

# Fermi Gas

• entartet für  $T \ll T_F$

• Fermi See:

$$a' = \gamma, \quad b' = a, \quad b'' = \gamma$$

$$\sum_p f(\epsilon) \rightarrow V \int \frac{d^3p}{(2\pi\hbar)^3} f(\epsilon) = V \int d\epsilon g(\epsilon) f(\epsilon)$$

$$E_p = \frac{p^2}{2m} \quad E_F = \frac{p_F^2}{2m} \quad p_F = \sqrt{2mE_F}$$

$$n = \frac{(2S+1)}{(2\pi\hbar)^3} \frac{4}{2} \pi p_F^3 = \frac{(2S+1)}{(2\pi\hbar)^3} \frac{4}{3} \pi (2mE_F)^{3/2}$$

$$\Omega = \pm (2S+1) V \int d\epsilon g(\epsilon) \frac{1}{1 + \exp[-\beta(\epsilon - \mu)]} \quad (-\beta) \exp[-\beta(\epsilon - \mu)]$$