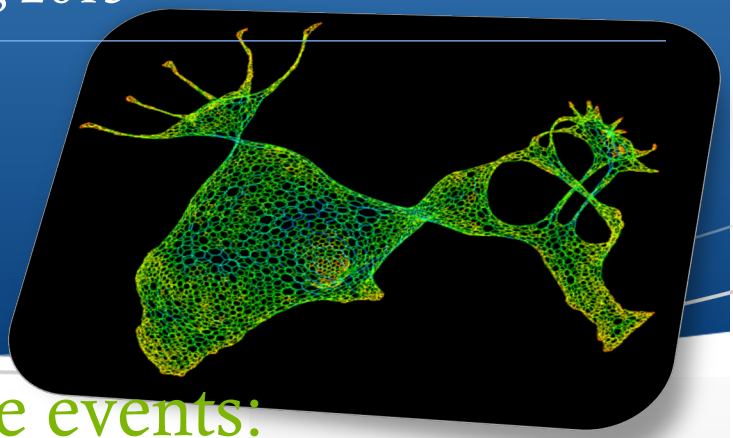
Applied Math Seminar

Spring 2015

United States Naval Academy
Tuesday March 31, 2015
12 noon, Room CH 351



Modeling epidemic rare events:

A dynamical systems perspective of disease extinction and control

As seen by the many new vaccination and treatment campaigns across the world, disease control is of paramount importance in public health with eradication as the ultimate goal. Without intervention, disease extinction in a large population would be what is known in the field of stochastic processes as a rare event. In this talk, I will review some of the mathematical models and machinery used to describe the underlying dynamics of rare events in finite population disease models. I will show how to derive a new model that includes a dynamical systems description of the most probable fluctuations of the noise that drives the disease to extinction. Dynamical systems analysis of the new model reveals how to best use disease controlling resources. I will also discuss how such extinction processes and the math machinery can be applied to predicting stochastic disease extinction in random networks.

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Speaker

Ira Schwartz

ira.schwartz@gmail.com

Nonlinear Systems Dynamics

Naval Research Laboratory, Washington, DC

Organizer:
Reza Malek-Madani, United States Naval Academy rmm@usna.edu