

## I. Introduction

Planck's Law of Black Body Radiation

$$\rho(\nu, T) = \frac{8\pi\nu^2}{c^3} \frac{h\nu}{e^{\frac{h\nu}{kT}} - 1}$$

Boltzmann's Law

$$S \propto \log(W)$$

Bose Distribution Function

$$n = \frac{1}{e^{\alpha + E/kT} - 1}$$

Criterion for Condensation in Interacting Systems

$$\lim_{|\vec{r} - \vec{r'}| \rightarrow \infty} \rho(\vec{r}, \vec{r'}) = \frac{\langle N_0 \rangle}{V}$$

$$\rho(\vec{r}, \vec{r'}) = \langle \psi^\dagger(\vec{r'}) \psi(\vec{r}) \rangle$$

Macroscopic Quantum Phenomenon

$$n(\vec{r}) = N |\phi_0(\vec{r})|^2$$