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Physics 404 **HOMEWORK ASSIGNMENT #8** **Fall 2014**

Due date: Tuesday, Nov. 11 **Deadline:** Thursday, Nov. 13

1. (10) 6.5 3-state model and the role of zero-point energy.

2. (5) 6.12 Estimate of temperature of interstellar clouds.

3. (15) 6.22 b-e Paramagnet with n states. We did part a in class. Part f is a straightforward grind.

4. (9) 6.41 2D Maxwell speed distribution. We did much of this in class. Just find the mean, the mode, and the rms speeds.

5. (6) 6.42 Free energy of N SHO's. In part b, comment on the meaning of the two terms.

6. (10) 6.48 Entropy and chemical potential of a diatomic gas. Note that the spin of O_2 is 1.

Problem 6.52 Finding Z_1 for a relativistic gas, so an unconventional energy dispersion relation, is a corollary of what we will do/did in class.