

Answer on Question #71454, Physics / Molecular Physics | Thermodynamics

Fermi temperature when number density increased to eight times

Solution:

Fermi temperature by definition

$$T_F = \frac{\hbar^2}{2mk_B} (3\pi^2 n)^{2/3}$$

Thus

$$T_F \sim n^{2/3}$$

When the number density increased to eight times

$$T_F \sim (8n)^{2/3} = 4n^{2/3} = 4T_{F0}$$

Answer: Fermi temperature increased to four times.

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