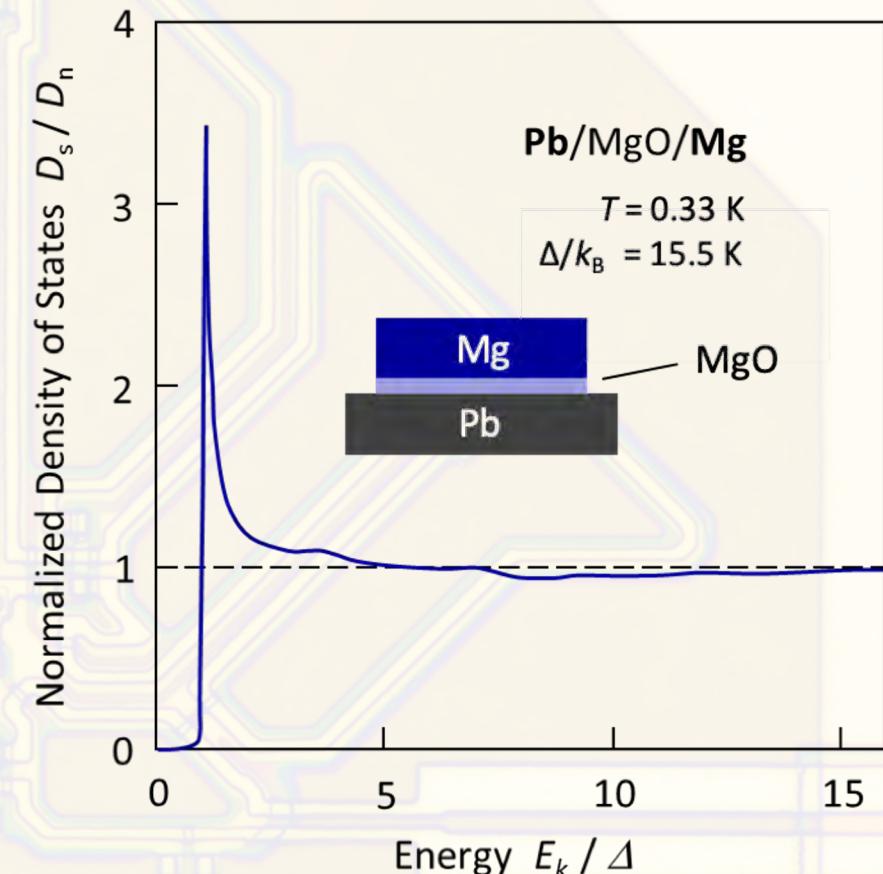
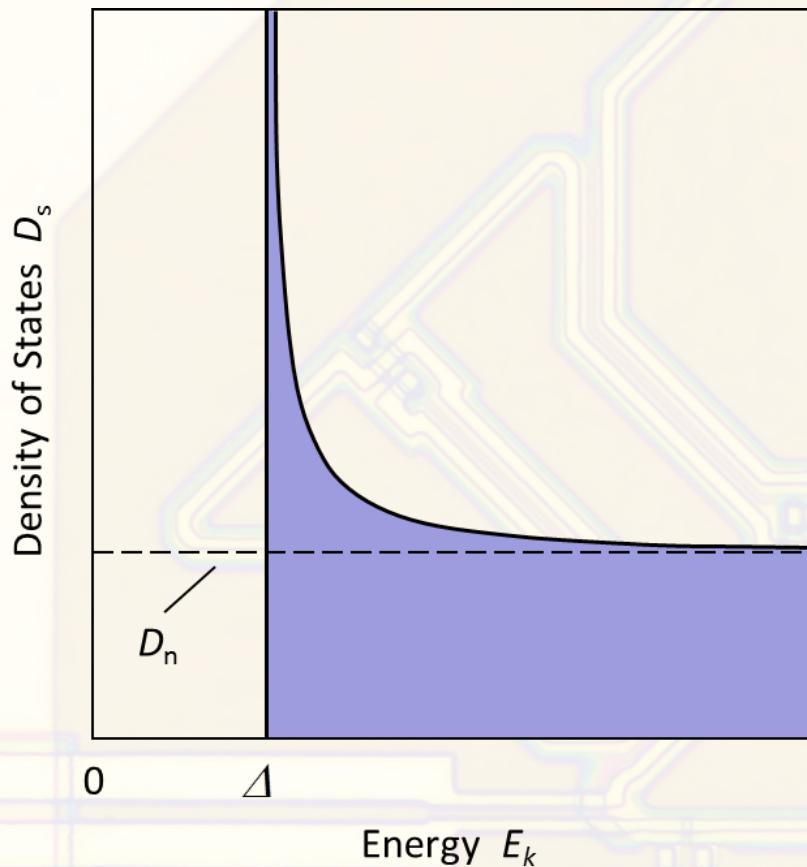
