

MATTEO MITRANO, PH.D.

Harvard University
Department of Physics
17 Oxford St.
Cambridge, MA 02138

Office: Lyman 341, (617) 495-3735
Lab: Jefferson Laboratory, 164
mmitrano@fas.harvard.edu
<https://mitrano.physics.harvard.edu/>

APPOINTMENTS

07/2020 – present	Assistant Professor of Physics, Harvard University
06/2019 - 06/2020	Research Associate in Physics, Harvard University
02/2019 - 06/2020	Postdoctoral Research Associate, University of Illinois at Urbana-Champaign
02/2017 - 01/2019	Feodor Lynen Postdoctoral Research Fellow, University of Illinois at Urbana-Champaign
03/2016 - 01/2017	Postdoctoral Research Associate, University of Illinois at Urbana-Champaign
07/2015 - 02/2016	Postdoctoral Research Associate, Max Planck Institute for the Structure and Dynamics of Matter

EDUCATION

- 07/2015 Ph.D. in Physics, *summa cum laude*, University of Hamburg
- 10/2010 M.Sc. in Physics in Physics, 110/110 *cum laude*, University of Rome “Sapienza”
- 10/2008 B.Sc. in Physics in Physics, 110/110 *cum laude*, University of Rome “Sapienza”

HONORS AND AWARDS

- 2023 Star-Friedman Challenge for Promising Scientific Research Award
- 2022 U.S. Department of Energy Early Career Award
- 2021 PRISM Award of the Italian National Research Council (ISM-CNR)
 - *Citation*: “For breakthrough achievements in the field of Science of Matter in the last five years”
- 2021 Aramont Fellowship Fund for Emerging Science Research
- 2020 Harvard William F. Milton Fund Award
- 2019 LCLS Young Investigator Award
 - *Citation*: “For pioneering new techniques to probe high-temperature superconductivity”
 - *Given annually to early-career scientists for exceptional research using the Linac Coherent Light Source (LCLS) X-ray free-electron laser*
- 2017 Feodor Lynen Research Fellowship of the Alexander von Humboldt Foundation

RESEARCH INTERESTS

I am an experimental condensed matter physicist interested in investigating fundamental problems in quantum materials, as well as in controlling their nonequilibrium properties with light. The goal of my research is to discover novel, emergent physical phenomena and solve long-standing problems in the physics of interacting electron systems. To further these goals, I make use of advanced ultrafast optical methods and of ultrafast scattering probes both in my laboratory and at large-scale facilities (e.g. free electron lasers).

PUBLICATIONS

Total Publications: 35 publications, including Nature (2), Nature Phys. (1), Nature Materials (1), Phys. Rev. X (4), Science Advances (1), Phys. Rev. Lett. (8), PNAS (2).

Total Citations: 2422, h-index: 18 (according to Google Scholar).

Peer-reviewed publications (Key MitranoLab publications are identified with ♦)

1. ♦ Hales, J., Bajpai, U., Liu, T., Baykusheva, D. R., Li, M., **Mitrano, M.**, Wang, Y. (2023): Witnessing Light-Driven Entanglement using Time-Resolved Resonant Inelastic X-Ray Scattering, [Nature Communications 14, 3512](#).

