng, K. Kowalski, P. Lougovski, and **S. Johnston**, *Quantum-classical simulation of dynamical mean-field theory using coupled-cluster methods*. American Physical Society March Meeting (2021).
13. I. Ownby***, P. M. Dee*, and **S. Johnston**. *Addressing autocorrelation in the determinant quantum Monte Carlo Method*. American Physical Society Southeastern (SESAPS) Regional Meeting (2020).
14. T. Keen*, P. Lougovski, **S. Johnston**, and T. A. Maier, *Quantum-classical simulation of two-site dynamical mean-field theory on noisy quantum hardware*. American Physical Society March Meeting (2020). **Cancelled due to COVID.**
15. S. Karakuzu**, J. Pellicciari, R. Comin, **S. Johnston**, and T. A. Maier, *Quantum Monte Carlo calculations of dynamic spin excitations in FeSe*. American Physical Society March Meeting (2020). **Cancelled due to COVID.**
16. K. Bieniasz, M. Berciu, and **S. Johnston**, *Phonon RIXS calculations using Green's function Momentum Average technique*. American Physical Society March Meeting (2020). **Cancelled due to COVID.**
17. **S. Johnston**, P. Dee*, and J. Coulter, *Finding the breakdown of the linear Holstein model using determinant quantum Monte Carlo*. American Physical Society March Meeting (2020). **Cancelled due to COVID.**
18. P. Mai**, **S. Johnston**, and T. A. Maier, *Pairing correlations in the cuprates: a numerical study of the three-band Hubbard model*. American Physical Society March Meeting (2020). **Cancelled due to COVID.**
19. T. Keen*, P. Lougovski, **S. Johnston**, and T. A. Maier, *Quantum-classical implementation of two-site dynamical mean-field theory using quantum computers*. American Physical Society Southeastern (SESAPS) Regional Meeting (2019).
20. U. Kumar*, A. Nocera, E. Dagotto, and **S. Johnston**, *Unraveling spin and charge dynamics in two-leg spin ladders using resonant inelastic x-ray scattering*. American Physical Society March Meeting (2019).
21. Y. Wang**, P. Dee*, K. Nakatsukasa*, **S. Johnston**, *Study of the superconducting T_c dome in the phase diagram of the two-dimensional Holstein model*. American Physical Society March Meeting (2019).
22. S. Li *, P. Dee*, E. Khatami, and **S. Johnston**, *Self-learning with neural networks in determinant quantum Monte Carlo studies of the Holstein model*. American Physical Society March Meeting (2019).
23. G. Price, U. Kumar*, K. C. Stiwwinter, S. Johnston, and T. Datta, *Exact diagonalization RIXS studies of the doped 1D t_1 - t_2 -J model at the O K-edge*. American Physical Society March Meeting (2019).
24. D. Meyers, K. Nakatsukasa*, S. Mu, L. Hao, J. Yang, Y. Cao, G. Fabbris, H. Miao, J. Pellicciari, D. McNally, M. Dantz, E. Paris, E. Karapetrova, Y. Choi, D. Haskel, P. Shafer, E. Arenholz, T. Schmitt, T. Berlijn, **S. Johnston**, J. Liu, and M. P. M. Dean, *Decoupling carrier concentration and electron-phonon coupling in oxide heterostructures*. American Physical Society March Meeting (2019).

