



Universidad  
Carlos III de Madrid

## Seminario del Instituto Gregorio Millán

### **Bifurcation in the Echebarría-Karma modulation equation for cardiac arrhythmias**

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#### **Resumen**

Alternans, the simplest cardiac arrhythmia, is considered to be a precursor of fibrillation, possibly leading to sudden cardiac death. This term refers to behavior in which, under uniform periodic pacing, the response of the heart alternates between short and long action potentials. Moreover, in extended tissue, the phase of the short-long alternation varies with both position and time. The full mathematical description of these phenomena via reaction-diffusion PDE is difficult to analyze. A more tractable approximation-the Echebarría-Karma modulation equation-captures the dynamics at least qualitatively. Solutions of this equation are vulnerable to both steady and time-dependent instabilities. This lecture will focus on the bifurcation phenomena that result from the interaction of these two instabilities.

- **DÍA Y HORA: Miércoles 18 de noviembre de 2009 a las 12:30**
- **LUGAR: Edificio Sabatini. Aula 2.1.D04**