The Mathematics of Cardiac Arrhythmias, or, What do Forest Fires, Greek Columns and Cardiac Arrhythmias have in Common?

Speaker: James Keener
Room: TLC2 (232 Philip G. Hoffman Hall)
Date/Time: November 11th, 4pm-5pm

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.

The purpose of this talk is to give an overview of how mathematical modeling can give insight into the behavior of the cardiac conduction system, its normal and abnormal function.

In particular I will describe how reentrant arrhythmias are initiated and how they are maintained in time, asking, but not completely answering, what might be done to prevent these from occurring.