25. S. Li* and **S. Johnston**, *Bipolaron insulators and polaron liquids in high-temperature superconductors $Ba_{1-x}K_xBiO_3$* . American Physical Society March Meeting (2019).
26. U. Kumar* and **S. Johnston**, *Study of the origin of magnetic excitations at Γ -point in RIXS measurements on one-dimensional antiferromagnets*. American Physical Society Southeastern (SESAPS) Regional Meeting (2018).
27. K. Nakatsukasa*, Y. Wang**, and **S. Johnston**, *Pairing with an incipient band with enhanced T_c from forward scattering phonons*. American Physical Society Southeastern (SESAPS) Regional Meeting (2018).
28. P. M. Dee*, S. Li*, E. Khatami, and **S. Johnston**, *Using neural networks in determinant quantum Monte Carlo to study the Holstein model*. American Physical Society Southeastern (SESAPS) Regional Meeting (2018).
29. U. Kumar*, A. Nocera, E. Dagotto, and **S. Johnston**, *Spin-charge separation probed with resonant inelastic x-ray scattering on doped one-dimensional antiferromagnets*. American Physical Society March Meeting (2018).
30. P. Dee*, K. Nakatsukasa*, Y. Wang**, B. Nosarzewski, E. Huang, T. P. Devereaux, and **S. Johnston**, *Study of the two dimensional Holstein model using determinant quantum Monte Carlo and Migdal-Eliashberg theory*. American Physical Society March Meeting (2018).
31. M. Naamneh, D. Gawryluk, T. Shang, D. McNally, M. Dantz, J. Pellicari, J. Mesot, M. Shi, M. Radovic, T. Schmitt, **S. Johnston**, and N. Plumb, *Electron-phonon coupling and polaronic effects in the high- T_c superconductor $Ba_{1-x}K_xBiO_3$* . American Physical Society March Meeting (2018).
32. J. Lee, S. Choi, J. Jung, Y. Lee, S. Lee, Y. Semertzidis, J. Ok, J. S. Kim, **S. Johnston**, H. J. Choi, Y. Bang, S.-W. Cheong, A. Heinrich, W.-J. Jang, and A. Lee, *Superconductivity switched by spin-current and enhanced by forward scattering interfacial phonons in heterostructure iron-based superconductor*. American Physical Society March Meeting (2018).
33. S. Choi, H. J. Choi, J. Ok, Y. Lee, A.-H. Jang, A. Lee, Y. Kuk, S. Lee, A. Heinrich, S.-W. Cheong, Y. Bang, **S. Johnston**, J. S. Kim, and J. Lee. *Switching Magnetism and Superconductivity with spin-polarized current in iron-based superconductor*. American Physical Society March Meeting (2018).
34. Y. Wang**, L. Rademaker, E. Dagotto, and **S. Johnston**, *Phonon linewidth due to electron-phonon interactions with strong forward scattering in FeSe thin films on oxide substrates*. American Physical Society March Meeting (2018).
35. G. Farahi, **S. Johnston**, S. Burke, and D. Bonn, *Probing many-body scattering in Cu(111) via FT-STs: Understanding local perturbations from the collective signatures of a 2D electron gas*. American Physical Society March Meeting (2018).
36. K. Nakatsukada*, Y. Wang**, and **S. Johnston**. *The role of phonons in antiferromagnetic spin-fluctuation mediated superconductors within FLEX approximations*. American Physical Society March Meeting (2018).
37. B. Nosarzewski, E. Huang, I. Esterlis, P. Dee*, B. Moritz, **S. Johnston**, S. Kivelson, and T. P. Devereaux, *Competition between superconductivity and charge density wave order in the Holstein model*. American Physical Society March Meeting (2018).
38. S. Li*, E. Khatami, and **S. Johnston**, *Competing phases and orbital-selective behaviors in the two-orbital Hubbard-Holstein model*. American Physical Society March Meeting (2018).
39. N. Mannella, P. Vilmercati, S.-K. Mo, A. Fedorov, M. McGuire, A. Sefat, B. Sales, D. Mandrus, D. Singh, W. Ku, and **S. Johnston**, *Observation of particle-hole asymmetry and other abnormalities in the normal state of a prototypical electron-doped pnictide high-temperature superconductor*. American Physical Society March Meeting (2017).
40. E. Huang, C. Mendl, S. Liu, **S. Johnston**, H.-C. Jiang, B. Moritz, and T. P. Devereaux, *Fluctuating spin stripes in the normal state of high- T_c cuprate superconductors*. American Physical Society March Meeting (2017).
41. Y. Wang**, A. Nocera, G. Alvarez, **S. Johnston**, and E. Dagotto, *Study of spin-fluctuation mediated pairing in the Fe-based superconducting ladder $BaFe_2S_3$* . American Physical Society March Meeting (2017).

