

# Mobility – Phonon & Impurity Scattering

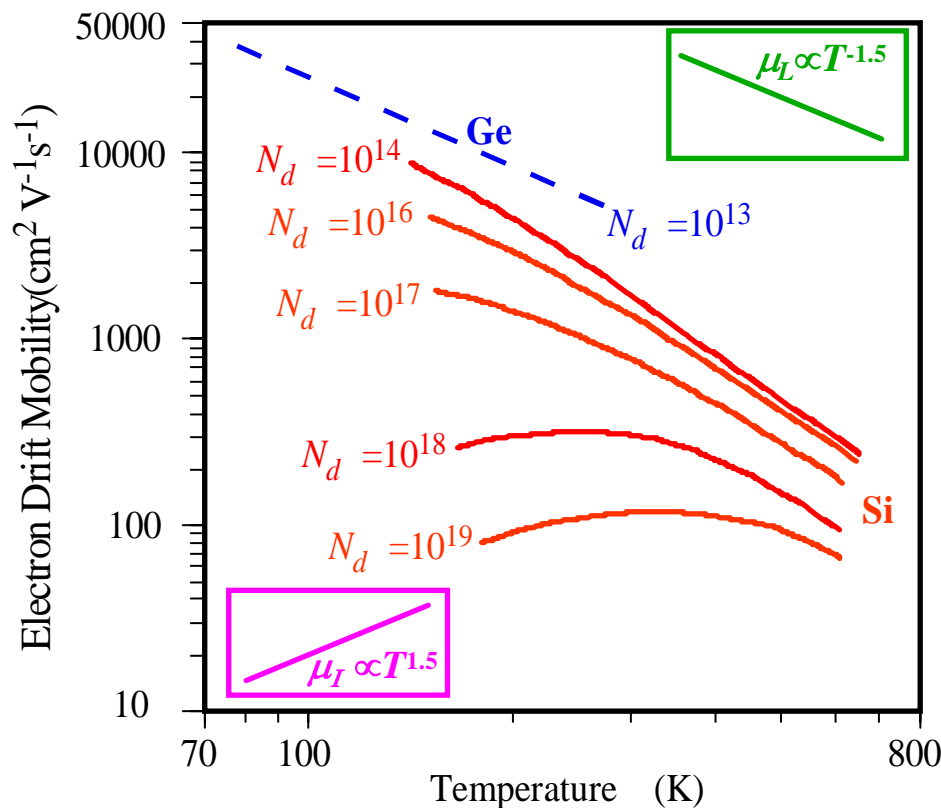
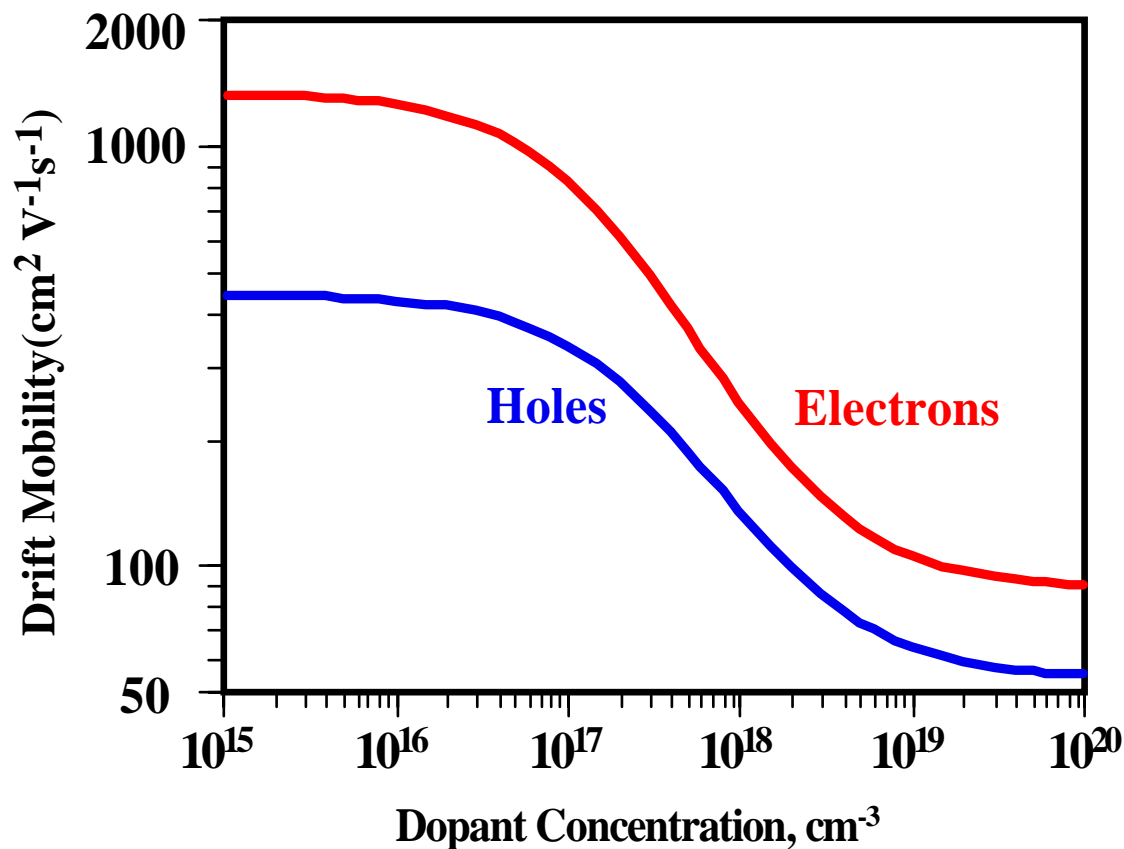


