

Functional Integral Approach to Transition Temperature of a Homogeneous Imperfect Bose Gas

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Abstract: A functional integral approach (FIA) is introduced to calculate the transition temperature of a uniform imperfect Bose gas. With this approach we find that the transition temperature is higher than that of the corresponding ideal gas. We obtain the expression of the transition temperature shift as $\Delta T_c/T_0 = 2.492(na^3)^{1/6}$, where n is the density of particle number and a is the scattering length. The result has never been reported in the literature.

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