42. S. Li*, N. Kaushal, Y. Wang*, E. Dagotto, **S. Johnston**, Y. Tang, G. Alvarez, A. Nocera, and T. Maier, *Nonlocal correlations in the orbital selective Mott phase of a one-dimensional multi-orbital Hubbard model*. American Physical Society March Meeting (2017).
43. A. Swartz, H. Inoue, T. Merz, Y. Hikita, S. Raghu, T. P. Devereaux, **S. Johnston**, and H. Hwang, *Polaronic behavior in a weak-coupling superconductor*. American Physical Society March Meeting (2017).
44. U. Kumar*, J. Schlappa, K. Zhou, S. Singh, V. Strokov, A. Revcolevschi, H. Rønnow, **S. Johnston**, and T. Schmitt, *Magnetic excitations in the one-dimensional cuprate Sr_2CuO_3 probed by resonant inelastic x-ray scattering*. American Physical Society March Meeting (2017).
45. N. Kaushal, S. Li*, Y. Wang**, Y. Tang, G. Alvarez, A. Nocero, T. Maier, **S. Johnston**, and E. Dagotto, *Study of a one-dimensional three-orbital Hubbard model and effect of spin orbit coupling using the Density Matrix Renormalization Group method*. American Physical Society March Meeting (2017).
46. J. Lee, S. Choi, W.-J. Jang, Y. Semertzidis, J. M. Ok, H. Lee, A. Akbari, J.-S. Kim, A. T. Lee, K. Nakatsukasa*, **S. Johnston**, and Y. Bang, *Enhancement of superconductivity by interfacial phonons in perovskite-clad FeAs monolayer*. American Physical Society March Meeting (2017).
47. A. Linscheid, Y. Wang**, S. Maiti, **S. Johnston**, and P. Hirschfeld, *Orbitally resolved superconductivity within FLEX: doping evolution of the FeSe monolayer*. American Physical Society March Meeting (2017).
48. G. Liu, N. Kaushal, C. Bishop, S. Liang, S. Li*, **S. Johnston**, and E. Dagotto, *Testing the constrained-path quantum Monte Carlo method using a one dimensional three orbital Hubbard model*. American Physical Society March Meeting (2016).
49. N. Kaushal, G. Liu, C. Bishop, S. Liang, S. Li*, **S. Johnston**, and E. Dagotto, *Density matrix renormalization group study of a one dimensional three-orbital Hubbard model: The role of pair hopping and spin-flip interactions*. American Physical Society March Meeting (2016).
50. N. C. Plumb, Z. Ristić, J. Park, Z. Wang, C. E. Matt, N. Xu, B. Q. Lv, D. Gawryluk, E. Pomjakushina, K. Conder, Y. Wang**, **S. Johnston**, J. Mesot, M. Shi, and M. Radović, *Momentum-resolved electronic structure of the superconductor parent compound $BaBiO_3$* . American Physical Society March Meeting (2016).
51. Y. Wang**, T. Berlijn, L. Rademaker, and **S. Johnston**, *Electron-Phonon Couplings of the Interfacial Mode in FeSe Thin Films on $SrTiO_3$ and $BaTiO_3$* . American Physical Society March Meeting (2016).
52. C. Mendl, E. A. Nowadnick, K. Kung, B. Moritz, **S. Johnston**, and T. P. Devereaux, *Doping dependence of ordered phases in the Hubbard-Holstein model*. American Physical Society March Meeting (2016).
53. E. Huang, C. Mendl, H. Jiang, S. Liu, Y. Kung, B. Moritz, **S. Johnston**, and T. P. Devereaux, *Searching for stripe order in the Hubbard model*. American Physical Society March Meeting (2016).
54. S. Li*, E. A. Nowadnick, and **S. Johnston**, *Quasiparticle properties of the nonlinear Holstein model at finite doping and temperature*. American Physical Society March Meeting (2016).
55. U. Kumar*, J. Schlappa, K. Zhou, S. Singh, V. Strocov, A. Revolevchi, H. Ronnow, **S. Johnston**, and T. Schmitt, *Resonant inelastic x-ray scattering study at the oxygen K-edge of corner-shared Sr_2CuO_3 cuprate*. American Physical Society March Meeting (2016).
56. E. van Heumen, A. Tytarenko, Y. Huang, A. de Visser, and **S. Johnston**, *Fermi-liquid like normal state electrodynamics in Co-doped $BaFe_2As_2$* . American Physical Society March Meeting (2015).
57. E. Huang, **S. Johnston**, Y. Kung, B. Moritz, and T. P. Devereaux, *Stability of the AFM phase in the three-band Hubbard-Holstein model*. American Physical Society March Meeting (2015).
58. Z. L. Dun, J. Ma, H. Cao, Y. Qiu, J. R. D. Copley, T. Hong, M. Matsuda, J. G. Cheng, M. Lee, E. S. Choi, **S. Johnston**, and H. D. Zhou, *Competition between the inter- and intra-sublattice interactions in $Yb_2V_2O_7$* . American Physical Society March Meeting (2015).
59. S. Li* and **S. Johnston**, *The effects of non-linear electron-phonon interactions on superconductivity and charge-density-wave correlations*. American Physical Society March Meeting (2015).

