

Exercises in Statistical Mechanics

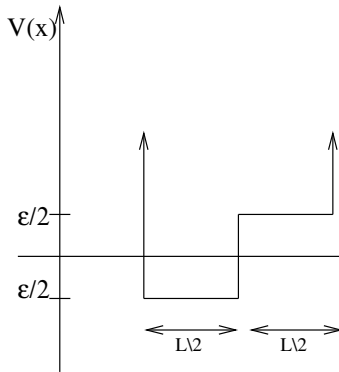
Based on course by Doron Cohen, has to be proofed
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This exercises pool is intended for a graduate course in “statistical mechanics”. Some of the problems are original, while other were assembled from various undocumented sources. In particular some problems originate from exams that were written by B. Horovitz (BGU), S. Fishman (Technion), and D. Cohen (BGU).

==== [Exercise 0105]

Spectral functions for a particle in a double well

Consider a particle that has a mass m in a double well. The potential $V(x)$ of the well is described in the figure.



- Describe the possible trajectories of the particle in the double well.
- Calculate $N(E)$ and the energy levels in the semi-classical approximation.
- Calculate $Z(\beta)$ and show that it can be written as a product of “kinetic” term and “spin” term.