Sharon Crook  
Arizona State University  

Professor Crook holds a joint appointment with the School of Mathematical and Statistical Sciences and the School of Life Sciences at Arizona State University. She uses computational approaches to study the dynamics of neurons and networks of neurons, as well as the mechanisms underlying changes in these cells and networks due to trauma, learning, or disease. She also contributes to the development of NeuroML, an international effort to create a common standard for describing computational models for neuroscience research. NeuroML is part of an ecosystem of tools to promote reproducibility, model sharing, and community-based collaborative model development in computational neuroscience research.

For more information please see mathstats.uncg.edu/events/computational-mathematics/ or contact Xiaoli Gao at x_gao2@uncg.edu

Spring 2020  
Helen Barton Lecture Series  
Computational Mathematics  

Title: Data Driven Models in Neuroscience: A Mathematical Success Story

Building on early work that speculated on the nature of the electrical properties of neurons, Hodgkin and Huxley developed data-driven models for an excitable membrane that still serve as the basis of many neuroscience models today. A decade later, Rall extended these ideas in order to model how the spatial properties of neurons inform the dynamics of their electrical behavior. In this talk, I will discuss how these approaches are being used today to develop data-driven models that are appropriate for answering questions about the mechanisms underlying neural computation in the era of large-scale data. I will examine the issues that arise as novel technologies bring more and more data to the field, and I will introduce some of the tools the community is developing to deal with these issues.

Friday, January 24, 2020  
Reception · Petty 116 · 3:30 – 4:00 PM  
Lecture · Petty 150 · 4:00 – 5:00 PM