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*Stimulated Unidirectional Propagation in Heterogeneous Excitable Media.*

Deterministic models of signal and wave propagation in excitable media are formulated and analyzed. A particular heterogeneous distribution of stimulus and coupling (or diffusion) parameters are shown to initiate unidirectional propagation. Both time-dependent and space-time-dependent models are considered. Equilibria and steady-states are computed in models without recovery to determine the critical parameter ranges over which unidirectional propagation may be initiated. The biological implications are discussed. Simulations show that the model parameter set can initiate and sustain a rotating wave on a circular spatial domain (known as re-entrant arrhythmia in cardiac tissue). (Received November 29, 2007)