
Low temperature asymptotics of Lennard-Jones systems in 1d

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Abstract

We study the asymptotic behaviour the equilibrium distribution of N Lennard Jones particles at finite temperature. It is expected that for $d > 1$ and small temperature the distribution develops crystalline order as N tends to infinity in the sense that the most probable configurations are slightly deformed crystalline lattices.

I will show that for $d=1$ the distribution is supported at configurations which are unions of disconnected clusters. The size of the clusters is independent of N and exponentially large with the inverse temperature.

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