

**Phys 410**

**Fall 2013**

**Homework #11**

**Due Thursday 12 December, 2013**

All problems are from Taylor, *Classical Mechanics*.

- 1) Problem 12.6 Solve the DDP equation of motion for the nearly linear case [*Note that Mathematica code for solving this equation is available on the class web site*]
- 2) Problem 12.10 DDP with period doubling
- 3) Problem 12.13 The Lyapunov exponent
- 4) Problem 12.14 Quantifying sensitivity to initial conditions
- 5) Problem 12.16 The time-horizon for predictions
- 6) Problem 12.19 State space of a simple harmonic oscillator
- 7) Problem 15.3
- 8) Problem 15.7 Time dilation
- 9) Problem 15.13 Apparent rotation of a moving meter stick
- 10) Problem 15.15 Inverse Lorentz transformation

Extra Credit

- 1) Problem 15.10 Detailed examination of time dilation

Download Mathematica for free: <https://terpware.umd.edu/Windows/Package/2032>

Download Matlab for free: <https://terpware.umd.edu/Windows/Package/2053>