

Assignment #7 PY 541 Week of Oct. 23–27, 2006

Reading: After completing the treatment of white dwarf stars, we will discuss ideal Bose systems. For the latter topic, please read sections 1–3 of chapter 7 in the text. You may also find sections 12.1 – 12.3 of Huang to be useful. The main applications of Bose gases that we will cover are Bose-Einstein condensation, and the thermodynamics of photons and phonons.

Problems: Due Thursday Nov. 2. Please note that the earlier problems closely parallel problems that I assigned previously for ideal Fermi gases.

1. Pathria 7.5.
2. Pathria 7.8.
3. Pathria 7.12.
4. Pathria 7.18. Instead of part (iii), please do the following subproblem: Assume that the Earth is a black body of radius 6400 km and that the earth-sun system is in a steady state energy balance, estimate the surface temperature of the Earth.