Nonlinear Physics:
Modeling Chaos & Complexity

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Homework 6

Covering *NDAC* Sections 12.0 - 12.3.

This is the *last* dynamics homework! There will be programming homework, but on Python coding methods that you will need for your project.

This week's homework has the same format as last week's: There is a lot of overlap between the dynamic problems and the programming problems. In particular, you will need the programs you produce for the programming homework for some of the problems below.

Where appropriate use, and possibly modify, the 2D map and ODE programs presented in class (and available from our Python Programming Labs page). In these cases, turn in a screen capture of the associated graphics. (EPS, PDF, or tiff of the graphics also fine.)

1. Problem 12.1.4 (Baker's Map.)
2. Problem 12.1.9 (Standard Area-Preserving Map.)
3. Problem 12.2.8 (Henon Map.)
4. Problem 12.2.9 (Invariant Set in the Henon Map. Do this by modifying the HenonMapLines.py program, which iterates lines of initial conditions.)
5. Problem 12.3.1 (Rossler ODE exploration: Make a variant of the LorenzODE.py program.)

Homework due one week after being assigned.