Zewail City of Science and Technology

PEU Program, Fall 2018-19

PEU 450: Computational Physics

Homework 8

Due date: Thursday, Nov 8th



- 1. **Problems 4.3, 4.5, 4.8**. 10 points each. Notice that there are three cases for 4.5. Consider the first one for elliptical and circular orbits.
- 2. Precession of the perihelion of Mercury. Use the code you developed in class to reproduce
 - (a) (2 points) Figure 4.8;
 - (b) (6 points) Figure 4.9;
 - (c) (12 points) Figure 4.10. Then calculate the precession rate due to the theory of general relativity.
- 3. Use **NDSolve** to study the chaotic tumbling of hyperion in Sec. 4.6. Basically reproduce plots similar to figures 4.17 4.19.