2. Husain, A.A., Huang, E. W., **Mitrano, M.**, Rak, M. S., Rubeck, S. I., Guo, X., Yang, H., Sow, C., Maeno, Y., Uchoa, B., Chiang, T. C., Batson, P. E., Phillips, P. W., Abbamonte, P. (2023): Observation of Pines' Demon in Sr_2RuO_4 , *Nature*, in press.
3. ♦ Baykusheva, D. R., Kalthoff, M. H., Hofmann, D., Claassen, M., Kennes, D. M., Sentef, M. A., **Mitrano, M.** (2023): Witnessing nonequilibrium entanglement dynamics in a strongly correlated fermionic chain, [*Physical Review Letters* **130**, 106902.](#)
4. Shen, Y., Sears, J., Fabbri, G., Li, J., Pellicciari, J., **Mitrano, M.**, He, W., Zhang, J., Mitchell, J. F., Bisogni, V., Norman, M. R., Johnston, S., and Dean, M. P. M. (2023): Electronic character of charge order in square planar low-valence nickelates, [*Physical Review X* **13**, 011021.](#)
5. Moya, J. M., Lei, S., Clements, E. M., Allen, K., Chi, S., Sun, S., Li, Q., Peng, Y. Y., Husain, A. A., **Mitrano, M.**, Krogstad, M. J., Osborn, R., Abbamonte, P., Puthirath, A. B., Lynn, J. W., Morosan, E. (2022): Incommensurate magnetic orders and possible field-induced skyrmions in the square-net centrosymmetric EuGa_2As_2 system. [*Physical Review Materials* **6**, 074201.](#)
6. Peng, Y. Y., Martinelli, L., Li, Q., Rossi, M., **Mitrano, M.**, Arpaia, R., Moretti Sala, M., Gao, Q., Guo, X., De Luca, G. M., Walters, A., Nag, A., Barbour, A., Gu, G., Pellicciari, J., Brookes, N., Abbamonte, P., Salluzzo, M., Zhou, X., Zhou, K.-J., Bisogni, V., Braicovich, L., Johnston, S., Ghiringhelli, G. (2022): Doping-dependence of the electron-phonon coupling in two families of bilayer superconducting cuprates. [*Physical Review B* **105**, 115105.](#) [Editors' Suggestion]
7. Lee, S., Huang, E. W., Johnson, T. A., Guo, X., Husain, A. A., **Mitrano, M.**, Lu, K., Zakrzewski A. V., de la Pena, G. A., Peng, Y. Y., Lee, S.-J., Jang, H., Lee, J.-S., Joe, Y. I., Doriese, W. B., Szypryt, P., Swetz, D. S., Aczel, A. A., Macdougall, G. J., Kivelson, S. A., Fradkin, E., Abbamonte, P. (2022): Generic character of charge and spin density waves in superconducting cuprates. [*Proceedings of the National Academy of Sciences* **119**, e2119429119.](#)
8. Shen, Y. Sears, J., Fabbri, G., Li, J. Pellicciari, J., Jarrige, I., He, X., Bozovic, I., **Mitrano, M.**, Zhang, J., Mitchell, J. F., Botana, A. S., Bisogni, V., Norman, M. R., Johnston, S., Dean, M. P. M. (2022): Role of oxygen states in the low valence nickelate $\text{La}_4\text{Ni}_3\text{O}_8$. [*Physical Review X* **12**, 011055.](#)
9. ♦ Baykusheva, D. R., Jang, H., Husain, A. A., Lee, S., TenHuisen, S., Zhou, P., Park, S., Kim, H., Kim, J., Kim, H.-D., Kim, M., Park, S.-Y., Abbamonte, P., Kim, B. J., Gu, G. D., Wang, Y. & **Mitrano, M.** (2022): Ultrafast renormalization of the onsite Coulomb repulsion in a cuprate superconductor. [*Physical Review X* **12**, 011013.](#)
10. ♦ Wang, Y., Chen, Y., Devereaux, T.P., Moritz, B. & **Mitrano, M.** (2021): X-ray Scattering from Light-Driven Spin Fluctuations in a Doped Mott Insulator. [*Communications Physics* **4**, 212.](#) [Selected for Editor's Highlights]
11. Guo, X., Lee, S., Johnson, T. A., Chen, J., Vandeventer, P., Husain, A. A., Rodolakis, F., McChesney, J. L., Shafer, P., Huang, H., Lee, J., Schneeloch, J., Zhong, R., Gu, G. D., **Mitrano, M.**, & Abbamonte, P. (2021): Search for $Q \sim 0$ order near a forbidden Bragg position in $\text{Bi}_{2.1}\text{Sr}_{1.9}\text{CaCu}_2\text{O}_{8+x}$ with resonant soft x-ray scattering. [*Journal of the Physical Society of Japan* **90**, 111007.](#)
12. Lee, S., Collini, J., Sun, S. X.-L., **Mitrano, M.**, Guo, X., Eckberg, C., Paglione, J., Fradkin, E., & Abbamonte, P. (2021): Multiple charge density waves and superconductivity nucleation at antiphase domain walls in the nematic pnictide $\text{Ba}_{1-x}\text{Sr}_x\text{Ni}_2\text{As}_2$. [*Physical Review Letters*, **127**, 027602.](#)
13. Huang, E. W., Limtragool, K., Setty, C., Husain, A. A., **Mitrano, M.**, Abbamonte, P. & Phillips, P. W. (2021): Extracting correlation effects from Momentum-Resolved Electron Energy Loss Spectroscopy (M-EELS): Synergistic origin of the dispersion kink in $\text{Bi}_{2.1}\text{Sr}_{1.9}\text{CaCu}_2\text{O}_{8+x}$. [*Physical Review B*, **103**, 035121.](#)
14. ♦ **Mitrano, M.** & Wang, Y. (2020): Probing light-driven quantum materials with ultrafast resonant inelastic X-ray scattering. [*Communications Physics* **3**, 184.](#) [Selected for Editor's Highlights]

