

Yao Wang

Curriculum Vitae

Kinard Laboratory 213

Clemson, SC 29631

+1 (310) 498 1649

✉ yaowang@clemson.edu

📄 scienceweb.clemson.edu/yaowang

Research Interest

Physical Problems: quantum many-body systems, strongly correlated materials, electron-boson coupling
quantum algorithm/simulation, nonequilibrium dynamics, high-order entanglement

Computation: hybrid quantum-classical algorithm, advanced many-body algorithms, time-domain algorithm

Simulated Characterization: photoemission, scattering, nonlinear spectroscopies, pump-probe techniques

Professional Appointments

2020 - **Assistant Professor** *Department of Physics & Astronomy, Clemson University*
2017 - 2020 **Postdoctoral Fellow** *Department of Physics, Harvard University*

Education

2017 **Ph.D. in Applied Physics, Stanford University**
Minor in Computational and Mathematical Engineering
2011 **B.S. in Applied Physics, University of Science and Technology of China**

Honors and Awards

Selected Awards

2022 **DOE Early Career Award,** US Department of Energy
2021 **Frontera Leadership Resource (LRAC) Award ,** Texas Advanced Computing Center
2019 **IUCr Young Scientist Award,** Inelastic X-ray Scattering Conference

Fellowships and Scholarships

2017 - 2020 **Harvard-MPQ Postdoctoral Fellowship in Quantum Science,** Harvard University
2012 - 2015 **Stanford Graduate Fellowship,** Stanford University
2011 **Guo Moruo Scholarship,** University of Science and Technology of China

Grants and Allocations

Federal Grants:

NSF (PI): "Quantum Algorithms for Correlated Electron-Phonon System" \$299,827 (Jan 2021 - Dec 2022)
NSF (co-I): "Optically-Enhanced Superconductivity in Hydrogen-Based Materials" 40% of \$299,999 (Aug 2021 - Jul 2023)
DOE (PI): "Analog Quantum Simulation for Solid-State Spectroscopies" \$750,000 (Aug 2022 - Jul 2027)

Computational Allocations:

NERSC (PI): "Nonlinear Pump-Probe Theory and Simulation" 15,750 node hours (Sep 2020 - Jan 2023)
TACC (PI): "Electron-Phonon Coupling in Correlated Quantum Materials" 187,000 SUs (Apr 2021 - Mar 2023)
IonQ (PI): "Quantum Algorithms for Correlated Fermi-Boson Systems" \$12,000 Credit (Sep 2021 - Sep 2022)

Full Publication List

† denotes equal contributions; * denotes corresponding authors; bold label denotes representative publications

