**Metallic Bonding**

The gap between the highest antibonding orbital and lowest bonding orbital quickly becomes constant.

Close spacing of discreet energies $\rightarrow$ energy band

---

**Cohesive Energy**

*Lennard-Jones potential*

$$E = 4e \left( \frac{\sigma}{r} \right)^{12} - \left( \frac{\sigma}{r} \right)^{6}$$

Attractive force (negative) dominates at long distances
Repulsive force (positive) dominates at very small distances