15. Peng, Y. Y., Husain, A. A., **Mitrano, M.**, Sun, S. X.-L., Johnson, T. A., Zakrzewski, A. V., MacDougall, G.J., Barbour, A., Jarrige, I., Bisogni, V. & Abbamonte, P. (2020): Enhanced Electron-Phonon Coupling for Charge-Density-Wave Formation in $\text{La}_{1.8-x}\text{Eu}_{0.2}\text{Sr}_x\text{CuO}_{4+\delta}$. [*Physical Review Letters*, **125**, 097002.](#)

Before joining Harvard Physics

16. **Mitrano, M.**, Lee, S., Husain, A. A., Zhu, M., de la Pena, G. A., Sun, X.-L., Joe, Y. I., Reid, A. H., Wandel, S. F., Coslovich, G., Schlotter, W., van Driel, T., Schneeloch, J., Gu, G. D., Goldenfeld, N., Abbamonte, P. (2019): Evidence for photoinduced sliding of the charge-order condensate in $\text{La}_{2-x}\text{Ba}_x\text{CuO}_4$. *Physical Review B* **100**, 205125. **[Editors' Suggestion]**
17. **Mitrano, M.**, Lee, S., Husain, A. A., Delacretaz, L., Zhu, M., de la Pena, G. A., Sun, X.-L., Joe, Y. I., Reid, A. H., Wandel, S. F., Coslovich, G., Schlotter, W., van Driel, T., Schneeloch, J., Gu, G. D., Hartnoll, S., Goldenfeld, N., Abbamonte, P. (2019): Ultrafast time-resolved x-ray scattering reveals diffusive charge order dynamics in $\text{La}_{2-x}\text{Ba}_x\text{CuO}_4$. *Science Advances* **5**, eaax3346.
18. Husain, A. A., **Mitrano, M.**, Rak, M. S., Rubeck, S. I., Uchoa, B., Schneeloch, J., Zhong, R., Gu, G. D., Abbamonte, P. (2019): Crossover of charge fluctuations across the strange metal phase diagram. *Physical Review X* **9**, 041062.
19. Lee, S., de la Peña Munoz, G., X. L. Sun, S., **Mitrano, M.**, Fang Y., Jang, H., Lee, J-S., Eckberg, C., Campbell, D., Collini, J., Paglione, J., de Groot, F. M. F., & Abbamonte, P. (2019): Unconventional Charge Density Wave Order in the Pnictide Superconductor $\text{Ba}(\text{Ni}_{1-x}\text{Co}_x)_2\text{As}_2$.” *Physical Review Letters* **122**, 147601.
20. Di Pietro, P., **Mitrano, M.**, Caramazza, S., Capitani, F., Lupi, S., Postorino, P., Ripanti, F., Joseph, B., Ehlen, N., Grüneis, A., Sanna, A., Profeta, G., Dore, P., & Perucchi, A. (2018): Emergent Dirac Carriers across a Pressure-Induced Lifshitz Transition in Black Phosphorus. *Physical Review B* **98**, 165111.
21. **Mitrano, M.**, Husain, A. A., Vig, S., Kogar, A, Rak, M. S., Rubeck, S. I., Schmalian, J., Uchoa, B., Schneeloch, J., Zhong, R., Gu, G. D., Abbamonte, P. (2018): Anomalous density fluctuations in a strange metal. *Proceedings of the National Academy of Sciences* **115**, 5392-5396.
22. Cantaluppi, A., Buzzzi, M., Jotzu, G., Nicoletti, D., **Mitrano, M.**, Pontiroli, D., Riccò, M., Perucchi, A., Di Pietro, P., Cavalleri A. (2018): Pressure tuning of light-induced superconductivity in K_3C_{60} . *Nature Physics* **14**, 837–841.
23. Pomarico, E., **Mitrano, M.**, Bromberger, H., Sentef, M. A., Al-Temimy, A., Coletti, C., Stöhr A., Link, S., Starke, U., Cacho, C., Chapman, R., Springate, E., Cavalleri, A. and Gierz, I. (2017): Enhanced electron-phonon coupling in graphene with periodically distorted lattice. *Physical Review B* **95**, 024304.
24. Vig, S., Husain, A., **Mitrano, M.**, Rak, M., Abbamonte, P., Kogar, A., Venema, L., Mishra, V., Johnson, P., Gu, G., Fradkin, E., & Norman, M. (2017): Measurement of the Dynamic Charge Response of Materials Using Low-Energy, Momentum-Resolved Electron Energy-Loss Spectroscopy (M-EELS). *SciPost Physics* **3**, 26.
25. **Mitrano, M.**, Cantaluppi, A., Nicoletti, D., Kaiser, S., Perucchi, A., Lupi, S., Di Pietro, P., Pontiroli, D., Riccò, M., Clark, S. R., Jaksch, D., Cavalleri, A. (2016): Possible light-induced superconductivity in K_3C_{60} at high temperature. *Nature* **530**, 461-464. **[Featured in Nature Physics News and Views, The Conversation, Chemical & Engineering News, Superconducting Week March 2016, Elettra Top Story]**
26. Gierz, I., **Mitrano, M.**, Bromberger, H., Cacho, C., Chapman, R., Springate, E., Link, S., Starke, U., Sachs, B., Eckstein, M., Wehling, T.O., Katsnelson, M. I., Lichtenstein, A., Cavalleri, A. (2015): Phonon-pump extreme-ultraviolet photoemission probe in graphene: Anomalous heating of Dirac carriers by lattice deformation. *Physical Review Letters* **114**, 125503.
27. Gierz, I., **Mitrano, M.**, Petersen, J. C., Cacho, C., Turcu, I. C. E., Springate, E., Stöhr, A., Köhler, A., Starke, U., & Cavalleri, A. (2015): Population Inversion in Monolayer and Bilayer Graphene. *Journal of Physics: Condensed Matter* **27**, 164204.