Preprints and Manuscripts under Review

64. M. Yazdani-Asrami, W. Song, A. Morandi, G. de Carne, J. Murta-Pina, A. Pronto, R. Oliveira, E. Pardo, F. Grilli, M. Parizh, B. Shen, T. Coombs, T. Salmi, D. Wu, E. Coatanea, D.A. Moseley, R.A. Badcock, M. Zhang, V. Marinozzi, N. Tran, M. Wielgosz, A. Skoczen, D. Tzelepis, S. Meliopoulos, N. Vilhena, G. Sotelo, Z. Jiang, V. Große, T. Bagni, D. Mauro, C. Senatore, A. Mankevich, V. Amelichev, S. Samoilenkov, T.L. Yoon, **Y. Wang**, R.P. Camata, C.-C. Chen, A.M. Madureira, and A. Abraham, *Artificial Intelligence and Big Data Techniques for Superconductivity: a Roadmap to the Applications*, under review of Supercond. Sci. Technol.
63. C. Peng, **Y. Wang**, J. Wen, Y. Lee, T.P. Devereaux, and H.-C. Jiang*, *Enhanced Superconductivity by Near-Neighbor Attraction in the Doped Hubbard Model*, under review of Phys. Rev. Lett.
62. W.-C. Chen, **Y. Wang***, and C.-C. Chen*, *Superconducting Phases of the Square-Lattice Extended Hubbard Model*, under review of Phys. Rev. B
61. Q. Li, H.-Y. Huang, T. Ren, E. Weschke, L. Ju, C. Zou, S. Zhang, Q. Qiu, J. Liu, S. Ding, A. Singh, O. Prokhnenko, D.-J. Huang, I. Esterlis, **Y. Wang**, Y. Xie, and Y. Peng, *Prevailing Charge Order in Overdoped Cuprates Beyond the Superconducting Dome*, under review of Nat. Phys.
60. P. Wrzosek, A.Klosinski, **Y. Wang**, M. Berciu, C. E. Agrapidis, and K. Wohlfeld, *The Fate of the Spin Polaron in the 1D Antiferromagnet*, under review of Phys. Rev. Lett.
59. X. Ren, J. Li, W.-C. Chen, Q. Gao, J.J. Sanchez, J. Hales, H. Luo, F. Rodolakis, J L. McChesney, J.W. Freeland, T. Xiang, J. Hu, F.C. Zhang, R. Comin, **Y. Wang***, X.J. Zhou*, and Z. Zhu*, *Strain-Induced Enhancement of T_c in Infinite-Layer $Pr_{0.8}Sr_{0.2}NiO_2$ Films*, under review of Nat. Commun.
58. H.A. Merker, H. Heiberger, L. Nguyen, T. Liu, Z. Chen, N. Andrejevic, N.C. Drucker, R. Okabe, **Y. Wang**, T. Smidt, M. Li*, *Machine Learning Magnetism Classifiers from Atomic Coordinates*, under review of iScience
57. C. Chen, X. Chen, W. Tang, Z. Li, S. Wang, S. Ding, C. Jozwiak, A. Bostwick, E. Rotenberg, M. Hashimoto, D. Lu, J. Ruff, S.G. Louie, R. Birgeneau, Y. Chen, **Y. Wang***, and Y. He*, *Lattice Fluctuation Induced Pseudogap in Quasi-One-Dimensional Ta_2NiSe_5* , under review of Nat. Phys.
56. D. Qu, B. Chen, H.C. Jiang, **Y. Wang***, and W. Li*, *Spin-Triplet Pairing Induced by Near-Neighbor Attraction in the Extended Hubbard Model*, under review of Nat. Commun.
55. Q. Xiao, W. Zhang, T.C. Asmara, D. Li, Q. Li, S. Zhang, Y. Tseng, X. Dong, **Y. Wang**, C.-C. Chen, T. Schmitt*, and Y. Peng*, *Dispersionless Orbital Excitations in $(Li,Fe)OFeSe$ Superconductors*, under review of npj Quantum Mater.
54. E.W. Huang*, S. Ding, J. Liu, and **Y. Wang***, *Determinantal Quantum Monte Carlo Solver for Cluster Perturbation Theory*, under review of Phys. Rev. Lett.
53. A. Alexandradinata, N.P. Armitage*, A. Baydin, W. Bi, Y. Cao, H. Changlani, E. Chertkov, E. da Silva Neto, L. Delacretaz, I. Baggari, G.M. Ferguson, W. Gannon, S. Ghorashi, B. Goodge, O. Goulko, G. Grissonnanche, A. Hallas, I. Hayes, Y. He, E. Huang, A. Kogar, D. Kumah, J. Lee, A. Legros, F. Mahmood, Y. Maximenko, N. Pellatz, H. Polshyn, T. Sarkar, A. Scheie, K. Seyler, Z. Shi, B. Skinner, L. Steinke, K.

Thirunavukkuarasu, T. Trevisan, M. Vogl, P. Volkov, **Y. Wang**, Y. Wang, D. Wei, K. Wei, S. Yang, X. Zhang, Y. Zhang, L. Zhao, and A. Zong, *The Future of the Correlated Electron Problem*, under review of npj Quantum Mater.

