1135-37-119 **Daniel Olszewski***, Department of Mathematics, Carroll College, Helena, MT 59625, and **Mariya Savinov**, Department of Mathematics, University of Pittsburgh, Pittsburgh, PA 15260.
Controlling period-2 electrical activity in a cardiac cell model.

Ordinary differential equations allow us to model the behavior of single cardiac cells in response to stimuli. Extending these equations into a cable of cells, we get a set of partial differential equations that describe the flux of voltage and ions across the cable. We study a specific dynamic exhibited by these systems called alternans. Electrical alternans, the beat-to-beat alternations of cellular action potential duration (APD) and/or intracellular calcium concentration amplitude (peak ci), is a dynamical state that often precedes life-threatening arrhythmia, which is characterized by the irregular propagation of electrical waves and is the leading cause of sudden cardiac death. Previous efforts aimed at controlling alternans have utilized mathematical models that primarily exhibit voltage-driven alternans; here, we consider the impact of intracellular calcium mechanisms. We utilize the Shiferaw-Fox et al. cardiac action potential model, which is capable of both voltage- and calcium-driven alternans, for a single cell (0D) and for a cable of cells (1D). Our results indicate that the success of strategies to control cardiac alternans in experimental and clinical settings may depend on the mechanism underlying alternans. (Received July 29, 2017)