

## PHY410 Homework Set 9

1. [5 pts] Kittel-Kroemer, problem 7-12.
2. [5 pts] In the *Physics Today* article by Collins, August, 1995, vol. 48, no. 8, p. 17, it is stated that a Bose-Einstein condensate of about 2000  $^{87}\text{Rb}$  atoms forms at a temperature of  $170 \times 10^{-9}$  K. Use the theory of the condensate from the textbook to estimate the concentration of Rubidium atoms in the sample. What is the mass density? Assuming a sample in the form of a sphere, what is the radius?
3. [5 pts] Kittel-Kroemer, problem 8-2.