Fig. 5.18: Log-log plot of drift mobility vs temperature for *n*-type Ge and *n*-type Si samples. Various donor concentrations for Si are shown.  $N_d$  are in  $\text{cm}^{-3}$ . The upper right inset is the simple theory for lattice limited mobility whereas the lower left inset is the simple theory for impurity scattering limited mobility.

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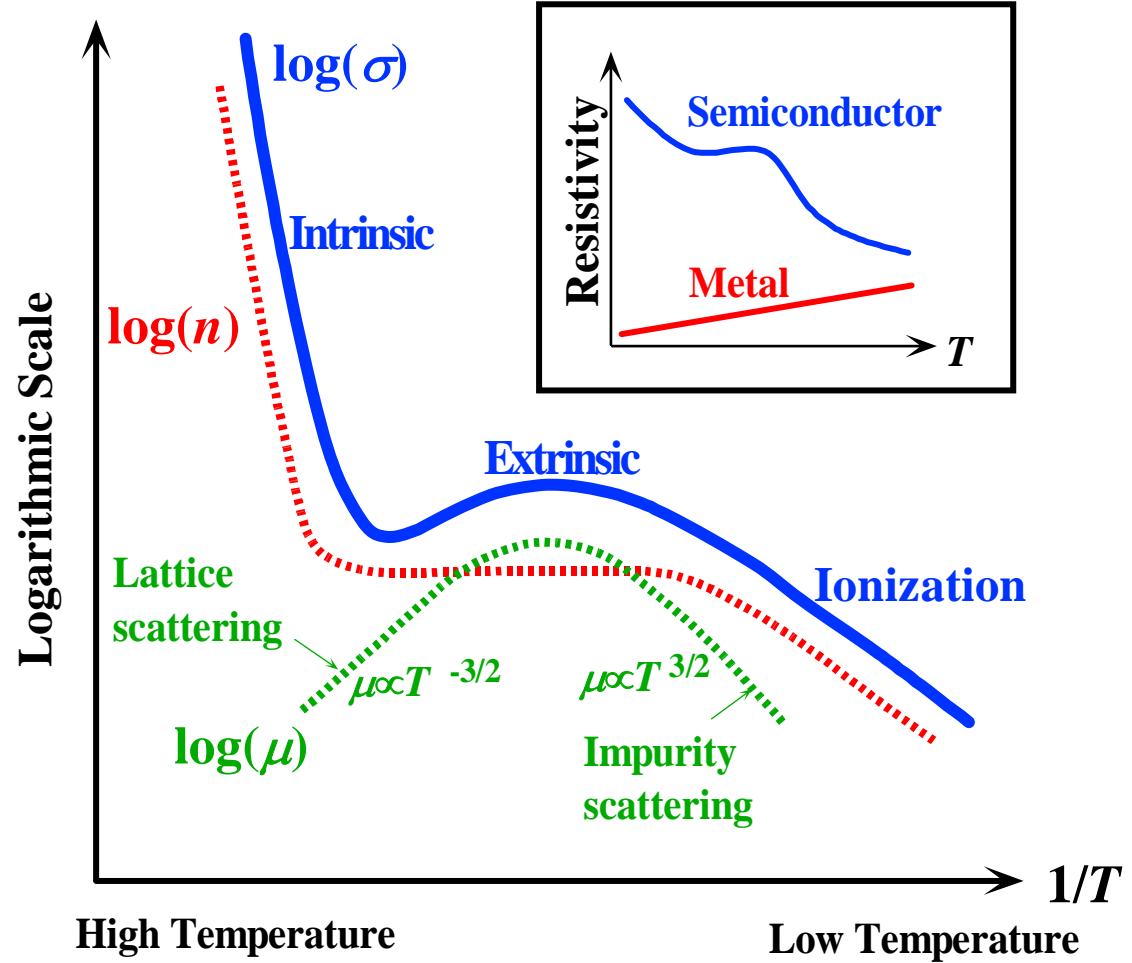
# Mobility – Impurity Scattering



**Fig. 5.19: The variation of the drift mobility with dopant concentration in Si for electrons and holes**

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# Carrier Concentration versus Mobility



**Fig. 5.20: Temperature dependence of electrical conductivity for a doped (*n*-type) semiconductor.**

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