28. Baldassarre, L., Perucchi, A., **Mitrano, M.**, Nicoletti, D., Marini, C., Pontiroli, D., Mazzani, M., Aramini, M., Riccò, M., Giovannetti, G., Capone, M. & Lupi, S. (2015): The Strength of Electron Electron Correlation in Cs_3C_{60} . *Scientific Reports* **5**, 15240.
29. Singla, R., Cotugno, G., Kaiser, S., Först, M., **Mitrano, M.**, Liu, H. Y., Cartella, A., Manzoni, C., Okamoto, H., Hasegawa, T., Clark, S. R., Jaksch, D., Cavalleri, A. (2015): THz-Frequency Modulation of the Hubbard U in an Organic Mott Insulator. *Physical Review Letters* **115**, 187401.
30. Marini, C., Joseph, B., Caramazza, S., Capitani, F., Bendele, M., **Mitrano, M.**, Chermisi, D., Mangialardo, S., Pal, B., Goyal, M., Iadecola, A., Mathon, O., Pascarelli, S., Sarma, D. D. & Postorino, P. (2014): Local Disorder Investigation in $\text{NiS}_{2-x}\text{Se}_x$ Using Raman and Ni K-Edge X-Ray Absorption Spectroscopies. *Journal of Physics: Condensed Matter* **26**, 452201.
31. **Mitrano, M.**, Cotugno, G., Clark, S. R., Singla, R., Kaiser, S., Stähler, J., Beyer, R., Dressel, M., Baldassarre, L., Nicoletti, D., Perucchi, A., Hasegawa, T., Okamoto, H., Jaksch, D., Cavalleri, A. (2014): Pressure-Dependent Relaxation in the Photoexcited Mott Insulator $\text{ET-F}_2\text{TCNQ}$: Influence of Hopping and Correlations on Quasiparticle Recombination Rates. *Physical Review Letters* **112**, 117801.
32. Marini, C., Bendele, M., Joseph, B., Kantor, I., **Mitrano, M.**, Mathon, O., Baldini, M., Malavasi, L., Pascarelli, S. & Postorino, P. (2014): Probing the Electronic and Local Structural Changes across the Pressure-Induced Insulator-to-Metal Transition in VO_2 . *Europhysics Letters* **108**, 36003.
33. Gierz, I., Petersen, J. C., **Mitrano, M.**, Cacho, C., Turcu, I. C. E., Springate, E., Stöhr, A., Köhler, A., Starke, U., Cavalleri, A. (2013): Snapshots of non-equilibrium Dirac carrier distributions in graphene. *Nature Materials* **12**, 1119-1124.
34. **Mitrano, M.**, Maroni, B., Marini, C., Hanfland, M., Joseph, B., Postorino, P., Malavasi, L. (2012): Anisotropic compression in the high-pressure regime of pure and chromium-doped vanadium dioxide. *Physical Review B* **85**, 184108.
35. Caviglia, A., Scherwitzl, R., Popovich, P., Hu, W., Bromberger, H., Singla, R., **Mitrano, M.**, Hoffmann, M. C., Kaiser, S., Zubko, P., Gariglio, S., Triscone, J. M., Först, M., Cavalleri, A. (2012): Ultrafast Strain Engineering in Complex Oxide Heterostructures. *Physical Review Letters* **108**, 136801. [Selected for APS Viewpoint in Physics, and Research Highlight in Nature Materials]

