

Critical point and Bose-Einstein condensation in pion matter

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The Bose-Einstein condensation and the liquid-gas first-order phase transition are studied in the interacting pion matter. Two phenomenological models are used: the mean-field model and the hybrid model. Free model parameters are fixed by fitting the lattice QCD data on the pion Bose condensate density at zero temperature. In spite of some minor differences, the two models demonstrate an identical qualitative and very close quantitative behavior for the thermodynamic functions and electric charge fluctuations. A peculiar property of the considered models is an intersection of the Bose-Einstein condensation line and the line of the first-order phase transition at the critical endpoint.

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