

Applied Math Seminar scheduled on Wednesday, November 13, 2019, 2:30-3:30pm, SQ102

Speaker: Dr. Casey Johnson (Claremont Graduate University)

Title: Stability of a Neuroendocrine Model

Abstract:

The hypothalamic-pituitary-adrenal (HPA) axis responds to physical and mental challenges to maintain homeostasis partly by controlling the body's cortisol level. Dysregulation of the HPA axis is implicated in numerous stress-related diseases such as post-traumatic stress disorder (PTSD). There have been several mathematical models of the HPA axis proposed in literature. In this talk, I will focus on a structured model of the HPA axis that includes the glucocorticoid receptor with a time delay. Setting the delay equal to zero, we will analyze stability for the nonlinear system. Then I will explain how to incorporate the time delay and what changes it causes to the stability of the system.