52. E. Baldini, A. Zong, D. Choi, C. Lee, M.H. Michael, L. Windgatter, I.I. Mazin, S. Latini, D. Azoury, B. Lv, A. Kogar, **Y. Wang**, Y. Lu, T. Takayama, H. Takagi, A.J. Millis, A. Rubio, E. Demler, and N. Gedik, *Unraveling the Origin of Spontaneous Symmetry Breaking in Ta_2NiSe_5* , under review of Phys. Rev. X

Peer-Reviewed Journal Articles

51. S. Peng, C. Lane, Y. Hu, M. Guo, X. Chen, Z. Sun, M. Hashimoto, D. Lu, Z.-X. Shen, T. Wu, X. Chen, R. Markiewicz, **Y. Wang**, A. Bansil, S. Wilson, and J.-F. He, *Electronic Nature of the Pseudogap in Electron-Doped Sr_2IrO_4* , npj Quantum Mater. 7, 58 (2022)
50. B. Lv, A. Zong, D. Wu, A. Rozhkov, B. Fine, S.-D. Chen, M. Hashimoto, D. Lu, M. Li, Y. Huang, J. Ruff, D. Walko, Z. H. Chen, I. Hwang, Y. Su, X. Shen, X. Wang, F. Han, H. C. Po, **Y. Wang**, P. Jarillo-Herrero, X. Wang, H. Zhou, C.-J. Sun, H. Wen, Z.-X. Shen, N.-L. Wang, and N. Gedik*, *Unconventional Hysteretic Transition in a Charge Density Wave*, Phys. Rev. Lett. 128, 036401 (2022)
49. D. Baykusheva, H. Jang, A.A. Husain, S. Lee, S. TenHuisen, P. Zhou, S. Park, H. Kim, J. Kim, H.-D. Kim, M. Kim, S.-Y. Park, P. Abbamonte, B. Kim, G. Gu, **Y. Wang***, and M. Mitrano*, *Ultrafast Renormalization of the Onsite Coulomb Repulsion in a Cuprate Superconductor*, Phys. Rev. X 12, 011013 (2022)
48. M. Li* and **Y. Wang***, *One Way Express Ticket to Quantum Criticality*, Nat. Mater. 21, 3 (2022) [[Invited News & Views, Non-Peer-Reviewed](#)]
47. C. Peng, Y.-F. Jiang, **Y. Wang**, and H.-C. Jiang*, *Gapless Spin Liquid and Pair Density Wave of the Hubbard Model on Three-Leg Triangular Cylinders*, New J. Phys. 23, 123004 (2021)
46. T. Tang, **Y. Wang**, B. Moritz, and T.P. Devereaux, *Orbitally Selective Resonant Photodoping to Enhance Superconductivity*, Phys. Rev. B 104, 174516 (2021)
45. **Y. Wang***, T. Shi, and C.-C. Chen*, *Fluctuating Nature of Light-Enhanced d -Wave Superconductivity: A Time-Dependent Variational Non-Gaussian Exact Diagonalization Study*, Phys. Rev. X 11, 041028 (2021)
44. **Y. Wang***, Z. Chen, T. Shi, B. Moritz, Z.-X. Shen, and T.P. Devereaux*, *Phonon-Mediated Long-Range Attractive Interaction in 1D Cuprates*, Phys. Rev. Lett. 127, 197003 (2021)
43. J. Koepsell, D. Bourgund, P. Sompet, S. Hirthe, A. Bohrdt, **Y. Wang**, F. Grusdt, E. Demler, G. Salomon, C. Gross, and I. Bloch*, *Microscopic Evolution of Doped Mott Insulators from Polaronic Metal to Fermi Liquid*, Science 374, 82 (2021)
42. **Y. Wang***, Y. Chen, T.P. Devereaux, B. Moritz, and M. Mitrano*, *X-ray Scattering from Light-Driven Spin Fluctuations in a Doped Mott Insulator*, Commun. Phys. 4, 212 (2021) [[Editor's Highlights](#)]
41. Z. Chen†, **Y. Wang**†, S.N. Rebec, T. Jia, M. Hashimoto, D. Lu, B. Moritz, R.G. Moore, T.P. Devereaux*, and Z.-X. Shen*, *Anomalously Strong Near-Neighbor Attraction in Doped 1D Cuprate Chains*, Science 373, 1235 (2021)
40. **Y. Wang***, A. Bohrdt, S. Ding, J. Koepsell, E. Demler, and F. Grusdt*, *Higher-Order Spin-Hole Correlations around a Localized Charge Impurity*, Phys. Rev. Research 3, 033204 (2021)
39. Z. Chen, N. Andrejevic, N. Drucker, T. Nguyen, R. P. Xian, T. Smidt, **Y. Wang**, R. Ernstorfer, A. Tennant, M. Chan, and M. Li*, *Machine Learning on Neutron and X-Ray Scattering*, Chem. Phys. Review. 2, 031301

