Phys 404
Spring 2011
Homework 5, CHAPTERS 3 and 4 REVISED
Due Thursday, March 3, 2010 @ 12:30 PM

The first hour exam is Thursday, March 10. It will cover Chapters 1-4 (roughly) in the text. Books, notes, formula sheets, cell phones, and calculators may not be used during the test.

Chapter 3 assignment: Read chapter 3, then do these problems in chapter 3:

1. K+K, Chapter 3, Problem 9

2. K+K, Chapter 3, Problem 2, part (a), only. Expand the magnetization in the limit of small ($mB << \tau$) and large ($mB >> \tau$) magnetic fields.

3. K+K, Chapter 3, Problem 6

4. K+K, Chapter 3, Problem 11 Hint: Follow the process for the 3D ideal gas that we did in lecture. Treat the particles as indistinguishable.

Chapter 4 assignment: Read chapter 4, then do these problems in chapter 4:

~~**5**. K+K, Chapter 4, Problem 1~~ **These problems are moved to the NEXT HW assignment**

~~**6**. K+K, Chapter 4, Problem 2~~

~~**7**. K+K, Chapter 4, Problem 5~~

~~**8**. K+K, Chapter 4, Problem 7~~

General hints:

1. Find the free energy directly from the partition function.

2. Do the first problem in the list before doing the next, then use the generalization of the first problem, that the partition function for N independent *distinguishable* systems is $Z(\mathbf{1+2+3+...+N})=Z(\mathbf{1})Z(\mathbf{2})Z(\mathbf{3})...Z(\mathbf{N})$.