

Summer 2023 5/22-7/28

## Summer Undergraduate Research Experience (SURE) in Data Science and Computational Math

Students will gain insight into some hot topics with hands-on research experience as they interact with graduate students and faculty while learning how to work as a team member and understand how to conduct real-world research.

**Participants will receive a stipend of \$550 per week.**

The applicants are required to have a *foundational background in mathematics* (calculus, differential equations, and linear algebra) and some *programming skills*. All applications received by **March 15th** will receive full consideration. Applications will be received until the positions are filled. The SURE program anticipates funding from the National Science Foundation, which is gratefully acknowledged.

Apply Scan



### Speedier Simulations

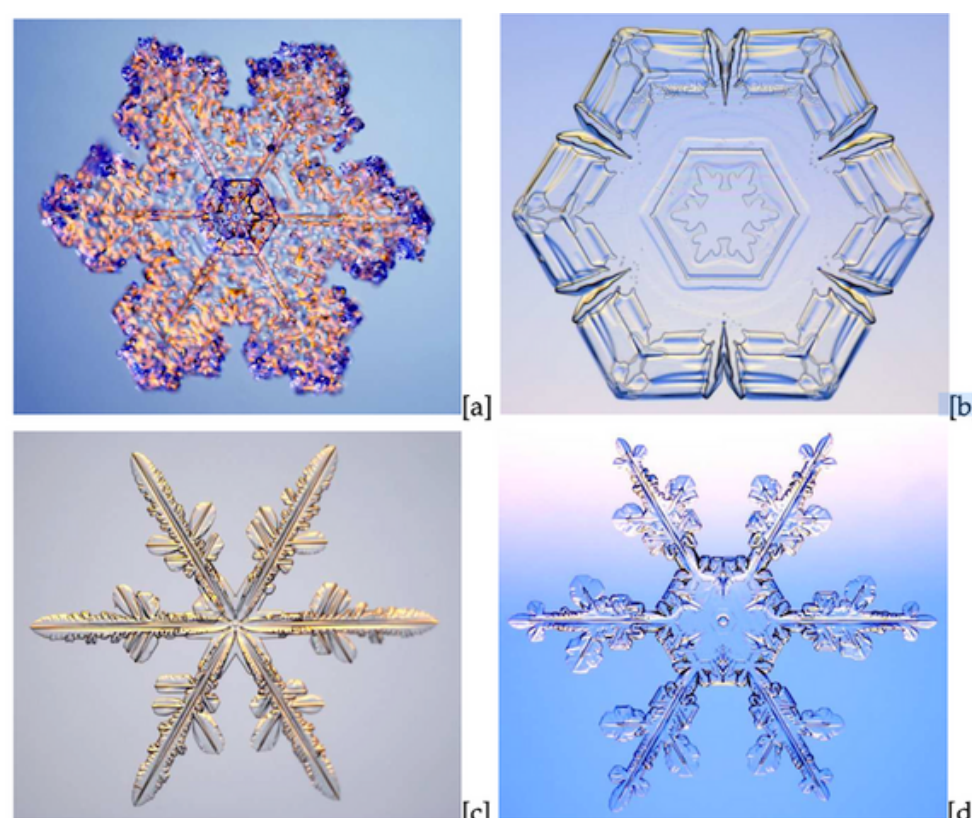
Advisers: Dr. Sou-Cheng Choi  
and Dr. Fred Hickernell

Monte Carlo methods are used to solve problems involving uncertainty, such as financial risk and geophysical problems whose parameters are not known precisely. The speedy simulations research group develops and implements algorithms in an open-source Python package called QMCPy that speeds up Monte Carlo simulations. By joining the speedy simulations research group, students will experience teamwork, learn to identify and solve research problems, follow good practices in technical software development, and hone their communication skills.

### From the formation of snowflakes to crystal growth

Adviser: Dr. Shuwang Li

In this project, students will learn the underlying physics of snowflake formation and evolution. In particular, students will be exposed to the general concepts of mathematical modeling and hands-on scientific computing.



### Learning and modeling collective behaviors

Advisers: Dr. Yubin Lu  
and Dr. Ming Zhong

In this project, students will learn how to model collective behaviors with the help of proper machine-learning tools and possibly validate the learning method on experimental data.