(2021) [Editor Featured]

38. Y. Zhou, J. Sung, E. Brutschea, I. Esterlis, **Y. Wang**, G. Scuri, R.J. Gelly, H. Heo, T. Taniguchi, K. Watanabe, G. Zaránd, M.D. Lukin, P. Kim, E. Demler, and H. Park*, *Signatures of Bilayer Wigner Crystals in a Transition Metal Dichalcogenide Heterostructure*, Nature 595, 48 (2021)
37. M. Buzzi, G. Jotzu, A. Cavalleri, J.I. Cirac, E. Demler, B.I. Halperin, M.D. Lukin, T. Shi, **Y. Wang**, and D. Podolsky, *Higgs-Mediated Optical Amplification in a Non-Equilibrium Superconductor*. Phys. Rev. X 11, 011055 (2021)
36. A. Bohrdt, **Y. Wang**, J. Koepsell, M. Kánasz-Nagy, E. Demler, and F. Grusdt, *Dominant Fifth-Order Correlations in Doped Quantum Anti-Ferromagnets*, Phys. Rev. Lett. 126, 026401 (2021)
35. **Y. Wang***, I. Esterlis, T. Shi*, J.I. Cirac, and E. Demler, *Zero-Temperature Phases of the 2D Hubbard-Holstein Model: A Non-Gaussian Exact Diagonalization Study*. Phys. Rev. Research 2, 043258 (2020)
34. **Y. Wang***, Y. He, K. Wohlfeld, M. Hashimoto, E.W. Huang, D. Lu, S.-K. Mo, S. Komiyama, C. Jia, B. Moritz, Z.-X. Shen, and T.P. Devereaux*, *Emergence of Quasiparticle in Doped Mott Insulators*. Comm. Phys. 3, 210 (2020)
33. Y. Chen, **Y. Wang***, M. Claassen, B. Moritz, and T.P. Devereaux*, *Observing Photo-Induced Chiral Edge States of Graphene Nanoribbons in Pump-Probe Spectroscopies*. npj Quantum Mater. 5, 84 (2020)
32. M. Mitrano* and **Y. Wang***, *Probing Light-Driven Quantum Materials with Ultrafast Resonant Inelastic X-Ray Scattering*. Comm. Phys. 3, 184 (2020) [Editor's Highlights]

