**Homework #4 Due Tuesday 10/19/2010 (no extension!)**

**ECEN 5060, Computational Semiconductor Physics**

Consider a bulk (3D) GaSb with parabolic conduction band.

Calculate and plot the Fermi energy versus doping concentration at temperatures of T=10K, 300K, 900K.

Use the following assumptions:

1. Consider two conduction bands with minima at Г and L points and ignore state filling in other bands.
2. Eg =0.813-3.78e-4\*T^2/(T+94) in eV
3. Ec(L)-Ec(Г)= 0.089-0.19e-4\*T^2/(94+T) in eV; T in Kelvin
4. m\*(Г)=0.041me;  m\*l(L)= 0.95me; m\*t (L)= 0.11me; ; T in Kelvin