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Physics 404   HOMEWORK ASSIGNMENT #3   **Spring 2014**

Due date: Thursday, Sept. 25   **Deadline:** Tuesday, Sept. 30

1. (10) 2.3 Probabilities of 2-state system: flipping 50 coins. It is easiest to use Excel, as in class, for part g; in fact, you can use it for the whole problem, printing out for each value of the number of heads, the multiplicity and the probability, and then circling the values requested in the problem.

2. (5) 2.4 Probability to get a royal flush in poker on one deal.

3. (10) 2.8 a-d   Two small Einstein solids

4. (5) 2.23 a & b Sampling microstates for macroscale systems. (Why one needs clever algorithms to do computer sampling of physical spin systems!) Think about part c.

5. (10) 2.24 d   Multiplicity of a large 2-state paramagnet, analogous to work on Einstein solids. (Note that parts a–c were done in class.)

   2.25 a & b

6. (5) 2.26 Multiplicity and entropy of ideal gas in flatland. You do not need to rewrite the whole derivation; just point out how each term in Eq. 2.40 changes when one goes from 3D to 2D.

7. (5) 2.32 Find the entropy of your result in S 2.26, applying Stirling's approximation explicitly.