Phys 194–FYRE PS 2

Given: Sep 13, 2017. Due: Sep 20, 2017

Homework Policy: You can consult class notes and books. Always try to solve the problems yourself; if you cannot make progress after some effort, you can discuss with your classmates or ask the instructor. However, you cannot copy other's work: what you turn in must be your own. Make sure you are clear about the process you use to solve the problems: partial credit will be awarded.

Problem 1   Learning Python

Go to `https://groklearning.com`. Try to finish all of units 1 and 2. Let us know if that's a problem.

Problem 2   Pulsars

The formula for a pulsar's magnetic field given its period P (measured in s) and spin-down $\dot{P}$ (measured in s/s) is:

$$B = 3.2 \times 10^{19}\,\mathrm{G}\sqrt{P\dot{P}}$$

and the approximate formula for it's age (in seconds) is:

$$\tau = \frac{P}{2\dot{P}}$$

Take a pulsar born on your birthday with an initial spin period of $10\,\mathrm{ms}$ and a magnetic field of $10^{12}\,\mathrm{G}$.

   a. What is its spin-down $\dot{P}$ at birth?

   b. What is its current period?

   c. If you estimate its age using the formula above, is that a good or a bad result? Why or why not?