1154-92-2498 **Kayleigh Campbell** (kacampbell@wpi.edu), **Laura Staugler*** (lstaugler@wpi.edu) and **Andrea Arnold** (anarnold@wpi.edu). *Estimating Time-Varying Applied Current in the Hodgkin-Huxley Model.*

The classical Hodgkin-Huxley model is widely-used for understanding the electrophysiological dynamics of a single neuron. While applying a constant current to the system results in a single voltage spike, it is possible to produce more interesting dynamics by applying time-varying currents, which may not be experimentally measurable. The aim of this work is to estimate time-varying applied currents of different forms given voltage data. In particular, we utilize an augmented ensemble Kalman filter with parameter tracking to estimate three different applied currents, analyzing how the model dynamics change in each case. We further test the efficiency of the parameter tracking algorithm in this setting by exploring the effects of changing the parameter drift variance and the frequency of data available on the resulting applied current estimates. (Received September 17, 2019)