



Physics Department - University of South Alabama
Presents Colloquium Speaker



Dr. Mark Byrne
Spring Hill College

Thursday, October 13, 2011
3:30-4:30 P.M., ILB 250



Tick, Tock: Simulating a Molecular Clock

In this talk I will briefly review the nature and scope of various types of information being acquired at the molecular level from cells and mention various challenges we face in integrating this type of data into the creation of mathematical models of various biophysical processes. One of the simplest biophysical systems which displays interesting dynamics is the circadian (≈ 24 hr) clock from cyanobacteria. It is the first and only known molecular circadian clock which functions outside a cell (in a test tube) and consists of just three distinct proteins. Recent direct numerical simulations of the clock using a stochastic matrix model with rates constrained by experiment indicate specific molecular mechanisms necessary for maintaining synchrony; similar mechanisms may also be operative in clocks from higher organisms or more generally in other intracellular processes where population synchronization is needed for temporal precision.

Refreshments are served at 3:15 P.M.

Host: Dr. R. Godang