

## Drude Model - notes about CGS units

Normally the Ashcroft-Mermin book uses **CGS units**:

- Unit of charge: statcoulomb (**statC**) or electrostatic unit of charge (**esu**)

$$[esu] = [L]^{3/2}[M]^{1/2}[T]^{-1}$$
$$1 \text{ statC} = 1 \text{ dyn}^{1/2} \text{ cm} = 1 \text{ cm}^{3/2} \text{ g}^{1/2} \text{ s}^{-1}$$

- Plasma frequency in CGS

$$\omega_p^2 = \frac{4\pi n e^2}{m} \implies [\omega_p]^2 = [n][e]^2[m]^{-1} = [L]^{-3} \left( [L]^3 [M] [T]^{-2} \right) [M]^{-1} = [T]^{-2}$$

However, it can be convenient to use **MKS(SI)** units in presence of eqs. containing the **resistivity**: use  $\rho$  in  $\Omega$ -meters,  $m$  in Kg,  $n$  in electrons/m<sup>3</sup>,  $e$  in Coulomb.