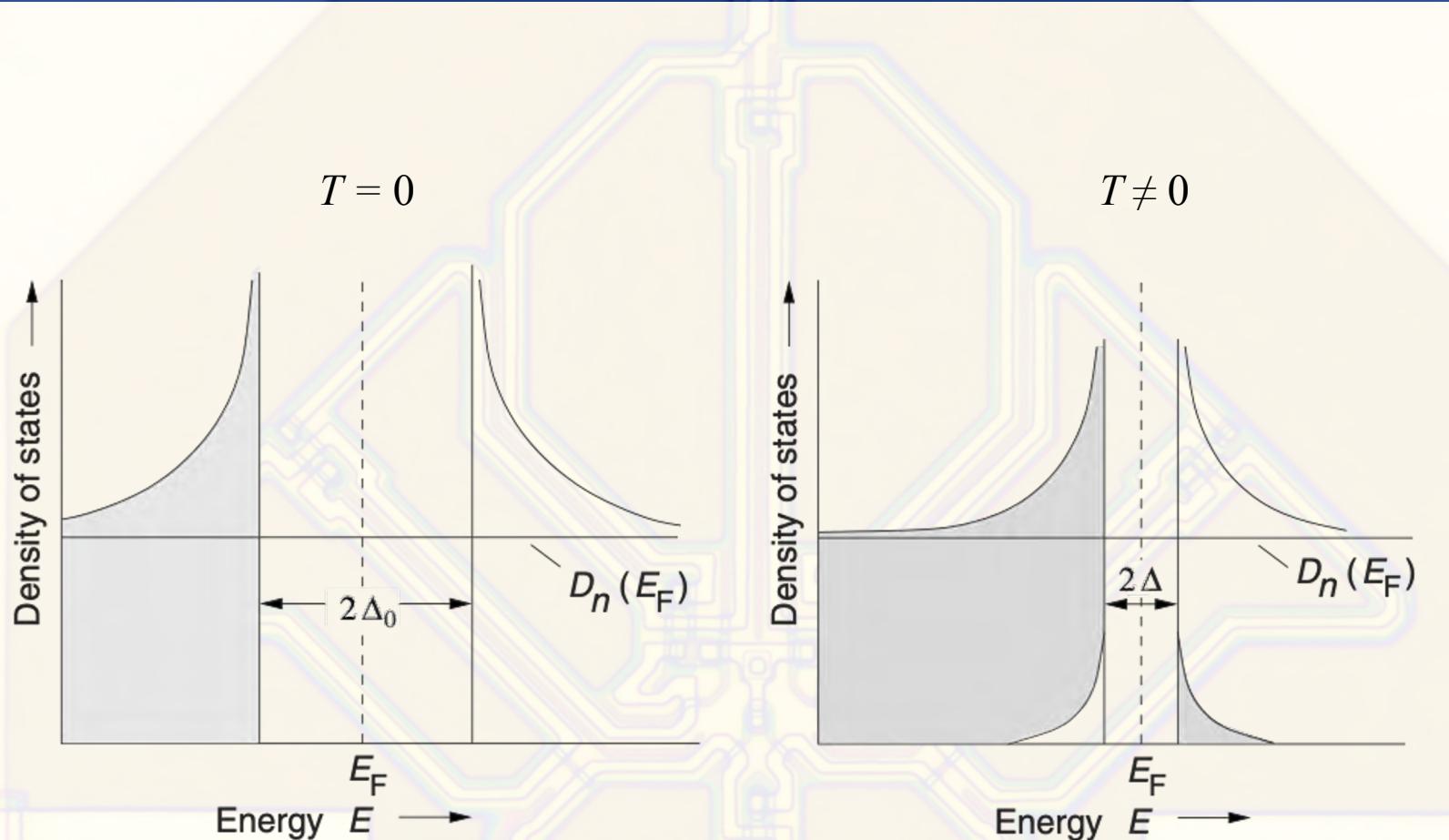