Preprints

1. Kengle, C. S., Rubeck, S. I., Rak, M., Chen, J., Hoveyda, F., Bettler, S., Husain, A., **Mitrano, M.**, Edelman, A., Littlewood, P., Chiang, T.-C., Mahmood, F., Abbamonte, P. (2022): Anharmonic multiphonon origin of the valence plasmon in $\text{SrTi}_{1-x}\text{Nb}_x\text{O}_3$, [arXiv:2210.15026](https://arxiv.org/abs/2210.15026).

INVITED SEMINARS AND CONFERENCE PRESENTATIONS

1. Tohoku University, Japan, Resonant Inelastic and Elastic X-ray Scattering (RIXSREXS2023) workshop, 08/2023 “TBD”
2. Incheon, S. Korea, 2023 International Conference on Strongly Correlated Electron Systems (SCES2023), 07/2023 “TBD”
3. Crete, Greece, X International Conference on Ultrafast Dynamics and Bandgap Photonics, 06/2023 “Controlling nonlinearities in a driven quantum chain”
4. MPIPKS Dresden, Germany, International Workshop on "Dynamical Control of Quantum Materials", Invited Colloquium 05/2023 "Witnessing many-body entanglement in light-driven quantum materials"
5. Ohio University, Department of Physics and Astronomy (Athens, OH), Invited Colloquium, 04/2023 “Driven quantum materials under the x-ray spotlight”

6. Ariel University, Department of Physics, Israel, Invited Colloquium, 04/2023
“Driven quantum materials under the x-ray spotlight”
7. Dresden, Germany, DPG Spring meeting, 03/2023
" Witnessing many-body entanglement in light-driven quantum materials"
8. Las Vegas, 2023 March Meeting of the American Physical Society, Invited Session, 03/2023
“Ultrafast x-ray spectroscopy of driven quantum materials”
9. Politecnico di Milano, Department of Physics, Italy, Invited Seminar, 01/2023
“Driven quantum materials under the x-ray spotlight”
10. University of Pennsylvania, Virtual Condensed and Living Matter Seminar, 11/2022
“Ultrafast manipulation of electronic interactions in quantum materials”
11. Oxford, UK, 12th International Conference on Inelastic X-ray Scattering (IXS2022), 08/2022
“Ultrafast manipulation of electronic interactions in quantum materials”
12. Manchester, UK, EPS-Condensed Matter Division Conference 29 (CMD29), 08/2022
“Ultrafast manipulation of electronic interactions in quantum materials”
13. Center for Computational Quantum Physics (NY), “Harnessing light matter interactions in quantum materials” workshop, 08/2022
" Witnessing many-body entanglement in light-driven quantum materials"
14. Vancouver, Canada, 13th international conference on Materials and Mechanisms of Superconductivity & High Temperature Superconductors (M2S 2022), 07/2022
“Ultrafast manipulation of electronic interactions in quantum materials”
15. Paris, France, Resonant Elastic X-ray Scattering conference (REXS 2022), 06/2022
“Probing the finite-momentum spectrum of light-driven superconductors”
16. Nordita, Stockholm, Sweden, “Recent developments in strongly-correlated quantum matter” Workshop, 06/2022
“Ultrafast manipulation of electronic interactions in quantum materials”
17. Bath, UK, Condensed Matter and Quantum Materials (CMQM) 2022, Invited Plenary, 06/2022
“Driven quantum materials under the x-ray spotlight”
18. Crete, Greece, VII International Conference on Ultrafast Dynamics and Bandgap Photonics, 06/2022
“Ultrafast manipulation of electronic interactions in quantum materials”
19. SPring-8 Angstrom Compact free electron Laser (SACLA) User meeting, Japan, 03/2022
“Ultrafast manipulation of electronic interactions in quantum materials”
20. Columbia University, Frontiers of Condensed Matter Physics Invited Lecture, 01/2022
“Probing light-driven quantum materials with resonant inelastic x-ray scattering”
21. Snowbird, Utah, 51st Winter Colloquium on the Physics of Quantum Electronics, 01/2022
“Ultrafast manipulation of effective interactions in quantum materials”
22. CNR-ISM, Italy, PRISM Prize invited online talk, 12/2021
“Probing driven quantum phases of high-temperature superconductors with ultrafast x-rays”
23. Cornell, Center for Bright Beams Seminar, 12/2021
“Probing light-driven superconductors with ultrafast X-ray spectroscopy”
24. Georgetown Univ. VIII International Conference on Ultrafast Dynamics and Bandgap Photonics, 11/2021
“Dynamical control of effective interactions in cuprate superconductors”
25. PIPT 7: Photoinduced Phase Transitions and Cooperative Phenomena, 11/2021
“Ultrafast renormalization of the Hubbard U in a cuprate superconductor”
26. UCSB/KITP Conference: Non-Equilibrium Universality in Many-Body Physics, 09/2021
“Dynamical control of effective interactions in quantum materials”

