

Meeting: 1006, Lubbock, Texas, SS 16A, Special Session on Partial Differential Equation and Its Application in Biomedical Study

1006-92-205 **John Alford Alford*** (jalford@math.tulane.edu), Mathematics Department, Tulane University, 6823 St. Charles Ave., New Orleans, LA La 70118. *Effects of Diffusion and Stimuli on Bifurcating Rotating Waves In Excitable Media.*

If a ring of cardiac tissue is stimulated with an electrical current, a rotating wave of electrical activity may be initiated and sustained. The diffusive FitzHugh-Nagumo (FHN) equations model rotating waves on a circular ring. This talk will present the results of a two parameter study of the FHN equations. These parameters control a uniform current stimulus and the diffusive properties of the medium. If these parameters satisfy a simple algebraic relationship, there may be rotating wave solutions of the FHN equations which bifurcate from the equilibria. Simulations yield entire branches of bifurcating rotating waves that exhibit bistability and changes in bifurcation direction. Finally, the FHN equations are a good qualitative model of the wavespeed when cardiac cell resting potential is altered (Received February 15, 2005)