Below: Publications before Joining Clemson University

31. R. Li, P. Zhu, H. Zhang, **Y. Wang**, J. Chen, P.M. Rentzepis, and J. Zhang, *Evolution of Picosecond Surface Electric Fields Generated by Photon-induced Charge Emission from $\text{La}_{0.67}\text{Sr}_{0.33}\text{MnO}_3$ Films*. Phys. Rev. B 102, 024302 (2020)
30. **Y. Wang**, Y. Chen, C.J. Jia, B. Moritz, and T.P. Devereaux, *Time-Resolved Resonant Inelastic X-Ray Scattering in a Pumped Mott Insulator*. Phys. Rev. B 101, 165126 (2020)
29. J.P. Dehollain, U. Mukhopadhyay, V.P. Michal, **Y. Wang**, B. Wunsch, C. Reichl, W. Wegscheider, M.S. Rudner, E. Demler, and L.M.K. Vandersypen, *Nagaoka Ferromagnetism Observed in a Quantum Dot Plaquette*. Nature 579, 528 (2020)
28. **Y. Wang**, J.P. Dehollain, F. Liu, U. Mukhopadhyay, M.S. Rudner, L.M.K. Vandersypen, and E. Demler, *Ab Initio Exact Diagonalization Simulation of Nagaoka Transition in Quantum Dots*. Phys. Rev. B 100, 155133 (2019)
27. E.M. Pärskke[†], **Y. Wang**[†], B. Moritz, T.P. Devereaux, C.-C. Chen, and K. Wohlfeld, *Numerical Study of the Spin Excitations in a Doped Spin Chain*. Phys. Rev. B 99, 205102 (2019)
26. Y. Chen, **Y. Wang**, C. Jia, B. Moritz, A.M. Shvaika, J.K. Freericks, and T.P. Devereaux, *Theory for Time-Resolved Resonant Inelastic X-ray Scattering*. Phys. Rev. B 99, 104306 (2019) [Editors' Suggestion]
25. H. Ruiz, **Y. Wang**, B. Moritz, A. Baum, R. Hackl, and T.P. Devereaux, *Frustrated Magnetism from Local Moments in FeSe*. Phys. Rev. B 99, 125130 (2019)
24. J.-F. He, C.R. Rotundu, M.S. Scheurer, Y. He, M. Hashimoto, K. Xu, **Y. Wang**, E.W. Huang, T. Jia, S.-D. Chen, B. Moritz, D.-H. Lu, Y.S. Lee, T.P. Devereaux and Z.-X. Shen, *Fermi Surface Reconstruction*

- in Electron-Doped Cuprates without Long-Range Order. Proc. Natl. Acad. Sci. U.S.A.* 116, 3449 (2019)
23. A. Baum, H.N. Ruiz, N. Lazarević, **Y. Wang**, T. Böhm, R. Hosseinian Ahangharnejhad, P. Adelman, T. Wolf, Z.V. Popović, B. Moritz, T.P. Devereaux, and R. Hackl, *Frustrated Spin Order and Stripe Fluctuations in FeSe. Commun. Phys.* 2, 14 (2019)
 22. **Y. Wang**, T.P. Devereaux, and C.-C. Chen, *Theory of Time-Resolved Raman Scattering in Correlated Systems: Ultrafast Engineering of Spin Dynamics and Detection of Thermalization. Phys. Rev. B* 98, 245106 (2018)
 21. Y.Y. Peng, E.W. Huang, R. Fumagalli, M. Minola, **Y. Wang**, X. Sun, Y. Ding, K. Kummer, X.J. Zhou, N. B. Brookes, B. Moritz, L. Braicovich, T.P. Devereaux, and G. Ghiringhelli, *Paramagnon Damping Dependence on Doping and Momentum in $(Bi,Pb)_2(Sr,La)_2CuO_{6+\delta}$. Phys. Rev. B* 98, 144507 (2018)
 20. **Y. Wang**, M. Claassen, D. Pemmaraju, C. Jia, B. Moritz, and T. P. Devereaux, *Theoretical Understanding of Photon Spectroscopies in Correlated Materials In and Out of Equilibrium. Nat. Rev. Mater.* 3, 312 (2018)
 19. **Y. Wang**, C.-C. Chen, B. Moritz, and T.P. Devereaux, *Light-Enhanced Spin Fluctuations and d -Wave Superconductivity at a Phase Boundary. Phys. Rev. Lett.* 120, 246402 (2018)
 18. **Y. Wang**, E.W. Huang, B. Moritz, and T.P. Devereaux, *Magnon Splitting Induced by Charge Transfer in the Three-Orbital Hubbard Model. Phys. Rev. Lett.* 120, 246401 (2018)
 17. L. Chaix, E.W. Huang, C. Jia, S. Gerber, X. Lu, Y. Huang, D. McNally, **Y. Wang**, F.H. Vernay, A. Keren, M. Shi, B. Moritz, Z.-X. Shen, T. Schmitt, T. P. Devereaux, and W.-S. Lee, *Resonant Inelastic X-Ray Scattering Studies of Magnons and Bimagnons in the Lightly Doped Cuprate $La_{2-x}Sr_xCuO_4$. Phys. Rev. B* 97, 155144 (2018)
 16. H.-M. Guo, E. Khatami, **Y. Wang**, T.P. Devereaux, R.R.P. Singh, and R.T. Scalettar, *Unconventional Pairing Symmetry of Interacting Dirac Fermions on a π -Flux Lattice. Phys. Rev. B* 97 155146 (2018)
 15. **Y. Wang**, B. Moritz, C.-C. Chen, T.P. Devereaux, and K. Wohlfeld, *Influence of Magnetism and Correlation on the Spectral Properties of Doped Mott Insulators. Phys. Rev. B* 97, 115120 (2018)
 14. C.Y. Chen, J. Avila, S. Wang, **Y. Wang**, C. Shen, R. Yang, B. Nosarzewski, T.P. Devereaux, G. Zhang, and M.C. Asensio, *Emergence of Interfacial Polarons from Electron-Phonon Coupling in Graphene/ h -BN van der Waals Heterostructure. Nano Lett.* 18, 1082 (2018)
 13. C.J. Jia[†], **Y. Wang**[†], B. Moritz, and T.P. Devereaux, *Paradeisos: A Perfect Hashing Algorithm for Many-Body Eigenvalue Problems. Comput. Phys. Commun.* 224, 81 (2018)
 12. **Y. Wang**, M. Claassen, B. Moritz, and T.P. Devereaux, *Producing Coherent Excitations in Pumped Mott Antiferromagnetic Insulators. Phys. Rev. B* 96, 235142 (2017)
 11. S.-L. Yang, J. Sobota Y. He, **Y. Wang**, D. Leuenberger, H. Soifer, M. Hashimoto, D.H. Lu, H. Eisaki, B. Moritz, T.P. Devereaux, P. Kirchmann, and Z.-X. Shen, *Revealing the Coulomb Interaction Strength in a Cuprate Superconductor. Phys. Rev. B* 96, 195106 (2017)
 10. Y.F. Kung, C. Bazin, K. Wohlfeld, **Y. 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. Phys. Rev. B* 96, 195106 (2017)
 9. T.P. Devereaux, A. Shvaika, K. Wu, K. Wohlfeld, C.J. Jia, **Y. Wang**, B. Moritz, L. Chaix, W.-S. Lee, Z.-X. Shen, G. Ghiringhelli, and L. Braicovich, *Directly Characterizing the Relative Strength and Momentum*

