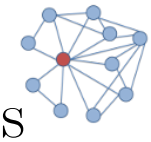
Entropy in statistical mechanics



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- How are the entropy and the information related

- Fill in the blank in the following sentence: The uniform distribution has ... entropy.

- Give an expression for the entropy if the distribution is uniform and define all terms.

- Give an expression for $\log P_j$ given that $P_j = \frac{e^{-\sum_k \lambda_k B_j^{(k)}}}{e^{\Phi}}$.

Entropy in statistical mechanics

- Hence, show that: $S = k_B \sum_i P_i \sum_k \lambda_k B_i^{(k)} + k_B \sum_i P_i \Psi$ to do this you will need to note how entropy, S, and information are related and to remember the formula that gives you the information contained in a distribution.

- What is $\sum_i P_i$ equal to

- What is $\sum_i P_i B_i^{(k)}$ equal to

- Give an expression for the entropy for a generalised distribution and explain how the results above are used in the derivation of this result.