27. Brookhaven National Laboratory, Resonant Inelastic and Elastic X-ray Scattering (RIXSREXS2021) workshop, 08/2021
“Dynamical Renormalization of the Hubbard U in a cuprate superconductor”
28. University of California, Los Angeles, UC-XFEL Workshop, 07/2021
“Dynamical control of effective interactions in quantum materials”
29. (CRC) Elasto-Q-Mat (Frankfurt-Karlsruhe-Mainz), CRC 288 Elasto-Q-Mat Colloquium, 05/2021
“Probing light-driven superconductors with ultrafast X-ray spectroscopy”
30. University of Minnesota, Condensed Matter Seminar, 05/2021
“Probing the finite-momentum spectrum of a light-induced superconductor”
31. International Online Workshop “Electrons, Photons, and Plasmons”, 03/2021
“Dynamical control of effective interactions in quantum materials”
32. Harvard University, Condensed Matter Physics Seminar, 02/2021
“Probing the finite-momentum spectrum of light-induced superconductors”
33. Brookhaven National Laboratory, Condensed Matter Physics and Materials Science Seminar, 02/2021
“Probing the finite-momentum spectrum of a light-induced superconductor”
34. Institut de Physique Theorique-CEA (Paris), Séminaire de physique statistique, 11/2020
“Finite-momentum electronic dynamics of strange metals”
35. Clemson University, Physics Colloquium, 10/2020
“Controlling quantum materials with light”

Before joining Harvard Physics

36. Massachusetts Institute of Technology, Chez Pierre Seminar, 05/2020
"Probing the finite-momentum spectrum of a light-induced superconductor"
37. Center for Computational Quantum Physics (NY), Nonequilibrium Superconductivity workshop, 01/2020
"Probing the finite-momentum spectrum of a light-induced superconductor"
38. LCLS user meeting, Ultrafast Electron Diffraction workshop, 09/2019
“Time-resolved probes of hydrodynamic behavior in quantum materials”
39. LCLS user meeting, Young Investigator Award Plenary Talk, 09/2019
“Ultrafast diffusive dynamics in a charge-ordered cuprate superconductor”
40. University of Oklahoma, Colloquium, 09/2019
“Controlling quantum materials with light”
41. Aspen workshop “Active and Driven Matter: Connecting Quantum and Classical Systems”, 06/2019
“Nonequilibrium dynamics and light control of solids”
42. 11th International Conference on Inelastic X-ray Scattering (IXS2019), 06/2019
“Ultrafast diffusive dynamics in a charge-ordered cuprate superconductor”
43. American Physical Society, March Meeting, Invited Session, 03/2019
“Ultrafast diffusive dynamics in a charge-ordered cuprate superconductor”
44. XFEL user meeting, hRIXS@SCS Workshop, 01/2019
“Ultrafast diffusive dynamics in a charge-ordered cuprate superconductor”
45. Harvard University, Condensed Matter Seminar, 03/2019
“Emergent nonequilibrium dynamics of complex solids”
46. Yale University, Condensed Matter Seminar, 02/2019
“Emergent nonequilibrium dynamics of complex solids”
47. Pennsylvania State University, Condensed Matter Seminar, 02/2019

“Emergent nonequilibrium dynamics of complex solids”

