

**Chaotic dynamical systems, 5B1490, fall 2006**

**1. One dimensional maps**

- a) Symbolic dynamics; conjugations
- b) The Feigenbaum perioddoublings
- c) Chaotic behavior

**2. Dynamics in higher dimensions**

- a) Smale's horseshoe
- b) Torus maps
- c) Stable and unstable manifolds
- d) Attractors; Hénon map
- e) Bifurcation theory

**3a. Complex dynamics**

- a) Julia sets
- b) The quadratic family; The Mandelbrot set

**3b. Time continuous systems and ordinary differential equations**

- 1) The Poincar-Bendixsson theorem
- 2) Stable and unstable manifold theory for flows (=time continuous dynamical systems)

*OBS. Only one of the alternatives 3a and 3b will be covered in the course. The choice of which one depends on the interests of the participants.*