PY 452: Quantum Physics II   Problem Set 2

Due date: Friday, September 18, by 5:00pm

Reading: Please complete reading sections 5.3 and 5.4 in the text.

1. Text 5.20. This problem asks you to determine the energy levels of the Dirac comb when the spike extend to negative energy.

2. Text 5.22. This problem asks you to compute the wave functions for 3 identical Fermions and 3 identical Bosons. that are in prescribed states.

3. Text 5.26. This is an exercise in the use of Lagrange multipliers.

4. Tet 5.34. This problem ask you to compute the Fermi energy of a two-dimensional electron gas. Please also extend the calculation and compute the energy of an electron gas of density ρ in d dimensions.

5. Text 5.35. This is an extended problem about white dwarf stars.