# Electronic Density of States of Pb

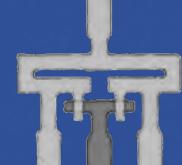


# Electronic Density in One Particle Representation





# Ratio of Thermal Energy at $T_c$ and Gap Energy $\Delta_0$

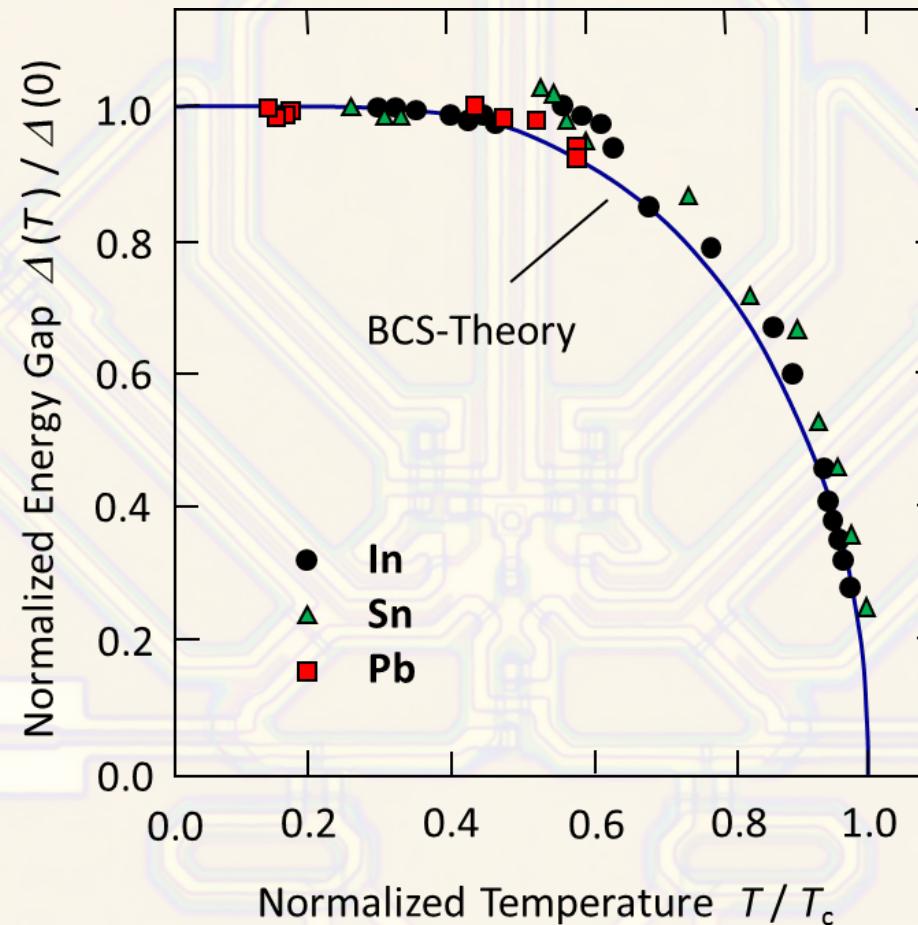


BCS Theory:  $2\Delta(0) = 3,53 k_B T_c$

| Superconductor       | Al   | Cd   | Hg   | In   | Nb   | Pb   | Sn   | Ta   | Tl   | Zn   |
|----------------------|------|------|------|------|------|------|------|------|------|------|
| $T_c$ (K)            | 1.18 | 0.52 | 4.15 | 3.40 | 9.25 | 7.20 | 3.72 | 4.47 | 2.38 | 0.86 |
| $2\Delta(0)/k_B T_c$ | 3.5  | 3.2  | 4.6  | 3.5  | 3.6  | 4.3  | 3.5  | 3.5  | 3.6  | 3.2  |

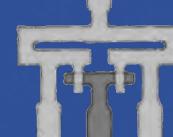


# Energy Gap of Various Superconductors





# Relative Change of Specific Heat at $T_c$

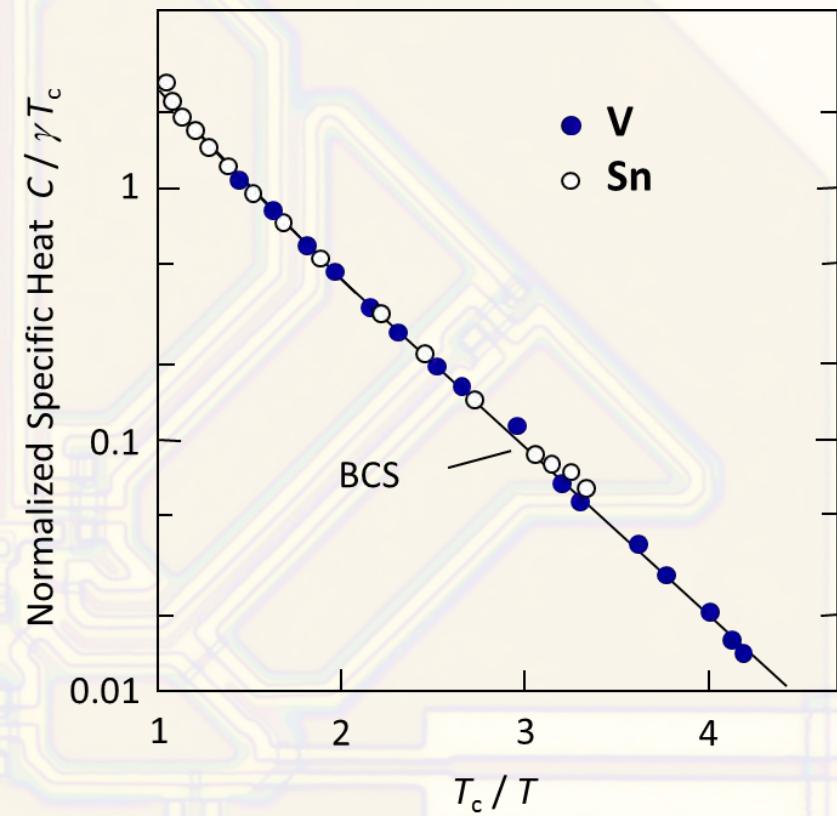
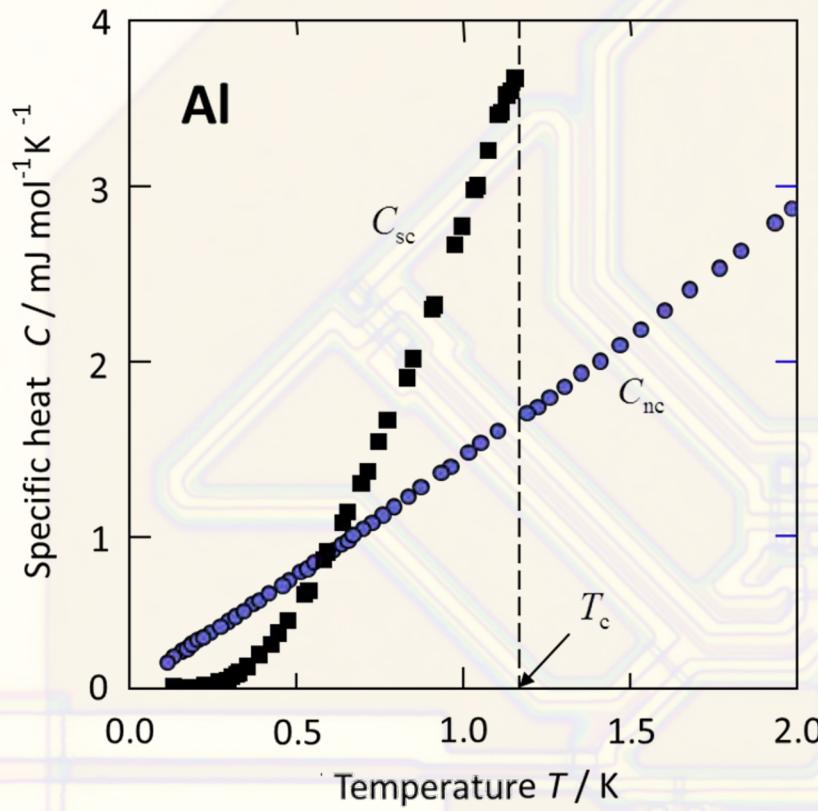