Dependence of Electron-Phonon Coupling Using Resonant Inelastic X-Ray Scattering. Phys. Rev. X 6, 041019 (2016)

8. C.J. Jia, K. Wohlfeld, **Y. Wang**, B. Moritz, and T.P. Devereaux, *Using RIXS to Uncover Elementary Charge and Spin Excitations.* Phys. Rev. X 6, 021020 (2016)
7. Z. Wang, S. McKeown Walker, A. Tamai, **Y. Wang**, Z. Ristic, F.Y. Bruno, A. de la Torre, Z. Ristic, F.Y. Bruno, A. de la Torre, S. Riccò, N. Plumb, M. Shi, P Hlawenka, J Sánchez-Barriga, A Varykhalov, T. Kim, M. Hoesch, P.D.C. King, W. Meevasana, U. Diebold, J. Mesot, B. Moritz, T.P. Devereaux, M. Radovic, and F. Baumberger, *Tailoring the Nature and Strength of Electron-Phonon Interactions in the SrTiO₃(001) Two-Dimensional Electron Liquid.* Nat. Mater. 15, 835 (2016)
6. Y.F. Kung, C.-C. Chen, **Y. Wang**, E.W. Huang, E.A. Nowadnick, B. Moritz, R.T. Scalettar, S. Johnston, and T.P. Devereaux, *Characterizing the Three-Orbital Hubbard Model with Determinant Quantum Monte Carlo.* Phys. Rev. B 93, 155166 (2016) [Editors' Suggestion]
5. **Y. Wang**, B. Moritz, C.-C. Chen, C.J. Jia, M. van Veenendaal, and T.P. Devereaux, *Using Nonequilibrium Dynamics to Probe Competing Orders in Mott-Peierls System.* Phys. Rev. Lett. 116, 086401 (2016)
4. **Y. Wang**[†], K. Wohlfeld[†], B. Moritz, C.J. Jia, M. van Veenendaal, K. Wu, C.-C. Chen, and T.P. Devereaux, *Origin of Strong Dispersion in Hubbard Insulators.* Phys. Rev. B 92, 075119 (2015)
3. N. Plonka, C.J. Jia, **Y. Wang**, B. Moritz, and T.P. Devereaux, *Fidelity Study of Superconductivity in Extended Hubbard Models.* Phys. Rev. B 92, 024503 (2015)
2. **Y. Wang**, C.J. Jia, B. Moritz, and T.P. Devereaux, *Real-Space Visualization of Remnant Mott Gap and Magnon Excitations.* Phys. Rev. Lett. 112, 156402 (2014)
1. H. Chen, **Y. Wang**, X. Chen, and Z. Lin, *Gas Phase Conformations of Tetrapeptide Glycine-Phenylalanine-Glycine-Glycine.* Chin. J Chem. Phys. 25, 77 (2012)

