

Meghna Shankar

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EDUCATION

Massachusetts Institute of Technology, Cambridge, MA

Doctor of Philosophy, Physics | September 2023 - Present

- Advisor: Riccardo Comin

University of Washington, Seattle, WA

B.S. Physics, Computer Science | September 2019 – June 2023

AWARDS AND HONORS

- UW Physics Department Anderson Scholarship (2022)
- Physics departmental honors
- Mary Gates Research Scholarship (Winter and Spring 2022)
- Annual Dean's List (2019-2020 and 2020-2021)

RESEARCH

Research Experience for Undergraduates – Condensed Matter Physics

UW Molecular Engineering Materials Center / Physics Department, June 2022 – June 2023

- Worked in Prof. Xiaodong Xu's lab in the UW physics department using scanning probe microscopy and optics to study properties of 2D transition metal dichalcogenide heterostructures
- Fabricated TMD heterostructures using exfoliation, transfer, electron beam lithography, and metal evaporation techniques
- Analyzed transition metal dichalcogenides with atomic force microscopy, piezoresponse force microscopy, reflectance, photoluminescence, and second harmonic generation measurements to investigate piezoelectric domains in tungsten disulfide
- Presented research with poster presentation, and in multiple journal clubs on relevant literature

Undergraduate Research Assistant – Physical Chemistry

UW Clean Energy Institute / Chemistry Department, March 2020 – June 2023

- Worked in Prof. Cody Schlenker's lab to find near-infrared sensitizers for triplet-triplet annihilation photon upconversion through photoinduced absorption spectroscopy and computational chemistry
- Performed extensive computational study of near-infrared absorbing squaraine molecules with software Gaussian, NWChem, and XTB Crest to inform new experimental directions for project

Directed Reading in Physics

Spring 2022

- Worked with graduate mentor reading scientific literature on discovery of charge-parity symmetry (CP) violation in the weak interaction

Summer Undergraduate Laboratory Internship – Computational Chemistry

Pacific Northwest National Laboratory, June – August 2021

- Performed computational chemistry calculations under mentorship of Prof. Sotiris Xantheas to find efficient near-infrared absorbing molecules for photon upconversion using NWChem and XTB Crest computational software (in conjunction with Schlenker Research Group)
- Wrote SLURM submission scripts to interact with batch submission scheduler on supercomputers
- Wrote Python scripts to facilitate creation, submission, and analysis of jobs and ran them in Linux and Windows environment

TEACHING

Teaching Assistant – Introductory Physics

UW Physics Department, Autumn 2021, Spring 2022

- Taught tutorial and lab and held weekly office hours for first-year electromagnetism course, both as part of Pedagogy in Physics class and as a paid TA

Teaching Assistant – Computer Science

UW Paul G. Allen School of Computer Science and Engineering, Autumn 2020

- Ran weekly discussion section for 20 computer science freshmen to introduce them to UW computer science department resources
- Provided group and individual advice to students on course planning, double majoring, and getting involved in undergraduate research

VOLUNTEER/ OUTREACH

UW Women+ in Physics Leadership Team

September 2022 – June 2023

- Worked on team with undergraduates and graduate students to organize UW Women+ in Physics club, which aims to build community among gender minorities in the physics department
- Organized group events and managed social media/external communications (Discord, Instagram)

UW Physics Mentorship Program Leadership Team

September 2022 – June 2023

- Worked on team with seven undergraduates, graduate students and faculty member to organize UW physics mentorship program, which pairs new undergraduates with a senior undergraduate mentor to help with success in the physics major
- Organized group events (trivia night, undergraduate research panel) and mentor/mentee recruitment, matching and communication
- Advised mentees one-on-one about course planning and applying for research opportunities

SKILLS

- **Experimental Equipment:** Optical microscope, glovebox, transfer stage, atomic force microscope, metal evaporator, scanning electron microscope, optics, cryostat, blowtorch
- **Programs:** Gaussian, GaussView, NWChem, XTB Crest, Origin, Mathematica, Microsoft Office
- **Programming Languages:** Java, Python, C, C++, Linux Bash, Latex

PRESENTATIONS

- Shankar, M., Wang, X., Xu, X. “Piezoelectric Domains in Tungsten Disulfide.” UW Undergraduate Research Symposium, 19 May 2023.
- Shankar, M., Wang, X., Xu, X. “Piezoelectric Domains in Transition Metal Dichalcogenides.” UW Summer Undergraduate Research Symposium, 17 August 2022.
- Shankar, M., Pristash, S., Schlenker, C. W. “Heavy-Atom-Free Sensitizers for NIR-to-Visible Solar Photon Upconversion.” UW Undergraduate Research Symposium, 20 May 2022.
- “Direct and Indirect Charge Parity Violation in K Mesons.” Directed Reading in Physics, 3 Jun 2022.
- “Heavy-Atom-Free Sensitizers for NIR-to-Visible Solar Photon Upconversion.” Pacific Northwest National Laboratory Summer Intern Symposium, 19 August 2021.

ACTIVITIES

University of Washington Symphony Orchestra – September 2019 – June 2023

Unite UW – September 2019, September 2021