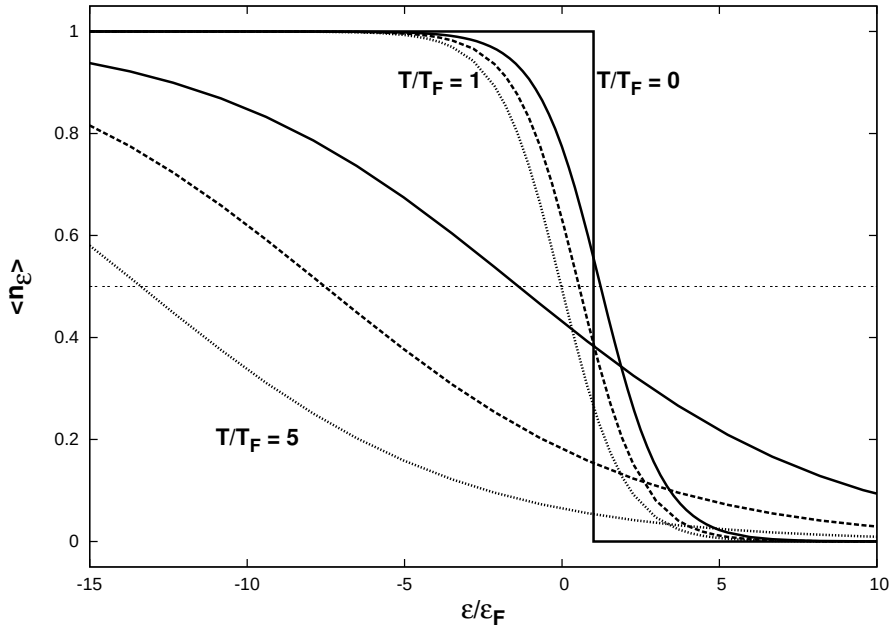
Ideal Fermi-Dirac gas: average level occupancy [tsl44]

Average occupancy of 1-particle state at energy ϵ if system (with fixed $\mathcal{N}, V$) is at temperature T:

$$\langle n_\epsilon \rangle = \frac{1}{e^{\beta(\epsilon-\mu)+1}} \qquad \text{with } \mu(T) \text{ from [tex117].}$$



Note: $\langle n_\epsilon \rangle = \dfrac{1}{2}$ occurs at $\epsilon = \mu(T)$.

Limit $T \to 0$: $\mu(T) \to \epsilon_F$, $\langle n_\epsilon \rangle \to \Theta(\epsilon_F - \epsilon)$.