

1035-92-1340

John Gordon Alford* (jalford@shsu.edu), Sam Houston State University, Department of Mathematics and Statistics, Huntsville, TX 77341. *Deterministic Models of Initiation and Propagation of Unidirectional Excitations (Action Potentials) In Excitable Media*. Preliminary report.

This talk will present the computations and analysis of some differential equation models which simulate initiation of unidirectional excitations (action potentials) in excitable media. The models depend on a heterogeneous distribution of stimulus and coupling (or diffusion) parameters. In the case of circular spatial domains, unidirectional propagation may result in a rotating wave which is referred to as re-entrant arrhythmia in cardiac tissue. The equilibria and steady-states are computed in order to determine the critical parameter values and ranges over which unidirectional propagation may occur. (Received September 19, 2007)