Phys 327 HWG Trevor McCeffrey
2/21/2022

Discipling 5.2, modified

In example 5.1 & Pioblem 5.5b we ignated = pin.

Po it now for particles of spin 1/2. Construet

the four lowest-energy configurations, and specify

Hur energies and degenerates. Suggestion use

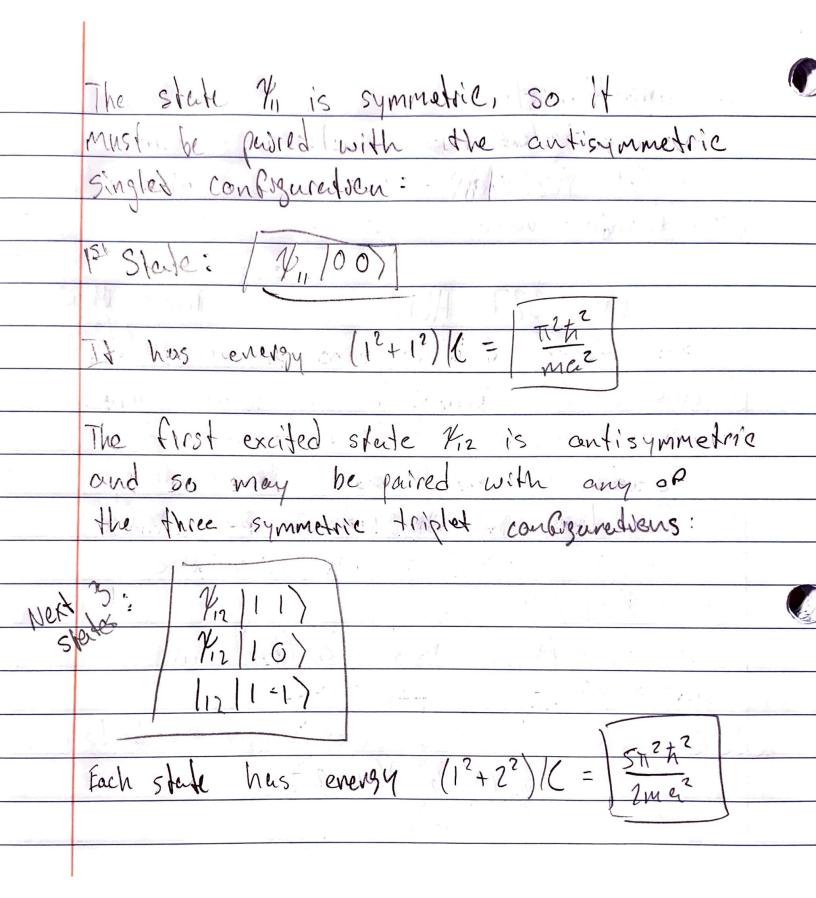
Notation 1/2 5 m), where

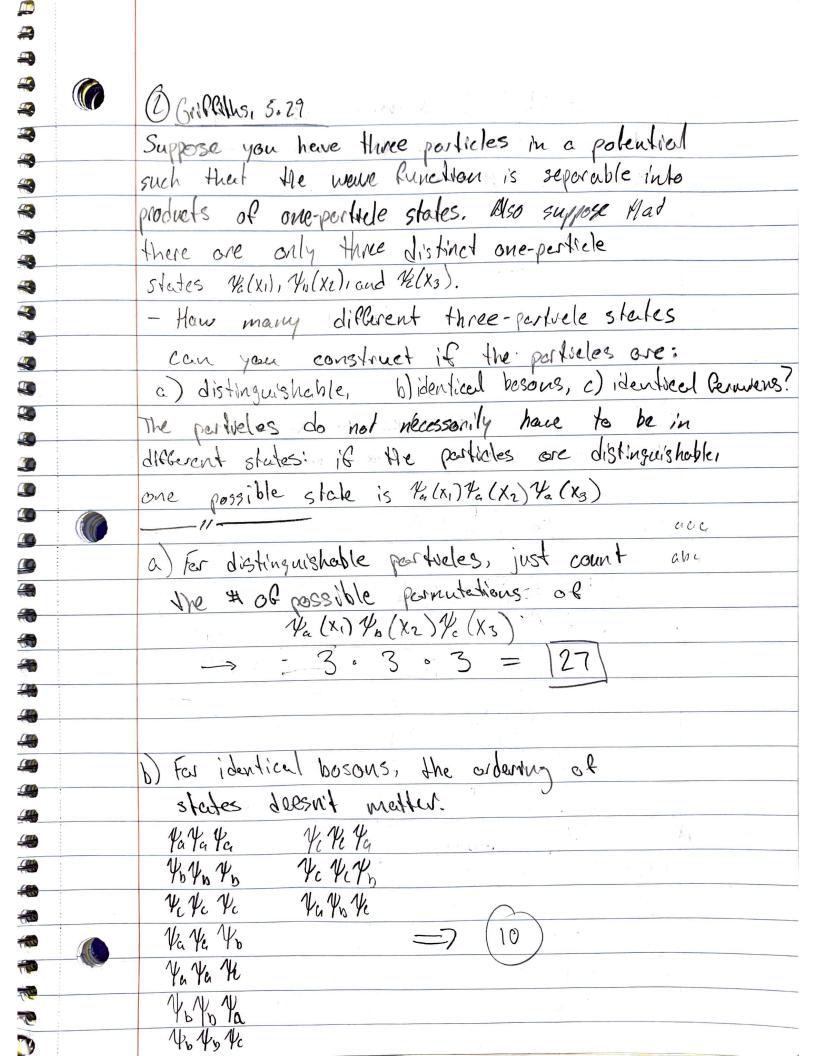
Notation 1/2 5 m), where

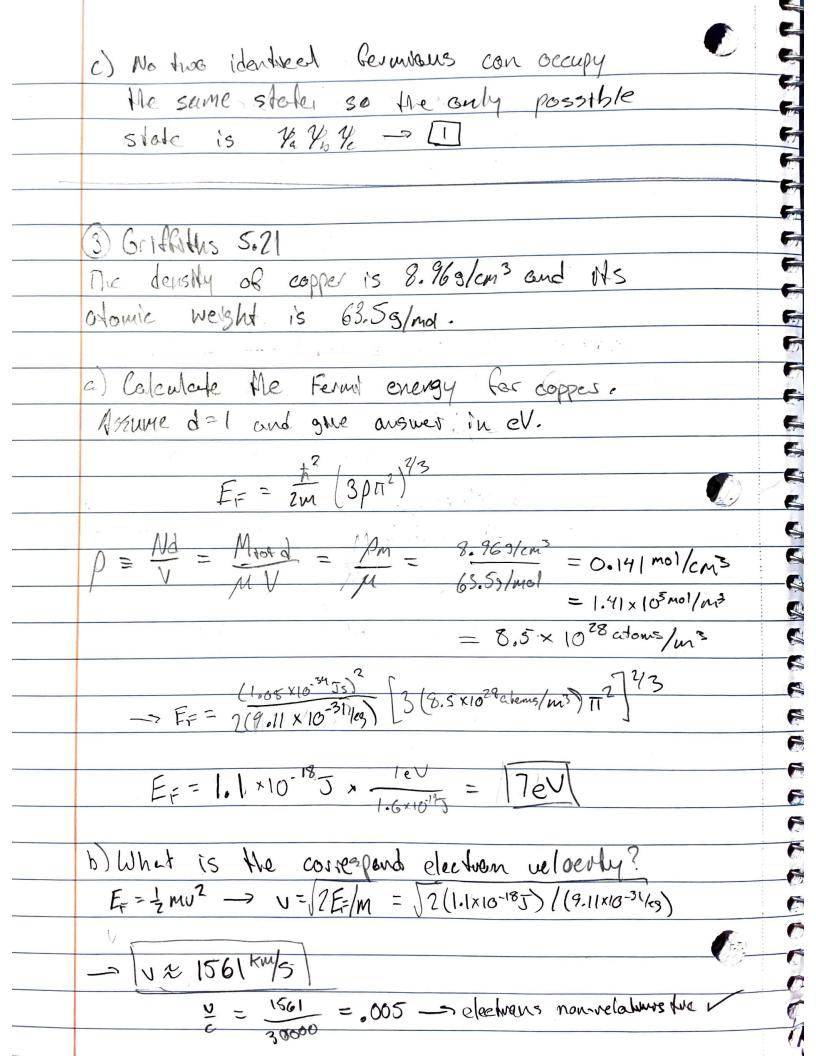
With spin, two perticles occupy the shale:

1/2 1/2 1/2 2

Mith spin, two perticles occupy the shale:







c) At what temperature dees the Fermi energy equal its characteristic Hermal energy? EF = HET -- 1- 1.1×10-185 1-38×10-235//C = 79710/C d) Calculate the degeneracy pressure of capper in the free electron gas model. $= \frac{(3H^2)^{2/3}t^2}{5M}$ $= \frac{\left(3\pi^{2}\right)^{2/3} \left(1.05 \times 10^{-34} 55\right)^{2} \left(8.5 \times 10^{28} \text{ atoms/m}^{3}\right)^{5/3}}{5\left(9.11 \times 10^{-31} \text{ kg}\right)}$ - P = 3.8× 1010 N/n2