BCS Theory:  $(C_s - C_n)/C_n = 1.43$

| Superconductor            | Al   | Cd   | Hg   | In   | Nb   | Pb   | Sn   | Ta   | Tl   | Zn   |
|---------------------------|------|------|------|------|------|------|------|------|------|------|
| $T_c$ (K)                 | 1.18 | 0.52 | 4.15 | 3.40 | 9.25 | 7.20 | 3.72 | 4.47 | 2.38 | 0.86 |
| $[(C_s - C_n)/C_n]_{T_c}$ | 1.4  | 1.4  | 2.4  | 1.7  | 1.9  | 2.7  | 1.6  | 1.6  | 1.5  | 1.3  |

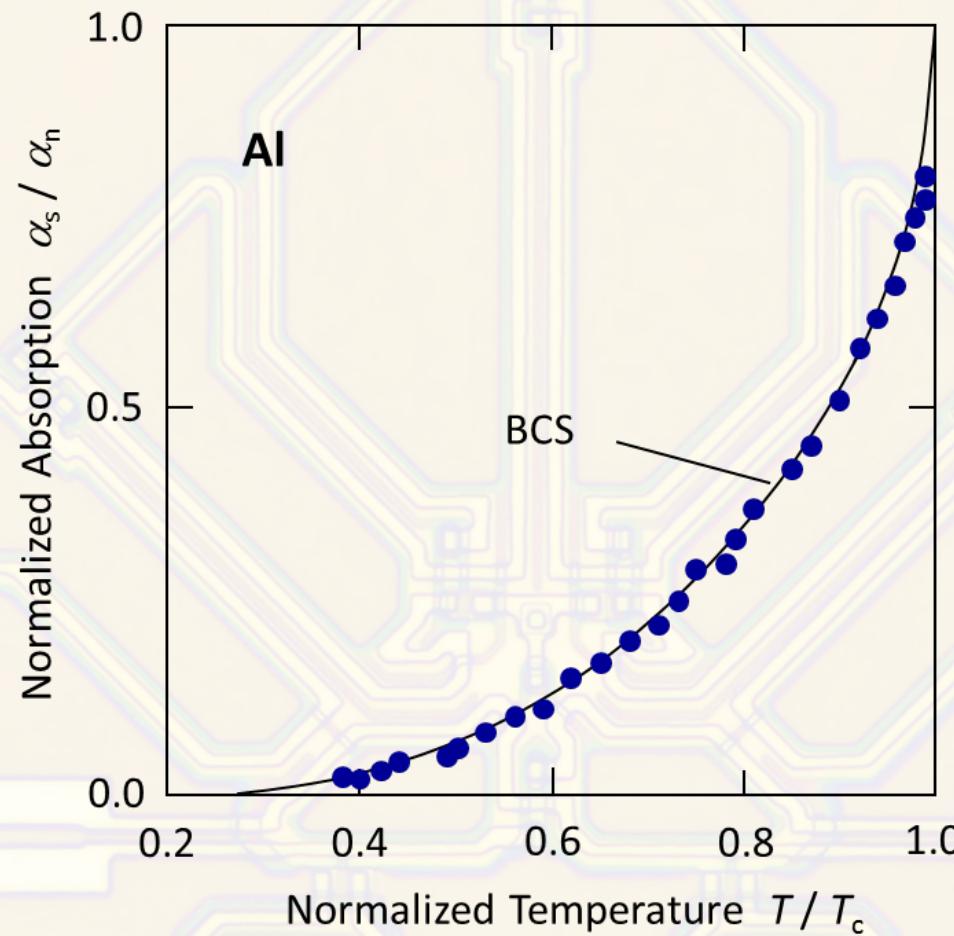


# Specific Heat of Different Superconductors



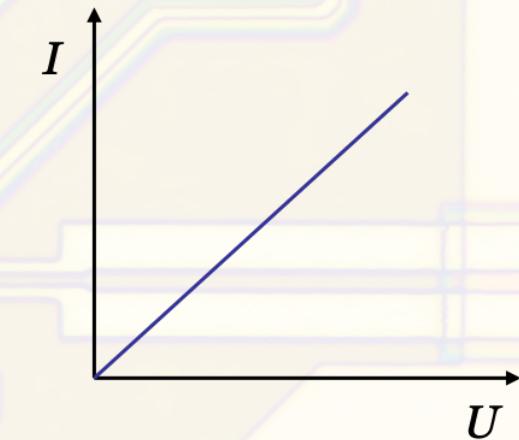
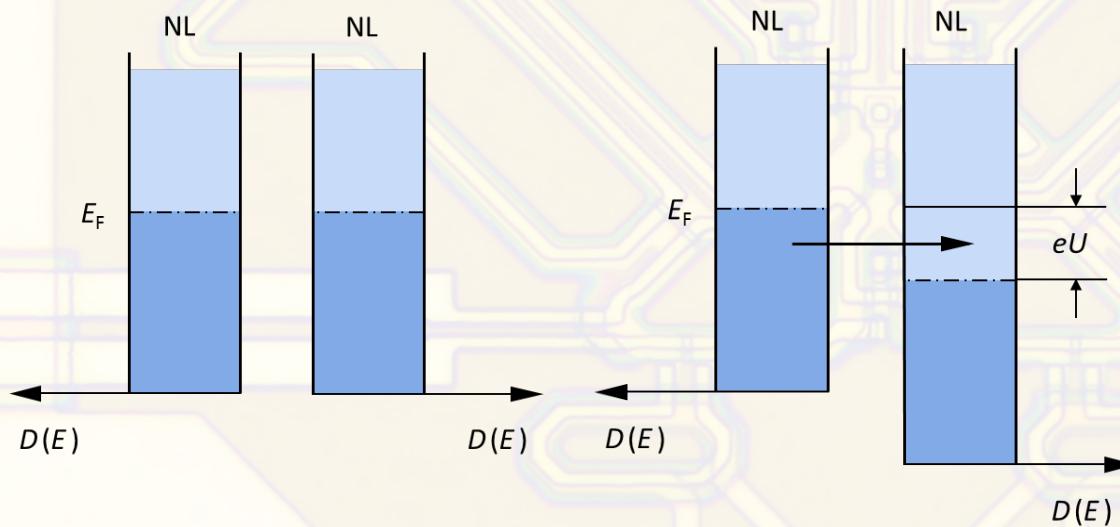
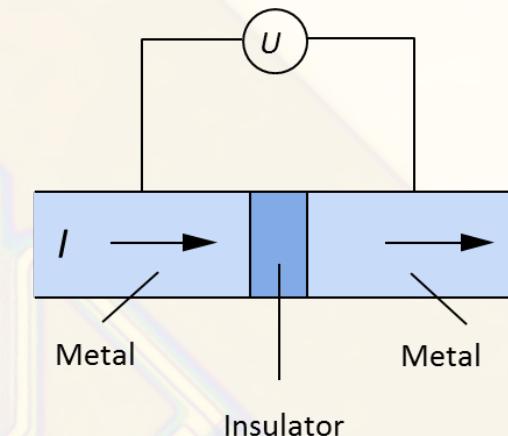
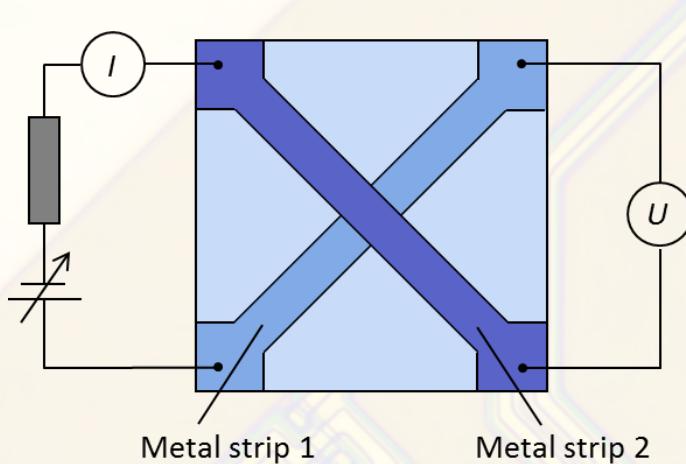
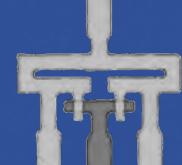


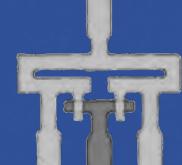
# Ultrasound Absorption in Superconducting Al



