



NSF-Duke-NCSU-UNC

**Interdisciplinary Workshop for Undergraduate Students**

**May 28 - June 2, 2019**

**PROJECT ABSTRACT**

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**Project IV – Sampling for ODEs**

*“How to sample for equation learning methods”*

**Abstract:**

While not required, an understanding of ordinary differential equations will be helpful with this project (some knowledge of partial differential equations would allow one to work on even more interesting aspects of this project!)

Differential equation models are used to model many scientific systems, including biological population growth, stock market fluctuations, and heat transfer. Typically, a model may be fit to noisy experimental data as a means to understand the system under consideration. Recent equation learning methods aim to reverse this process and instead learn the underlying differential equation(s) from noisy data. There are many unknown aspects of these methods, however, which leaves a plethora of areas for exploration. This project will focus on determining which locations of a dataset are most informative for learning the true underlying differential equation.