

# Astronomy 16 – Modern Astrophysics

Fall 2014

Homework 4

due: Wednesday, October 22, 5 pm

It is very important to present your solutions neatly and clearly. Use units when appropriate, state where your numbers come from, explain what you're doing. Use sketches when you think they'd be useful.

Some questions ask for interpretation. You can't get full credit without answering those parts of the questions.

Hand in the homework in the box on the wall outside my office door by 5:00 pm on Wednesday.

1. Ryden & Peterson problem 15.1 (p. 374).
2. Ryden & Peterson problem 15.4 (p. 374).
3. Ryden & Peterson problem 15.10 (p. 375). Do the integrals by hand – and neatly!
4. Ryden & Peterson problem 14.3 (p. 349). Start with equation 15.5, and I highly recommend you first derive an expression for  $P_c$  that's a function of  $R/R_{\text{sun}}$  and  $M/M_{\text{sun}}$ . Once you have that equation, it will be easy to evaluate the central pressure for each of the three stars. For full credit, explain the physical cause of the trend you've found.