Review Question (2.4 - 2.5)

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1 Problem 1

Find the density needed to form a Bose Condensate from a relativistic, spin 0 gas in three dimensions.

2 Problem 2

Starting with

$$\frac{PV}{T} = lnZ_{GC} = \Sigma_p ln(1 + e^{-\beta(\epsilon_p - \mu)} + e^{-2\beta(\epsilon_p - \mu)} + \cdots) \tag{1}$$

and,

$$\Sigma_p \Rightarrow V \frac{(2s+1)}{(2\pi\hbar)^D} \int d^D p \tag{2}$$

find the pressure of a nonrelativistic spin $\frac{1}{2}$, 3D fermi gas.