

Abstract Submitted
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Path-Integral quantum Monte Carlo study of Bose-Einstein condensates under attractive interactions¹ HONG MA, TAO PANG, University of Nevada, Las Vegas — A hard-core one-dimensional boson ring under attractive interactions is studied by using the path-integral quantum Monte Carlo method at low temperature. Condensate fraction, total energy, and angular pair correlation functions are obtained as a function of the interaction strength. Our simulation predicts a possible quantum phase transition from a uniform condensation state to a symmetry-broken cluster as the attractive interaction increases. The dependence of such a phase transition on temperature, hard-core size, and total number of particles in the system will be discussed.

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