PHSX 671: Homework #8

December 5, 2024

Grant Saggars

Problem 1

What is the equation for the entropy of a system consisting of N spin $\frac{1}{2}$ magnetic dipole moments (μ) in an external magnetic field B ? Express your answer in terms of μ, β, and B. What are the limiting values of the entropy at high temperature and/or weak magnetic field, and at low temperature and/or strong magnetic field. Do these limits make sense?