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Large deviations in Bose-Einstein condensates

University of Tübingen, Mathematics Department, C3N14 and via Zoom:
https://zoom.us/j/94274376976?pwd=YVBvU2tNMTBXSGxGYVg4eUoyV1ZiQT09
Meeting-ID: 942 7437 6976
Passcode: 929851

Abstract:

We consider the ground state of a Bose gas of N particles on the three-dimensional unit torus in the mean-field regime that is known to exhibit Bose-Einstein condensation. Bounded one-particle operators with law given through the interacting Bose gas' ground state correspond to dependent random variables. We prove that in the limit N to infinity, bounded one-particle operators with law given by the ground state satisfy large deviation estimates. We derive a lower and an upper bound on the rate function that match up to second order and that are characterized by quantum fluctuations around the condensate.