

**[tex101] FD gas in  $\mathcal{D}$  dimensions: heat capacity at low temperature**

Use the results of [tex118] and [tex100] to determine the low-temperature asymptotic behavior,

$$\frac{C_V}{\mathcal{N}k_B} \rightsquigarrow \mathcal{D} \frac{\pi^2}{6} \frac{T}{T_F},$$

of the heat capacity of the ideal Fermi-Dirac gas in  $\mathcal{D}$  dimensions.

**Solution:**