48. University of California Santa Barbara, Condensed Matter Seminar, 02/2019
“Emergent nonequilibrium dynamics of complex solids”
49. California Institute of Technology, Condensed Matter Seminar, 02/2019
“Emergent nonequilibrium dynamics of complex solids”
50. University of California Los Angeles, Condensed Matter Seminar, 02/2019
“Emergent nonequilibrium dynamics of complex solids”
51. Arizona State University, Condensed Matter Seminar, 02/2019
“Emergent nonequilibrium dynamics of complex solids”
52. Purdue University, Condensed Matter Seminar, 01/2019
“Emergent nonequilibrium dynamics of complex solids”
53. New York University, Condensed Matter Seminar, 01/2019
“Emergent nonequilibrium dynamics of complex solids”
54. University of Florida Gainesville, Condensed Matter Seminar, 01/2019
“Emergent nonequilibrium dynamics of complex solids”
55. International Conference on Electronic Spectroscopy and Structure-14 (ICESS-14), Shanghai, 10/2018
“Anomalous density fluctuations of the strange metal phase”
56. University of California San Diego, Condensed Matter Seminar, 06/2018
“Probing anomalous charge fluctuations in the cuprates”
57. Center for Computational Quantum Physics, Simons Foundation, 11/2017
“Singular density fluctuations in the strange metal phase of a copper-oxide superconductor”
58. 7th International NGSCES conference, Trieste, 09/2016
“Possible light-induced superconductivity in K_3C_{60} at high temperature”
59. Gordon Research Conference-Ultrafast Phenomena in Cooperative Systems, 02/2016
“Nonequilibrium superconductivity in metallic K_3C_{60} ”
60. University of Stuttgart, Condensed Matter Seminar 01/2016
“Possible light-induced superconductivity in K_3C_{60} at high temperature”
61. Massachusetts Institute of Technology, Condensed Matter Seminar, 12/2015
“Possible light-induced superconductivity in K_3C_{60} at high temperature”
62. University of Illinois at Urbana-Champaign, Condensed Matter Seminar, 12/2015
“Possible light-induced superconductivity in K_3C_{60} at high temperature”
63. Center for Free Electron Laser Science, Molecular Physics Seminar, 11/2015
“Light control of electronic interactions in organic molecular solids”
64. 4th Ultrafast Dynamic Imaging of Matter, 03/2015
“Light-induced high-temperature superconductivity in K_3C_{60} ”
65. Max Planck Research Department for Structural Dynamics, Condensed Matter Seminar, 09/ 2010
“X-Ray Diffraction at High Pressures in $V_{1-x}Cr_xO_2$ ”

TEACHING

- *Physics 191/247*, Advanced Laboratory, (co - Lead Instructor, w. Prof. J. E. Hoffman)
Undergraduate-level course at the Physics Department
Spring 2023. Instructor Evaluation: **4.9/5.0**
- *Physics 15c*, Wave Phenomena, (Lead Instructor)

Undergraduate-level course at the Physics Department

Fall 2022. Instructor Evaluation: **4.1/5.0**

- *Physics 191/247*, Advanced Laboratory, (co - Lead Instructor, w. Prof. J. E. Hoffman)

Undergraduate-level course at the Physics Department

Spring 2022. Instructor Evaluation: **4.2/5.0**

- *Physics 191*, Advanced Laboratory, (co - Lead Instructor, w. Prof. J. E. Hoffman)

Undergraduate-level course at the Physics Department

Fall 2021. Instructor Evaluation: **4.6/5.0**

- *Physics 15c*, Wave Phenomena, (Lead Instructor)

Undergraduate-level course at the Physics Department

Fall 2020. Instructor Evaluation: **4.2/5.0**

ADVISING

- *Postdoctoral Fellows:*

- Dr. Denitsa R. Baykusheva (09/2020-10/2023), Swiss National Science Foundation Fellow
- Dr. Filippo Glerean (11/2021-present),
- Dr. Hari Padmanabhan (01/2022-present)
- Dr. Luiz Gustavo Pimenta Martins (02/2023-present), Harvard Quantum Initiative Fellow

- *Visiting Postdoctoral Fellows:*

- Dr. Flavio Giorgianni (02/2021-08/2021), now Research Assistant at University of Bern, Switzerland

- *Graduate Students at Harvard:*

- Sophia F. R. TenHuisen (Ph.D. Candidate, SEAS), primary advisor.
- Tepie Meng (second year student, Physics), primary advisor.
- Ziqiang Guan (first year student, Physics), primary advisor.

- *Former Graduate Students at Harvard:*

- Preston Zhou (third year student, Physics)
- Kyeong Yoon Baek (first year rotating student, Physics).

