Summary of lecture 13

- <u>Fermi energy</u>: At T=0 it is the energy below which all single particle states are filled and above which no single particle states are filled.
- <u>Degenerate Fermi Gas</u>: a gas of identical fermions at a temperature low enough such that *almost* all states below the Fermi energy are filled whilst *almost* all states above the Fermi energy are empty.
- We calculated the Fermi energy for a 2-D electron gas:

$$\epsilon_F = \frac{\hbar^2 \pi N}{m A}$$

Note: the Fermi energy depends upon the number density of particles in the gas.