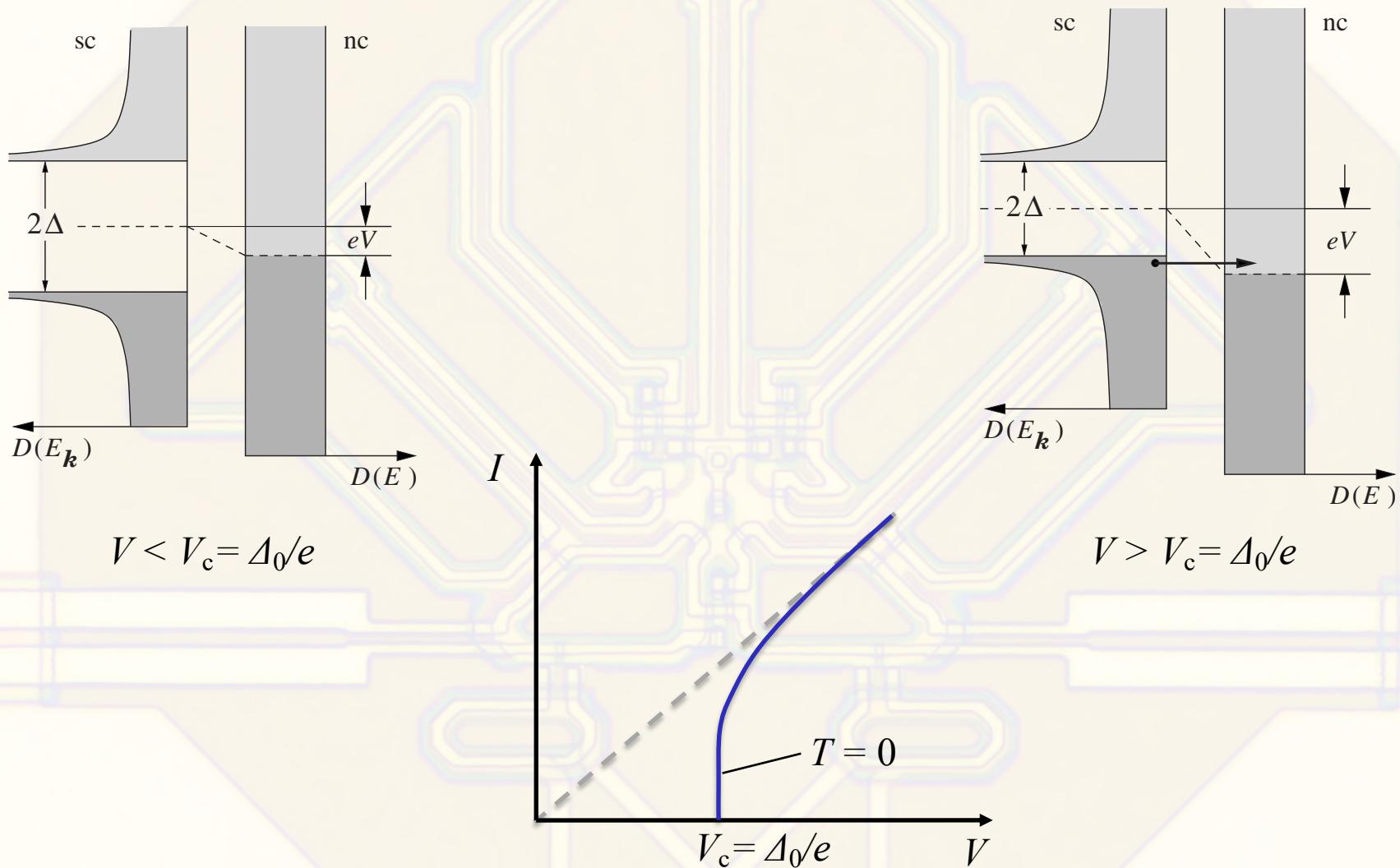


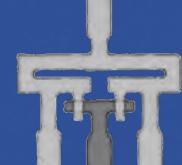
## Tunneling Experiments - Normal Conductors



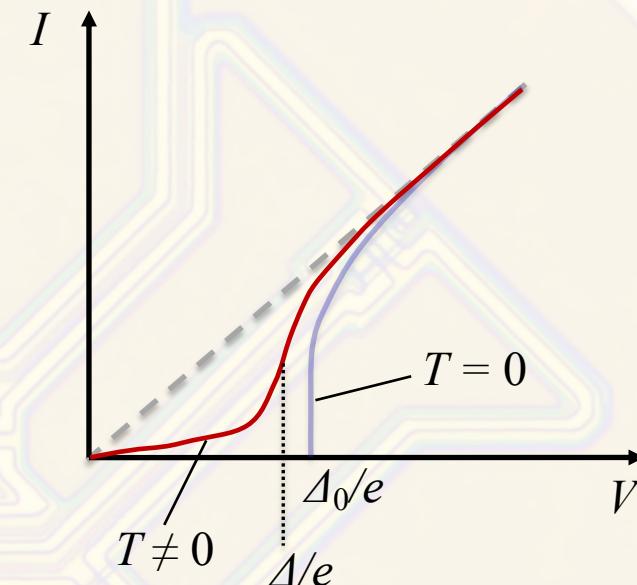
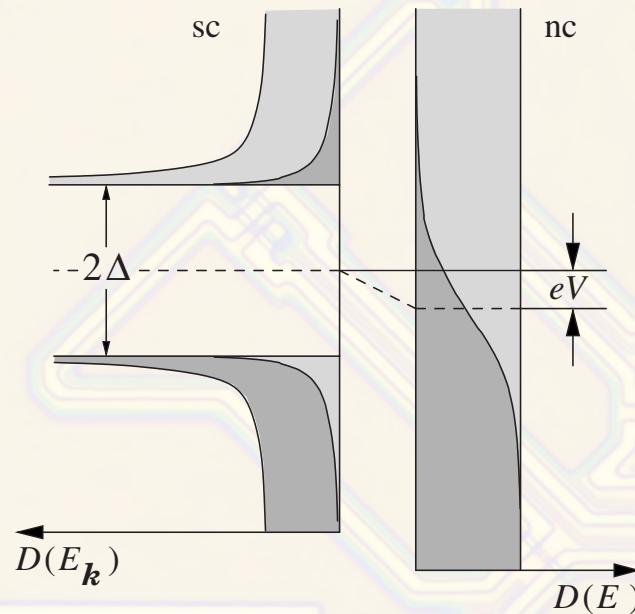
S-I-N Junction,  $T = 0$ 

