

Lecture 2 Summary

~~At~~
High Frequency dielectric $\epsilon(\omega) = 1 - \frac{\omega_p^2}{\omega^2}$

$$\omega_p^2 = \sum \omega_{pe,i}^2 \quad \omega_{pg}^2 = \frac{4\pi n_g q^2}{m_g}$$

Valid if $\left| \frac{\omega}{k} \right| < v_{th} = \sqrt{\frac{2T}{m}}$

otherwise

$\epsilon = \epsilon(\omega, k)$ to be determined

Collisions

$$v_e \sim \frac{\omega_{pe}^2}{(n \lambda_D^3)} \ll \omega_{pe}$$

if $n \lambda_D^3 \gg 1$ weakly coupled

Ionization

electrical input
Photons

Recombination

three body
radiation