Invited Presentations

- *Time-Resolved RIXS Theory and Potential Applications in Quantum Materials*
International Conference on Inelastic X-ray Scattering, Oxford, United Kingdom (Aug. 2022)
- *Hybrid Algorithms for Correlated Materials with Electron-Phonon Coupling*
2022 Frontera User Meeting, Texas Advanced Computing Center, Austin, TX, USA (Aug. 2022)
- *Design and Discovery of High-T_c Superconductors Accelerated by Quantum Algorithms*
Honda Research Institute Quantum Workshop, Massachusetts Institute of Technology, Cambridge, MA, USA (Jun. 2022)
- *Witnessing Transient Entanglement by Time-Resolved RIXS*
Dynamic X-Ray Scattering Workshop, SLAC National Accelerator Laboratory, Menlo Park, CA, USA (Apr. 2022)
- *Near-Neighbor Attraction in Cuprate Chains and Possible Phonon Origin*
Theoretical Physics Seminar, Fudan University, Shanghai, China (Dec. 2021)
- *Phonon-Mediated Near-Neighbor Attraction in Cuprate Chains*
Solid State & Optics Seminar, Yale University, New Haven, CT, USA (Dec. 2021)
- *Time-Resolved RIXS Technique and Applications in Nonequilibrium Quantum Materials*
Materials Research Society Meeting 2021, Boston, MA, USA (Nov. 2021)

