

Consider a two level system (such as the orientation of the magnetic moments of protons in a magnetic field, e.g. NMR). Let the spacing between the two levels be δ (delta) that is, the lower level has an energy of 0 and the other an energy of δ . Evaluate the following quantities in terms of delta and T.

a) the partition function

b) the internal energy

c) the entropy

In the limit of large T, does the system in the previous problem conform with the equipartition principle? Should it?