Brandon J. Klein

Ph.D. Candidate
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EDUCATION

Johns Hopkins University **2024 - Current**

- Ph.D. in Theoretical Condensed Matter Physics, Expected 2027
- Master of Arts in Physics, 2022 - 2024
- Advisor: Daniel A. Beller
- Research Interests: nematic liquid crystals, soft condensed matter physics, active matter, theoretical biophysics.
- Relevant Coursework: Advanced Statistical Mechanics, Numerical Methods, Condensed Matter Theory, Electrodynamics, Quantum Mechanics.

Rensselaer Polytechnic Institute **2018 - 2022**

- Bachelor of Science in Physics
- Bachelor of Science in Computer Science
- Summa Cum Laude
- Relevant Coursework: Design and Analysis of Algorithms, Computational Physics, Machine Learning from Data.

PUBLICATIONS

- **Klein**, **Brandon** and Soto Franco, Alejandro, and Sabbir, Md Mainul Hasan and Deutsch, Matthew J. and Selinger, Robin L.B. and Mitchell, Kevin A. and Beller, Daniel A., *Limits of Topological Entropy Production in Confined Active Nematics*, *In Preparation*, 2025.
- Mitchell, Kevin A. and Sabbir, Md Mainul Hasan and Geumhan, Kevin and Smith, Spencer A. and **Klein**, **Brandon** and Beller, Daniel A., *Maximally mixing active nematics*, Phys. Rev. E, 2024, 109, 014606.
- **Klein**, **Brandon** and Liang, Liangbo and Meunier, Vincent, *Low-Frequency Raman Active Modes of Twisted Bilayer MoS_2*, Journal of Physics: Condensed Matter, 2024, 36, 365301.

EXPERIENCE

- Graduate Teaching Assistant Fall 2022 - Spring 2023, Fall 2024
  -Physics 1, Physics 2 at Johns Hopkins University
- NSF REU Summer 2021 - Summer 2022
  -Interdisciplinary Computational Material Physics, Advisor: Vincent Meunier
- Software Engineering Intern at GlobalFoundries Fall 2020
  -Optical Proximity Correction Intern, Supervisor: Tamer Desouky
- Undergraduate Facilitator and Senior Mentor Spring 2019 - Fall 2021
  -Honors Physics 1, Physics 1, Foundations of Computer Science, Theoretical Mechanics, Thermodynamics & Statistical Mechanics at RPI

CONFERENCES AND TALKS

- Gordon Research Conference on Liquid Crystals, *invited speaker at seminar*, 2025
- APS March Meeting, *oral contribution*, 2025
- University of Pennsylvania Soft Matter Center Kickoff, *poster presentation*, 2024
- International Liquid Crystal Conference, *oral contribution*, 2024
- Banff International Research Station Workshop on Active Matter, *invited speaker*, 2024
- APS March Meeting, *oral contribution*, 2024
- University of Massachusetts Amherst Soft Solids and Complex Fluids Summer School, *poster presentation*, 2023

AWARDS

- RPI Leadership Award
- RPI Bicentennial Award
- Nadia Trinkala Service Award (for contributions to the city of Troy).
- Upsilon Pi Epsilon (UPE) International Computing and Information Disciplines Honor Society.

TECHNICAL SKILLS

- C, C++, Java, Javascript, MIPS, Perl, Python, Rust.
- Data visualization and analysis.
- Unix, SSH, Bamboo, and Git.
- Monte Carlo methods.
- Numeric PDE methods.
- Machine learning in PyTorch, Keras, and Sklearn.
- Limited working proficiency in Mandarin Chinese.

REFERENCES

- Daniel A. Beller at Johns Hopkins University: d.a.beller@jhu.edu
- Yi Li at Johns Hopkins University: yili.phys@jhu.edu
- Vincent Meunier at Pennsylvania State University: Vincent.Meunier@psu.edu