

# Interacting Bose gas in a harmonic trap

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We devote a particular attention to the role played by the repulsive interaction in order to determine a various quantities of Bose gas in a harmonic trap and in particularly the chemical potential of condensed atoms, the chemical potential of non-condensed atoms, the anomalous fraction and the heat specific capacity at finite temperature as function as the number of atoms. We also calculate their behavior in Thomas Fermi approximation, where the thermal cloud is not negligible. We compare our results with literature and experience, we find a good agreement.

**Keywords:** Bose Einstein condensation (BEC); Generalized Hartree-Fock Bogoliubov approximations (GHFB); Thomas Fermi approximation (TFA).