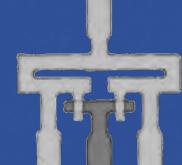
One-particle representation



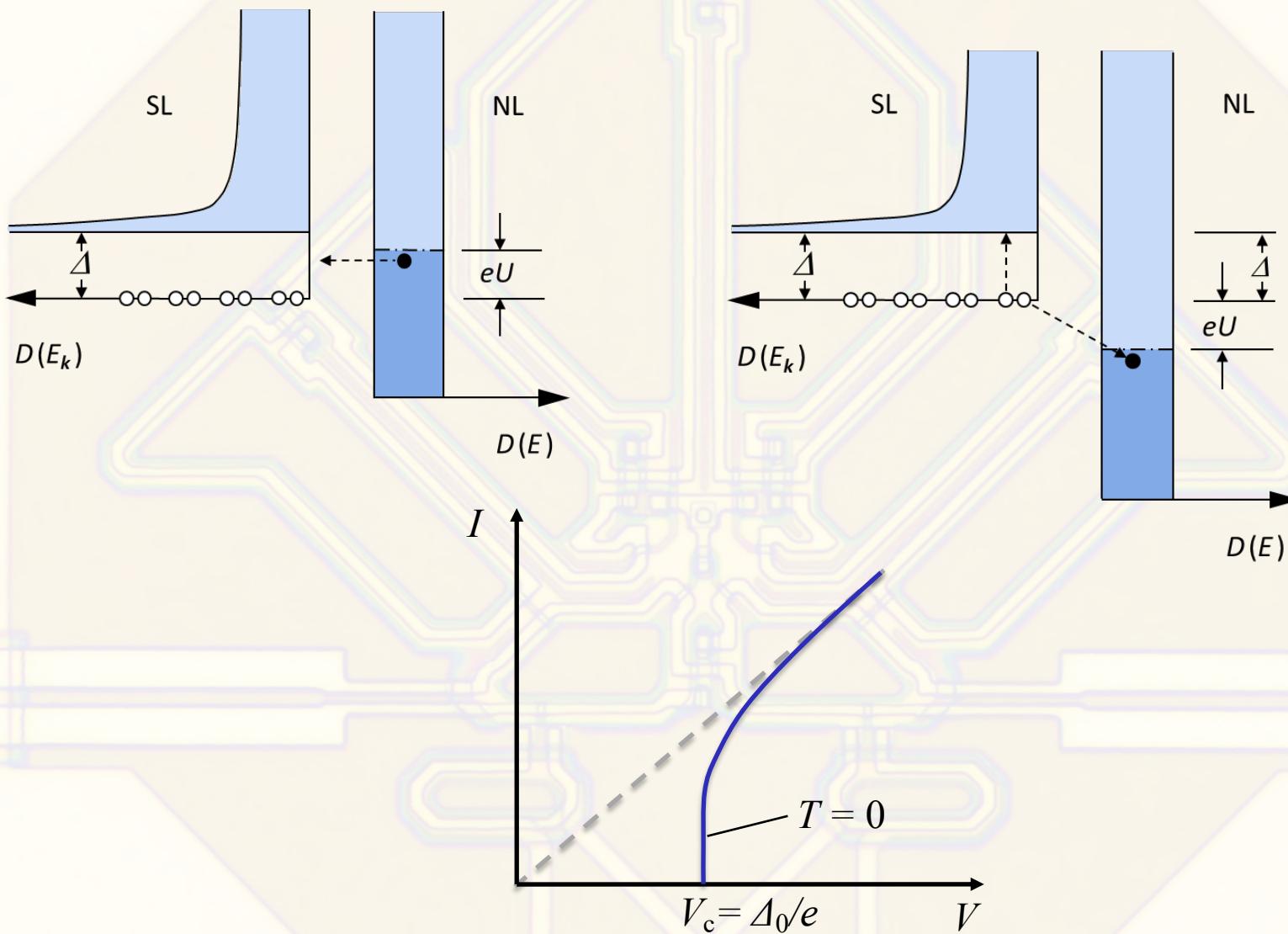
S-I-N Junction,  $T \neq 0$ 

One-particle representation



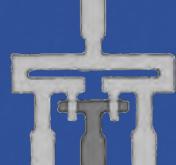
S-I-N Junction,  $T = 0$ 

Two-particle representation

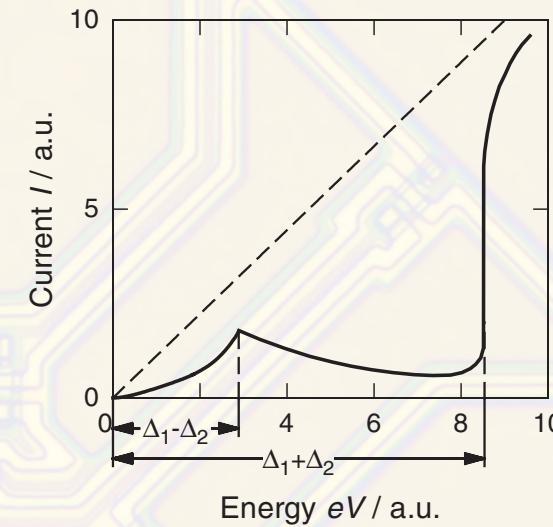
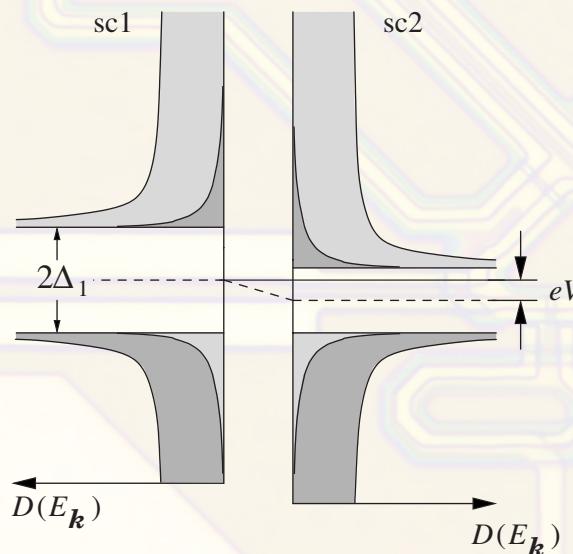
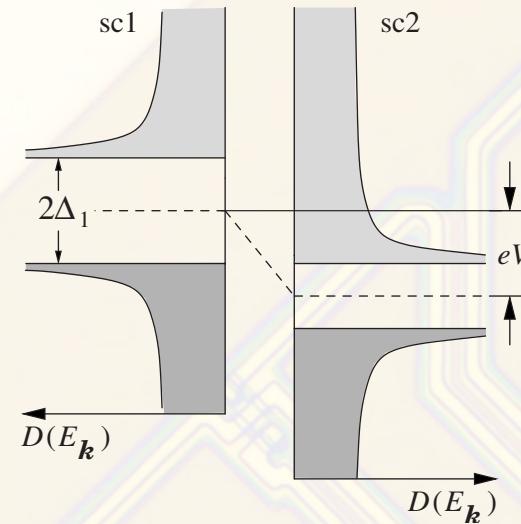




