

Astron 300 Problem Set 4

Due: Wednesday, Oct 6 at the beginning of class

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.

Reading: Carroll & Ostlie, Chapter 5.4, 10.3, 3.3, 3.4, 5.2, 9.3

Problem 1 C&O, 3.2

Problem 2 C&O, 3.7

Hint: look at radiation pressure earlier in Chapter 3. Specifically, eqns. 3.13 and 3.14. In those equations, $\langle S \rangle$ is the average amplitude of the Poynting vector. However, this has units of W m^{-2} , just like flux, so you can use them interchangeably in this context.

Problem 3 C&O, 3.8

For part (a), compare this answer with how much energy you take in each day through your food.

Problem 4 C&O, 3.9