Jim Yorke at 40*

A lecture series describing current research of the applied nonlinear dynamics group

All lectures are on Mondays at 4 p.m.
Department of Mathematics Colloquium Room (Rm. 3206)
URL: www.ipst.umd.edu/~yorke/current-projects.html

➤ **Chaos and weather prediction** (November 3)

We are using nonlinear dynamics to better determine what the current state of the atmosphere is - so that meteorologists have a better starting point for predictions. The model of the weather that we use was developed by the National Weather Service. It has about 3 million variables.

➤ **Modeling the population dynamics of HIV/AIDS** (November 10)

Our models reveal why the US gay HIV epidemic exploded years before the Sub-Saharan epidemic. HIV entered the U.S. population from African sources. It thus is surprising that the U.S. gay epidemic exploded over a decade earlier than the African one. We estimate how the infectiousness of a person varies as the disease progresses.

➤ **Almost Every Observation: A Mathematical theory of measurement** (November 17)

When a laboratory experiment (like a moving fluid) is oscillating chaotically, the state of the experiment is revealed only by simultaneously measuring a limited number m of variables in the experiment, such as fluid flow rates at different points, or temperatures or other physical measurements. In The Republic, Plato has Socrates discuss the very limited nature of observation. He says we do not see reality but only limited images or shadows of reality.

*that is, forty years at the University of Maryland