Lijie Ding

Ph.D Candidate (401)-410-4049 Lijie_Ding@Brown.edu

Education

Ph.D. (Physics), Brown University 2017-2022 (expected)
Research interests: Soft Matter, Computational Physics
Advisor: Robert A. Pelcovits and Thomas R. Powers

B.Sc. (Applied Physics), University of Science and Technology of China 2013-2017
Thesis: Irreversible Monte Carlo Algorithms
Advisor: Youjin Deng

Experience

Monte Carlo simulation of chiral fluid membrane 2018-present
Research Assistant, Brown University

- Designed **quantitative models** and implemented Monte Carlo simulation for **complex systems** using **C++**.
- Worked with computing cluster using **Slurm** workload manager in commend-line interface.
- Analyze and visualize data using **Python**. Present results to people with different backgrounds.

Controlled DNA Brownian motion using electrokinetic noise 2017-2018
Teaching Assistant, Brown University

- Proposed and tested the **stochastic process** modeling hypothesis for the system studied.
- Designed and implemented **image processing** program for DNA molecule tracking, and analyzed **time-series** data using **Python** and **OpenCV**.
- Carried out experiment in collaboration with others.

Irreversible Monte Carlo algorithms 2015-2017
Undergraduate Research Assistant, University of Science and Technology of China

- Designed state-of-the-art Monte Carlo **algorithm** and implemented it using **C++**.
- Carried out **efficiency benchmarking**, and analyzed data using **Python**, up to 14,100% improvement were achieved.

Skills

Programming: C++, Python, Mathematica, Matlab, Shell, Latex, HTML/CSS.
Software: Numpy, Scipy, OpenCV, Matplotlib, Blender, Git.
Technical: Complex systems modeling, Statistical algorithms development, Data analysis and visualization.

Publications

1. Lijie Ding, Robert A. Pelcovits, and Thomas R. Powers. Deformation and orientational order of chiral membranes with free edges. *Soft Matter*, 17:6580–6588, 2021
2. Lijie Ding, Robert A Pelcovits, and Thomas R Powers. Shapes of fluid membranes with chiral edges. *Physical Review E*, 102(3):032608, 2020
3. Shayan Lameh, Lijie Ding, and Derek Stein. Controlled amplification of dna brownian motion using electrokinetic noise. *Physical Review Applied*, 14(5):054042, 2020
4. Eren Metin Elçi, Jens Grimm, Lijie Ding, Abrahim Nasrawi, Timothy M Garoni, and Youjin Deng. Lifted worm algorithm for the ising model. *Physical Review E*, 97(4):042126, 2018