

Growth model of hydrogen condensate

Model:

C.W. Gardiner et al. PRL 81, 5266 (1998).

- normal gas is supercooled.
excess population in lower trap levels
- growth rate depends on difference in chemical potential ($\mu_N - \mu$)
 μ_N condensate chemical potential
 μ final equilibrium chemical potential
- rate constant, W^+ , depends on elastic collision rate

$$\dot{N}_0 = 2 W^+ \{ [1 - \text{Exp}((\mu_N - \mu) / k_B T)] N_0 + 1 \} - \gamma \dot{N}_{2,c}$$

N_0 condensate population

W^+ depends on collision rate

- $\gamma \dot{N}_{2,c}$ describes loss due to dipolar decay in condensate

Agreement with growth rate scaled from Na-BEC
(H.-J. Miesner et al., Science 279, 1005 (1998))