60. A. Mukherjee, N. D. Patel, S. Dong, **S. Johnston**, A. Moreo, and E. Dagotto, *Study of multi-orbital Hubbard model at finite temperature using the Monte Carlo-mean field approach*. American Physical Society March Meeting (2015).
61. N. D. Patel, A. Mukherjee, S. Dong, **S. Johnston**, A. Moreo, and E. Dagotto, *Monte Carlo-mean field approach for the one band Hubbard model*. American Physical Society March Meeting (2015).
62. Y. F. Kung, E. A. Nowadnick, C. J. Jia, **S. Johnston**, B. Moritz, T. P. Devereaux, *Turning a strongly correlated Mott insulator into a weakly correlated metal*. American Physical Society March Meeting (2015).
63. Y. F. Kung, C.-C. Chen, E. A. Nowadnick, **S. Johnston**, B. Moritz, and T. P. Devereaux, *Exploration of pseudogap scenarios in the three-orbital Hubbard model of cuprate superconductors*. American Physical Society March Meeting (2014).
64. S. Chi, **S. Johnston**, G. Levy, S. Grothe, R. Szedlak, B. Ludbrook, R. Liang, P. Dosanjh, S. A. Burke, A. Damascelli, D. A. Bonn, W. N. Hardy, and Y. Pennec, *Directly visualizing Bogoliubov quasiparticle interference of LiFeAs: a way toward understanding superconductivity in iron pnictides*. American Physical Society March Meeting (2014).
65. C. J. Jia, E. A. Nowadnick, K. Wohlfeld, Y. F. Kung, C.-C. Chen, **S. Johnston**, T. Tohyama, B. Moritz, and T. P. Devereaux, *Persistent spin excitations in doped cuprates revealed by resonant inelastic light scattering*. American Physical Society March Meeting (2014).
66. S. Grothe, **S. Johnston**, S. Chi, P. Dosanjh, S. A. Burke, and Y. Pennec, *Quantifying many-body effects by high-resolution Fourier transform scanning tunneling spectroscopy*. American Physical Society March Meeting (2014).
67. J. Lee, F. Schmitt, R. Moore, **S. Johnston**, Y. Cui, W. Li, M. Yi, Z. Liu, M. Hashimoto, Y. Zhang, D. Lu, T. Devereaux, D.-H. Lee, and Z.-X. Shen, *ARPES investigations of single unit cell iron selenide*. American Physical Society March Meeting (2014).
68. E. Nowadnick, **S. Johnston**, B. Moritz, R. Scalettar, and T. P. Devereaux, *Doping dependence of dispersion renormalizations in strongly correlated materials with electron-phonon coupling*. American Physical Society March Meeting (2014).
69. E. Nowadnick, **S. Johnston**, B. Moritz, R. Scalettar, and T. P. Devereaux, *Quantum Monte Carlo simulations of ARPES spectra on correlated materials with electron-phonon coupling*. American Physical Society March Meeting (2013).
70. I. M. Vishik, M. Hashimoto, **S. Johnston**, W.-S. Lee, F. Schmitt, R. G. Moore, D.H. Lu, T. Sasagawa, S. Uchida, S. Ishida, K. Fujita, M. Ishikado, Y. Yoshida, H. Eisaki, R.-H. He, Z. Hussain, T. P. Devereaux, and Z.-X. Shen, *Laser-ARPES studies of dispersion kinks in cuprate phase diagram*. American Physical Society March Meeting (2013).
71. F. Niestemski, **S. Johnston**, A. Contryman, C. Camp, T. P. Devereaux, and H. Manoharan, *Electron-hole asymmetries in the locally inverted $\alpha^2 F(\omega)$ spectrum of a conventional superconductor by STM*. American Physical Society March Meeting (2013).
72. Y. F. Kung, E. A. Nowadnick, **S. Johnston**, C.-C. Chen, B. Moritz, and T. P. Devereaux, *Temperature and doping dependence of spectral features in determinant quantum Monte Carlo studies of the three-orbital Hubbard model of cuprate superconductors*. American Physical Society March Meeting (2013).
73. E. van Heumen, **S. Johnston**, E. Rienks, A. Varykhalov, F. Masee, N. de Jong, Y. Huang, J. Kaas, J.B. Goedkoop, and M.S. Golden, *Multiband quasiparticle interference in the topological insulator $\text{Cu}_x\text{Bi}_2\text{Te}_3$* . American Physical Society March Meeting (2012).
74. F. C. Niestemski, **S. Johnston**, A. W. Contryman, C.D. Camp, T.P. Devereaux, and H.C. Manoharan, *Extracting the bosonic spectra of Pb using superconducting-tip STS and comparing it with the cuprates*. American Physical Society March Meeting (2012).
75. E. Nowadnick, **S. Johnston**, A. Mishchenko, B. Moritz, and T. P. Devereaux, *Spectral properties of correlated systems with electron-phonon coupling*. American Physical Society March Meeting (2012).

