MATH RESEARCH AT UNC CHARLOTTE 2023

Project 2: The study of COVID-19 via time-delayed differential equations

Mentor: Dr. Xingjie Helen Li

Project description

In this project we will study a mathematical model in epidemiology that uses differential equations to model the spread of a disease. This will be applied to simulate the growth trajectory of confirmed cases of COVID-19 in each county in the state of Florida. Students will learn concepts of the system of time-delayed Susceptible-Infected-Recovered (SIR) equations. In addition, students will compare several classical numerical tools of solving differential equations via MATLAB with modern machine learning tools of the Neural ODE via Python.

The students are expected to produce a poster and a project report by the end of summer. Further, the results are expected to be submitted for publications to a research journal.