

Physics 712 Homework Problems

Homework: Griffiths problems 5.29, 5.30.

These are simple problems, so there are no hints given.

In case you do not have a copy of the book by Griffiths, here are the problems. (Let me know if you do not have the book, since we will be using it for scattering theory).

- 5.29 Suppose you have three particles, and three distinct one-particle states $(\psi_a(x), \psi_b(x), \psi_c(x))$ are available. How many different three-particle states can be constructed (a) if they are distinguishable particles, (b) if they are identical bosons, and (c) if they are identical fermions? [The particles need not be in *different* states – $\psi_a(x_1)\psi_a(x_2)\psi_a(x_3)$ would be one possibility if the particles were distinguishable.]
- 5.30 Calculate the Fermi energy for electrons in a *two*-dimensional infinite square well. (Let σ be the number of free electrons per unit area.)