76. K. Koepernik, **S. Johnston**, J. van den Brink, E. van Heumen, M. S. Golden, *Scanning tunneling spectroscopy in Co-doped BaFe₂As₂: what density functional theory can tell us*. American Physical Society March Meeting (2012).
77. W. S. Lee, J. Lee, M. Yi, K. Zhou, **S. Johnston**, T. Schmitt, J. van den Brink, T. P. Devereaux, K. Kudo, Y. Koike, L. Patthey, and Z.-X. Shen. *High-resolution RIXS measurements at O K-edge on the edge-shared chain cuprates Ca_{2+x}Y_{2-x}Cu₅O₁₀*. American Physical Society March Meeting (2011).
78. J. Lee, M. Yi, W. S. Lee, K. Zhou, C. Monney, **S. Johnston**, J. van den Brink, T. Schmitt, L. Patthey, T. P. Devereaux, K. Kudo, Y. Koike, and Z.X. Shen, *Resonant Inelastic X-Ray studies on the Cu-L edge in 1-dimensional cuprate chains*. American Physical Society March Meeting (2011).
79. F. Schmitt, B. Moritz, **S. Johnston**, E. M. Motoyama, M. Greven, D. H. Lu, R. G. Moore, T. P. Devereaux, Z.-X. Shen, R. T. Scalettar. *High energy scales in e-doped HTSCs observed with ARPES*. American Physical Society March Meeting (2010).
80. C.-C. Chen, B. Moritz, F. Vernay, **S. Johnston**, J. Hancock, G. Chabot-Couture, M. Greven, I. Elfimov, G. A. Sawatzky, and T. P. Devereaux, *Momentum-resolved Cu K-edge RIXS spectra in the insulating parent compounds of high T_c superconductors*. American Physical Society March Meeting (2009).
81. B. Moritz, F. Schmitt, W. Meevasana, **S. Johnston**, E. M. Motoyama, M. Greven, D. H. Ku, C. Kim, R. T. Scalettar, Z.-X. Shen and T. P. Devereaux, *High energy anomaly in hole- and electron-doped cuprates*. American Physical Society March Meeting (2009).
82. B. Moritz, **S. Johnston**, W. Meevasana, C. Kim, R. T. Scalettar, T. P. Devereaux, and Z.-X. Shen, *Universal dispersion anomalies revealed by DQMC simulations of the Hubbard model*. American Physical Society March Meeting (2008).
83. W. S. Lee, W. Meevasana, D. H. Lu, **S. Johnston**, T. P. Devereaux, H. Eisaki, Z.-X. Shen, *Detailed properties of band renormalization effect of the Bi₂Sr₂CaCu₂O_{8+δ}*. American Physical Society March Meeting (2007).

