

**PHY 410**

**HW#4**

Assigned 1 Feb 10: Due 8 Feb 10

- 4.1 Problem 1, Chapter 3 of Kittel and Kroemer (Text) (10 points)
- 4.2 Problem 2, Chapter 3 of Kittel and Kroemer. (10 points)
- 4.3 Problem 3, Chapter 3 of Kittel and Kroemer. (10 points)
- 4.4 Consider three magnets (moment  $m$ , field  $B$ , pointing either up or down). Write down all the microstates and their energies. Calculate the partition function  $Z(3,\tau)$ . Show that  $Z(3,\tau) = [Z(1,\tau)]^3$ . We have calculated  $Z(1,\tau)$  in the lecture.

$$Z(1,\tau) = 2 \cosh\left(\frac{mB}{\tau}\right)$$