Because: and , we get:

Then the hopping probability is:

At equilibrium:

The normalized Maxwell-Boltzmann distribution is:

In variables:

Cumulative probability function:

So:

Fraction of the first N states [0,…N-1] in the total sum:

Total number of states:

Probability to be in any of states

Probability to be in any of states below N:

Probability that any of the states above N (including it) are occupied