# S-I-S Junction

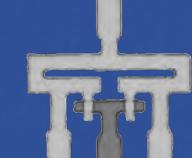


One-particle representation

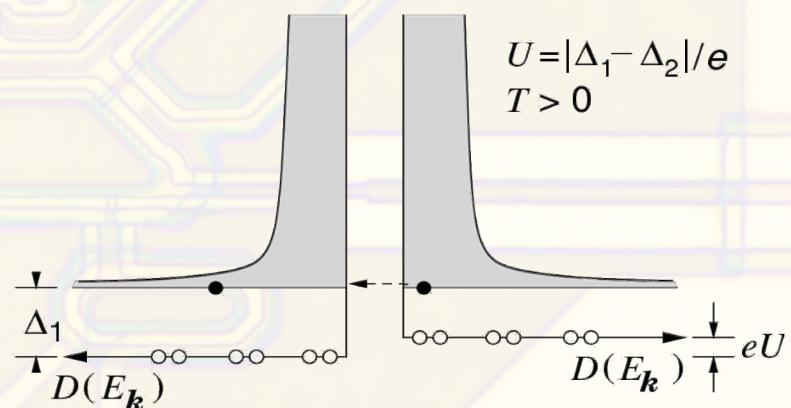
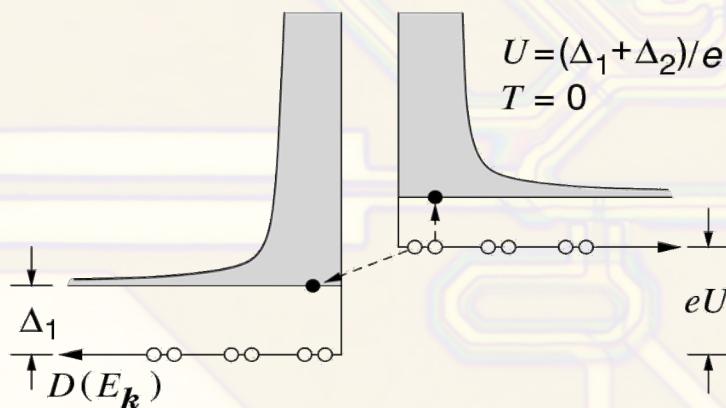
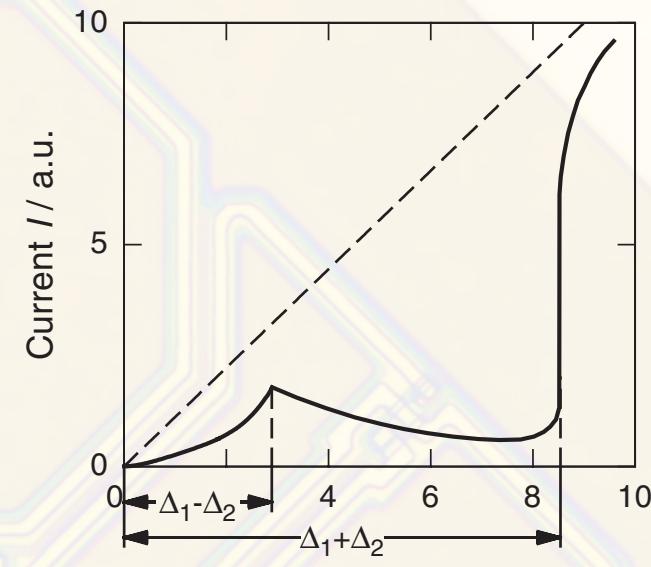
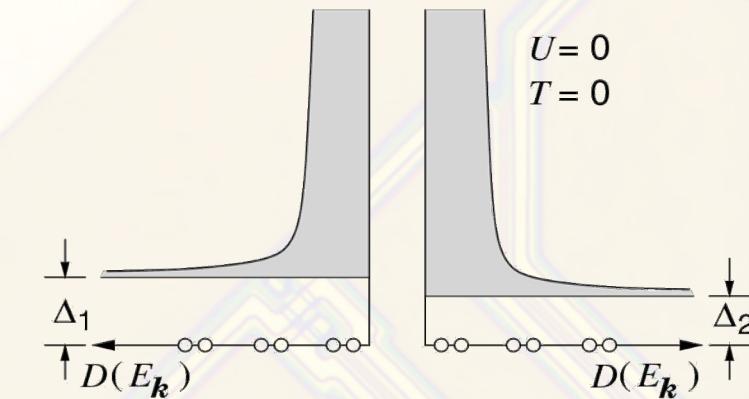




# S-I-S Junction



## Two-particle representation





# S-I-S Junction