SERVICE TO THE PROFESSION

1. Expert reviewer for the Department of Energy, Office of Basic Energy Science (DOE BES), the National Science Foundation (NSF), Natural Sciences and Engineering Research Council of Canada (NERSC), the French National Research Agency (ANR), and the ACS Petroleum Research Fund.
2. Expert Reviewer for Nature, Advanced Materials, Advances in Physics, Nature Communications, Scientific Reports, Science Advances, Reviews of Modern Physics, Physical Review Letters, Physical Review B, Physical Review Materials, 2D Materials (IOP), Condensed Matter, New Journal of Physics, Journal of Physics: Condensed Matter.
3. IOP Trusted Reviewer.
4. Reviewer of Oak Ridge National Laboratory CNMS user proposals.
5. Reviewer for the Oak Ridge National Neutron Sciences Directorate.
6. Scientific Program Committee Member, 13th International Conference on Materials and Mechanisms of Superconductivity & High Temperature Superconductors, Vancouver 2022.
7. Co-organizer, 2019 APS March Meeting Focus Sessions on Fe-based superconductors (9.1.1).
8. Southeast APS George Pegram Award Committee Member, Fall 2019.
9. Local Organizing Committee Member, SESAPS Regional APS Meeting, Fall 2018.
10. Co-organizer, Max-Planck-UBC Centre for Quantum Materials Workshop Scanning probe microscopy and quantum materials, June 28-30th, 2013.

SERVICE TO THE UNIVERSITY

1. Search Committee member for the Operations Director of the Institute for Advanced Materials & Manufacturing (IAMM) (08/2022 - 07/2023).
2. Director of the Graduate Program, Department of Physics and Astronomy (09/2020 – Present).
3. Search Committee member and Diversity Advocate for the Quantum Materials for Future Technologies Cluster Hire (09/2021 – 08/2022).
4. Graduate Admissions Committee, Chair (08/2019 – 07/2021).
5. Graduate Curriculum Committee, Department of Physics and Astronomy (09/2016 – present).
6. Search Committee for the Cluster Hire in Quantum Materials (01/2019 – 07/2020).
7. Diversity Task Force, Department of Physics and Astronomy (11/2018 – 07/2020).
8. Associate Director of the Graduate Program, Department of Physics and Astronomy (09/2017 – 07/2020).
9. Undergraduate Curriculum Committee, Department of Physics and Astronomy (09/2017 – 07/2019).
10. Undergraduate Advising Committee, Department of Physics and Astronomy (08/2016 – 07/2019).
11. Alternate for the Faculty Senate (08/2017 – 07/2018).
12. Organizer for the Department of Physics and Astronomy's Colloquium Series (Spring 2017).
13. Search Committee for the Lincoln Chair in Physics (2015).