- *Undergraduate Research Advisees:*

- Nicholas J. Brennan (HCRP and SULI awardee, PRISE fellow), now graduate student at Cornell University
- Lara Zeng (HCRP awardee), now at Iowa Writer's workshop
- Suneragiri Liyanage (PRISE fellow)
- Maxwell Christopher (HCRP awardee)
- Prabidhik KC (HCRP awardee)
- Eric Shen

- *Undergraduate Academic Advisees:*

Daniel Shen, Joey Huang, Milo Clark, Federico Maccagno, Lorenzo Russotto, Evan James Reynolds

PROFESSIONAL ACTIVITIES AT HARVARD

- Member of the HQI Postdoctoral Fellowship Committee (2022)
- Member of the HQI Gen Q G2 Fellowship Committee (2023)

- Member of the Natural Sciences Hoopes Prize Committee (2022, 2023)
- Member of the Graduate Admissions Committee, Department of Physics (2020-2021,2022-2023)
- Member of the Harvard University Radiation Safety Committee (2020-present)
- Member of the Colloquium Committee, Department of Physics (2021-2023)
- Reviewer and selection panel member for the William F. Milton Fund competition (2021, 2022, 2023)

PROFESSIONAL ACTIVITIES OUTSIDE HARVARD

- Conference co-chair (2021) and chair (2022) of the “Emergent Phenomena in Quantum Systems (EPiQS) Young Investigator” Workshop, supported by the Gordon and Betty Moore Foundation
- Co-organizer of the 2023 APS March meeting focus session DMP FT11.01.02 “Light-induced structural control of electronic phases” (with M. A. Sentef, J. Curtis, and M. Maiuri).
- Referee for *Nature*, *Science*, *Science Advances*, *Nature Physics*, *Nature Materials*, *Nature Communications*, *Physical Review X*, *Physical Review Letters*, *Physical Review B*, *Physical Review Materials*, *Proceedings of the National Academy of Sciences*, *Communications Physics*, *Nature Asia Materials*, *The Journal of Chemical Physics*, *New Journal of Physics*, *ACS Nano Letters*, *Applied Physics Letters*, *npj Quantum Materials*, *npg Scientific Reports*
- Grant Reviewer for *U. S. Department of Energy (USA)*, *Natural Sciences and Engineering Research Council (Canada)*, *Centre national de la recherche scientifique (France)*, *Freiburg Institute for Advanced Studies (Germany)*, *European Research Council (ERC Starting and Consolidator grants)*, *Serrapilheira Institute (Brazil)*, *Photonique Quantique Quebec (Canada)*, *SLAC National Accelerator Laboratory (LDRD grants, USA)*.
- Member of the MeV-UED Proposal Review Panel at the SLAC National Accelerator Laboratory (2021)
- Member of the FERMI Proposal Review Panel at the Elettra Sincrotrone Trieste, Italy (2023)
- Member of the LCLS User Executive Committee (2019-2025), the formal organization representing the user community of the Linac Coherent Light Source. Chair (2022-2023), Vice Chair (2021-2022)
- Member of the SSRL User Executive Committee (2022-2023, Ex-Officio), the formal organization representing the user community of the Stanford Synchrotron Radiation Lightsource.
- Member of the LCLS Scientific Advisory Committee (2022-2023), Ex-Officio, UEC Chair.
- Member of the American Physical Society.
- Member of the Italian Physical Society.
- Member of the Institute of Physics (IOP, UK).

MEMBER OF PH.D. COMMITTEES AT HARVARD

- Member of the PhD Qualifying Exam Committee of Eric Peterson, graduate student in Physics, working with Prof. Mikhail Lukin (April, 2023).
- Member of the PhD Qualifying Exam Committee of Xiaoling Liu, graduate student in Physics, working with Prof. Mikhail Lukin (May, 2023).
- Member of the PhD Committee of Nathan Drucker, graduate student at MIT (from SEAS), working with Prof. Mingda Li (October, 2022).
- Member of the PhD Committee of Yicheng Bao, graduate student in Physics, working with Prof. John Doyle (October, 2022).
- Member of the PhD Qualifying Exam Committee of Alex Cui, graduate student in Physics, working with Prof. Philip Kim (October, 2022).
- Member of the PhD Qualifying Exam Committee of Maine Christos, graduate student in Physics, working with Prof. Subir Sachdev (January, 2022).

- Member of the PhD Qualifying Exam Committee of Sophia TenHuisen, graduate student in SEAS, working under my supervision (May, 2021).
- Member of the PhD Qualifying Exam Committee of Soumya Ghosh, graduate student in Physics, working with Prof. Marko Loncar (April, 2021).
- Member of the PhD Qualifying Exam Committee of Yanting Teng, graduate student in Physics, working with Prof. Subir Sachdev (November, 2020).
- Member of the PhD Qualifying Exam Committee of Pavel Dolgirev, graduate student in Physics, working with Profs. Eugene Demler and Mikhail Lukin (October, 2020).

OUTREACH

- 2023 APS Quantum Scientist To-Go: Virtually visited on 04/13/2023 a class of 8 high school students at the Academy at the Lakes (Tampa, FL). Local Teacher: Ms. Rachel Klaeren.