Nonlinear Physics:
Modeling Chaos & Complexity

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WWW: `http://cse.ucdavis.edu/~chaos/courses/nlp/`

Homework 5

Covering *NDAC* Sections 10.0-10.4.

There is almost, but not quite, complete overlap between the dynamics problems here and the programming exercises.

Where appropriate use, and possibly modify, the 1D map programs presented in class (and available from the class Python Programming Labs webpage) to answer the following problems. Be sure to turn in any associated graphics required by the problems.

Note that when *NDAC* says "orbit diagram" it means "bifurcation diagram".

1. Problem 10.2.6 (Cosine map)
2. Problem 10.2.8 (Cubic map) There are multiple basins of attraction. Use several initial conditions to reveal the attractors.
3. Problem 10.4.1 (Exponential map)
4. Problem 10.4.4 (Write a program that finds: Superstable period-3 orbit)
5. Problem 10.4.5 (Band-merging and crisis of periodic windows)
6. Problem 10.4.6 (Superstable cycle)
7. Problem 10.5.5 (Tent map)

Homework due one week after being assigned.