- *Discovery and Engineering of Phonon-Mediated Near-Neighbor Attraction in Cuprate Chains*
SUSTech SIQSE Seminar, Shenzhen, China (Nov. 2021)
- *Emergent Phenomena in Various Quantum Systems*
2021 Rising Star Symposium, Clemson, SC, USA (Sep. 2021)
- *Characterizing and Control Collective Excitations in Quantum Materials Aided by trRIXS*
National Center for Theoretical Sciences, Taipei, Taiwan (July 2021)
- *Theory for Material Dynamics and Pump-Probe Spectroscopies*
National Center for Theoretical Sciences, Taipei, Taiwan (July 2021)
- *Phonon Mediated Strong Near-Neighbor Attraction in 1D Cuprates*
Jagiellonian University, Kraków, Poland (June 2021)
- *Ultrafast Control of Correlation and Topology*
IASF Workshop, Shenzhen Institute of Advanced Technology, Shenzhen, China (May 2021)
- *Time-Resolved RIXS Theory and Applications in Quantum Materials*
NSLS-II & CFN Users' Meeting, Brookhaven National Laboratory, Upton, NY, USA (May 2021)
- *Quantum Meets Computation*
Introduction to Research, Clemson University, Clemson, SC, USA (Sep. 2020)
- *Novel and Pragmatic Perspectives on Nonequilibrium Quantum Materials*
Physics Colloquium, University of Alabama at Birmingham, Birmingham, AL, USA (Feb. 2020)
- *Novel and Pragmatic Perspectives on Nonequilibrium Quantum Materials*
Physics Colloquium, University of Delaware, Newark, DE, USA (Feb. 2020)
- *Novel and Pragmatic Perspectives on Nonequilibrium Quantum Materials*
Physics Colloquium, University of Cincinnati, Cincinnati, OH, USA (Feb. 2020)
- *Novel and Pragmatic Perspectives on Nonequilibrium Quantum Materials*
Physics Seminar, Emory University, Atlanta, GA, USA (Feb. 2020)
- *Novel and Pragmatic Perspectives on Nonequilibrium Quantum Materials*
Physics Colloquium, Clemson University, Clemson, SC, USA (Feb. 2020)
- *Tracking Collective Spin and Charge Excitations through Time-Resolved Raman and RIXS Spectra*
International Conference on Inelastic X-ray Scattering, Stony Brook, NY, USA (Jun. 2019)
- *Deciphering Ultrafast Phenomena using Nonequilibrium Spectroscopies*
Condensed Matter Seminar, Peking University, Beijing, China (June 2019)
- *Investigation of Nonequilibrium Physics in Electron-Phonon Systems using the Non-Gaussian Approach*
MPHQ Spring Meeting, Harvard University, Cambridge, MA, USA (May 2019)
- *Deciphering Ultrafast Phenomena using Nonequilibrium Spectroscopies*
Special Seminar, Tsinghua University, Beijing, China (May 2019)
- *Pump-Induced Superconductivity and Higgs Oscillations*
Joint Quantum Seminar, Harvard University, Cambridge, MA, USA (Feb. 2019)
- *Nonequilibrium Manipulation of Bosonic Excitations and Superconductivity*
Physics Colloquium, University of Alabama at Birmingham, Birmingham, AL, USA (Feb. 2018)

- *Competing Orders, Bosonic Excitations and Transient Dynamics Out of Equilibrium*
Condensed Matter Physics Special Seminar, Harvard University, Cambridge, MA, USA (Feb. 2017)
- *Time-Domain Study of Competing Orders in Mott-Peierls System*
Condensed Matter Physics Seminar, California Institute of Technology, Pasadena, CA, USA (Jan. 2017)
- *Nonequilibrium Study of Competing Orders*
Seminar, Max-Planck Institute of the Structure and Dynamics of Matter, Hamburg, Germany (Jun. 2016)

Professional Activities and Service

Grant Reviewers: US Department of Energy, National Science Centre Poland

Journal Referees: *Nature*, *Nat. Phys.*, *Phys. Rev. Lett.*, *Phys. Rev. X*, *Phys. Rev. B*, *Phys. Rev. Mater.*, *2D Mater.*, *Commun. Phys.*, *J. Phys.-Condens. Mat.*, *Sci. Rep.*, *New J. Phys.* etc.

University Service: Member of Graduate Recruitment Committee (2020 - Now)
Initiator and organizer of the Quantum Science Seminar (2021 - Now)
Member of Faculty Search Committee (2022 - Now)

Conference Chairs: Correlated Insulating States in Two Dimensions Symposium (Nov 2020)
APS March Meeting 2022 (Mar 2022)

Teaching and Mentoring

Teaching: Methods in Theoretical Physics I (Spring 2021 & 2022) & II (Fall 2021)
Collaborative Research: Quantum Computing (Spring 2022)

Postdoc Supervised: Vivek Dixit (2021 - Now), Wei-Chih Chen (2021 - Now), Utkarsh Bajpai (2021)

Graduate Students Advised: Zecheng Shen (2020 - Now), Jordyn Hales (2021 - Now),
Chendi Xie (2021 - Now), Haoran Yan (2022 - Now)

Undergraduate Students Advised: Matthew Myers (2020 - 2022) & Shuhan Ding (2021 - 2022)
Yuanjie Sun (2022 - Now), Jiarui Liu (2022 - Now)

High-School Students Advised: Nathaniel Bruss (2022 - Now)

Outreach: NetPals volunteer for underrepresented minorities in Putnam Avenue Upper School (2019)
Science judge for the Journal of the South Carolina Academy of Science annual meeting (2021)