

**Finite-temperature, interaction driven phase transition in the three-dimensional Bose-Hubbard model**

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We discuss the finite-temperature phase diagram in the three-dimensional Bose-Hubbard model, relevant for Bose-Einstein condensates in optical lattices, by employing U(1) quantum rotor approach and the topologically constrained path-integral that includes a summation over U(1) topological charge. The effective action formalism allows us to formulate a problem in the phase only action and obtain analytical formulas for the critical lines beyond mean-field theory.

9.7 cm

13.4 cm

**Subject category :**

8. Other Topics

**Presentation mode :**

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