

Physics 566 Problem Set #1

Reading: CP Chapters 2 and 3.

Available January 17th

Due January 24th

I would like you to do the following problems in a Jupyter notebook. You should introduce each problem with Markdown text. Also, at the top of the notebook you should label the homework, give your name etc. It would also help me if you use your name in the name of the notebook so I don't have a bunch of files all with the same name.

You should use good programming style. Comment your programs well, use descriptive variable names. Use `print()` statements to print out your answers in a readable and well formatted way. I will pay attention to readability and style. Think of the formatting as if you were writing a report. Use Markdown headings to label the Homework assignment and each problem etc. “CP 2.5” means Exercise 2.5 in “Computational Physics” by Mark Newman. Make sure you do the **Exercise** and not the examples. The exercises are spread throughout the chapter.

Please turn in (by attachment in the Sakai assignment) both a PDF exported version of the notebook and the .ipynb file itself.

(1) CP 2.5

(2) CP 2.6 Do parts b) and c). Don't have the program ask for values, but rather make part b) a user defined function and then call that function in part c) printing out the period (in days and years) and the eccentricity for both Earth and Halley's comet.

(3) CP 2.9 As a check, the true value for Sodium Chloride is about 1.748

(4) CP 3.6 [Plotting Chaos]

(5) CP 3.7 [Plotting the Mandelbrot Set]