

Today

Electron energy bands in Solids

States in atoms with many electrons -
filled according to the Pauli exclusion principle

Why do some solids conduct – others do not – others are intermediate

Metals, Insulators and Semiconductors

Understood in terms of Energy Bands and the Exclusion Principle

Solid-state semiconductor devices

The electronic states in semiconductors

Transistors, . . .

Superconductivity

Electrical conduction with zero resistance!

All the electrons in a metal cooperate to form a single quantum state