421 Review Session Notes

1)   For #3, the cross section for ions include i-i scattering and i-e scattering. For elections, it should include e-e scattering and e-i scattering. You are going to find Debye length, for which please use Ni=Ne=10^14 cm-3. To estimate the sigma for different scattering, use vi (ion speed) as the approximate vr (relative speed) for i-i scattering. Similarly for e-e, use ve as vr. While for i-e or e-i scattering, vr=ve-vi.

2)   For #4 and #7, when calculating Cyclotron radiation, use Psi=0.01.

3)   For #6, about Poisson equ, you need to express N in terms of particle distribution function.

4)   #7, you need to search online for different mirror reactors if they are not discussed during class or not in the text book.

5)   For #8 (a), it seems to me another condition is needed for calculation. Let's assume the pellet radius before compression is 2 mm. If you have problems when you use this condition, please let me know.