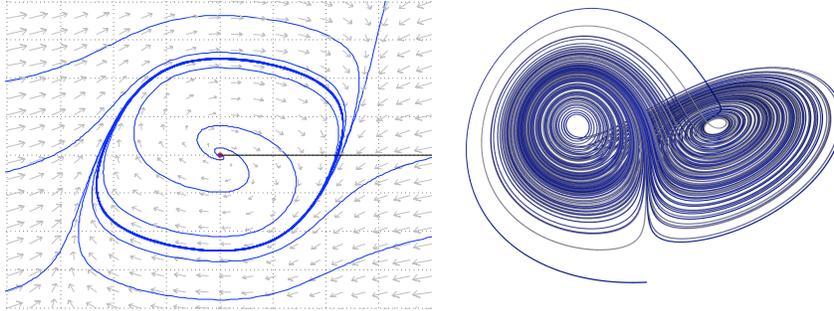


SAN JOSÉ STATE UNIVERSITY

DEPARTMENT OF MATHEMATICS

FALL 2013

Math 134: Dynamical Systems



Instructor: SLOBODAN SIMIĆ, simic@math.sjsu.edu

Time and place: MW 1:30-2:45 in MH 234

Prerequisite: MATH 133A or instructor consent

Textbook: M. W. Hirsch, S. Smale, and R. L. Devaney, *Differential Equations, Dynamical Systems and an Introduction to Chaos*, 3rd edition, Academic Press (Elsevier), 2013

What this course is about: It has long been known that only a miniscule fraction of differential equations can be solved explicitly. Since the sciences and engineering – as well as mathematics – abound in important “unsolvable” differential equations, we need other ways for understanding their solutions. This is where geometry, topology, and computers come to the rescue! Following pioneering ideas of Poincaré, we focus on **qualitative analysis** and ask: what is the asymptotic behavior of “typical” solutions? In MATH 134 we will view differential equations as dynamical systems, i.e., systems which change with time. We will explore the van der Pol oscillator, the Lorenz attractor (both pictured above), the Solar system, and many more. After taking MATH 134 you will finally be able to understand how Ian Malcolm the Chaos Expert from “Jurassic Park” saved the world from dinosaurs!

Web page: Go to <http://www.math.sjsu.edu/~simic/> and click on Math 134.