

Department of Mathematics Distinguished Visitor's Lecture Series
November 28-30, 2007

Professor James Keener
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Wednesday November 28 - 3:30 p.m. in room 105 MLH

Title

Arrhythmias by Dimension

Abstract:

Abnormalities of function of the cardiac conduction system are the cause of death of hundreds of people every day. For that reason, the study of cardiac arrhythmias is of great interest from a medical and scientific perspective. However cardiac arrhythmias are also interesting for mathematical reasons because the cardiac conduction system can be viewed as a dynamical system and the variety of its behaviors can be studied from the viewpoint of dynamical systems theory. In this talk, I will give a classification of cardiac arrhythmias that is based on spatial dimension, and is therefore useful for mathematicians, but probably not (as much) for physicians. I will describe examples of zero dimensional arrhythmias (abnormalities of single cells), one dimensional arrhythmias (Wolff-Parkinson White Syndrome), two dimensional arrhythmias (atrial flutter), and three dimensional arrhythmias (ventricular tachycardia and fibrillation).