HONOURS, M.SC. AND PH.D. COMMITTEES

Honours Thesis Supervision

1. Kevin Gordon Kleiner, University of Tennessee, Knoxville. *Implementing a Self-Corrected Chemical Potential Scheme in Determinant Quantum Monte Carlo Simulations*. Fall 2018.
2. Isaac Ownby, University of Tennessee, Knoxville. *Mapping the Autocorrelation Problem in the Holstein Model via Determinant Quantum Monte Carlo Simulations*. Spring 2022.

Ph.D. Thesis Committees (Internal to the University of Tennessee)

1. Emanuel Casiano-Diaz, Department of Physics and Astronomy (UTK) 07/2022 – Present.
2. Rudra Bista, Department of Physics and Astronomy (UTK) 07/2021 – Present.
3. Vikram Sharma, Department of Physics and Astronomy (UTK). 07/2020 – Present.
4. Xiyong Peng, Department of Physics and Astronomy (UTK). Current.
5. Elias Kokkas, Department of Physics and Astronomy (UTK). Current.
6. Shiva Dahal, Department of Physics and Astronomy (UTK). Current.
7. Luther Langston, II, Department of Chemistry (UTK). Current.
8. Kevin Smith, Department of Chemistry (UTK). 11/2020 – Present.
9. Dr. Saban Hustafa Hus, Department of Physics and Astronomy (UTK). Graduated 07/2014.
10. Dr. Yuen Yiu, Department of Physics and Astronomy (UTK). Graduated 08/2015.
11. Dr. Nick Sircia, Department of Physics and Astronomy (UTK). Graduated 04/2017.
12. Dr. Chris Bishop, Department of Physics and Astronomy (UTK). Graduated 08/2017.
13. Nischal Kafle, Department of Nuclear Engineering (UTK). 08/2017 – 06/2019.

14. Anurag Maan, Department of Nuclear Engineering (UTK). 08/2017 – 06/2019.
15. Dr. Nirav Patel, Department of Physics and Astronomy (UTK). Graduated 07/2018.
16. Dr. Ryan Rawl, Department of Physics and Astronomy (UTK). Graduated 03/2018.
17. Dr. Robert Carroll, Department of Physics and Astronomy (UTK). Graduated 06/2019.
18. Dr. Ganesh Pokharel, Department of Physics and Astronomy (UTK). Graduated 05/2020.
19. Dr. Tyler Smith, Department of Physics and Astronomy (UTK). Graduated 07/2020.
20. Dr. Chris Helstern, Department of Physics and Astronomy (UTK). Graduated 10/2020.
21. Dr. Shiyu Fan, Department of Chemistry (UTK). Graduated 11/2020.
22. Dr. Eric Stacy, Department of Physics and Astronomy (UTK). Graduated 12/2020.
23. Dr. Yadu Sarathchandran, Department of Physics and Astronomy (UTK). 04/2022.
24. Dr. Hao Zhang, Department of Physics and Astronomy (UTK). Graduated 06/2022.
25. Casey Eichstaedt, Department of Physics and Astronomy (UTK). Graduated 06/2022.
26. Dr. Rahul Soni, Department of Physics and Astronomy (UTK). Graduated 07/2022.

External Reader

1. Dr. Alona Tytarenko, Department of Physics, University of Amsterdam. 11/2017.
2. Dr. Gour Jana, National Institute of Science Education and Research Bhubaneswar. 2/2022.

Masters Committees (Internal to the University of Tennessee)

1. George Ashe, Department of Physics (UTK). Graduated 10/2017.
2. William Moffitt, Department of Physics (UTK). Graduated 07/2017.
3. Nathan Traynor, Department of Physics (UTK). Graduated 04/2019.