

Abstract Submitted  
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**Large N Model of Bose Gas** KE KE, LEO RADZIHOVSKY, University of Colorado at Boulder — We construct the large N model of bose gas. Using an artificial parameter  $1/N$  to do the perturbative analysis to study two models:  $U(N)$  bose gas and  $U(1) \times O(N)$  bose gas. We find that for  $U(N)$  bose gas we get Bogoliubov spectrum and LHY thermal dynamical relations which is the same as the usual weak coupling bose gas models. For  $U(1) \times O(N)$  bose gas model, however, we calculate the non-perturbative quantum correction to the depletion, chemical potential, free energy and dispersion relations.

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