Physics 214A
Problem Set 8
Fall 1997

Problem 22.

Some stars (supernovae) can be viewed as black bodies radiating both photons and neutrinos (neutrinos are massless fermions). What is the spectrum and total radiation of neutrinos by a supernova at temperature T and radius R?

Problem 23 (20 points).

Particles in three dimensions obeying Fermi-Dirac statistics have an energy momentum relation $\epsilon = ap^b$; a, b are constants.

a. Find the density of states.

b. There is a relation $PV = cE$; what is c?

c. Calculate C_v at low T.