PHYSICS 573: NUMERICAL METHODS

PHYSICS 643: COMPUTATIONAL PHYSICS

HOMEWORK ASSIGNMENT 7

Due: March 22, 2022

- Perform a numerical solution of some 2nd order, ordinary differential equation that arises in physics. (ODE must not be simply F = ma, i.e. homogeneous with all constant coefficients.)
- Briefly describe (in a README file) a specific physics problem for which this equation arises.
- For an extra challenge, use an algorithm that is at least as sophisticated as Runge-Kutta 4th–order and chose a differential equation with an intriguing class of solutions.
- For an extra challenge, numerically explore the range of solutions to your previous differential equation by continuing to adjust either parameters or initial conditions. (An example was the superimposed Van der Pol solutions in Lecture 14.)
- Save your source code, README file, program, and program output at ~/p643/outbox/home7.
- (As usual, follow the general guidelines from the end of Assignment 3.)

Assignments are posted at our Instructure Canvas course site https://utk.instructure.com. Other information concerning this class is available at http://sites.google.com/site/utkp643.