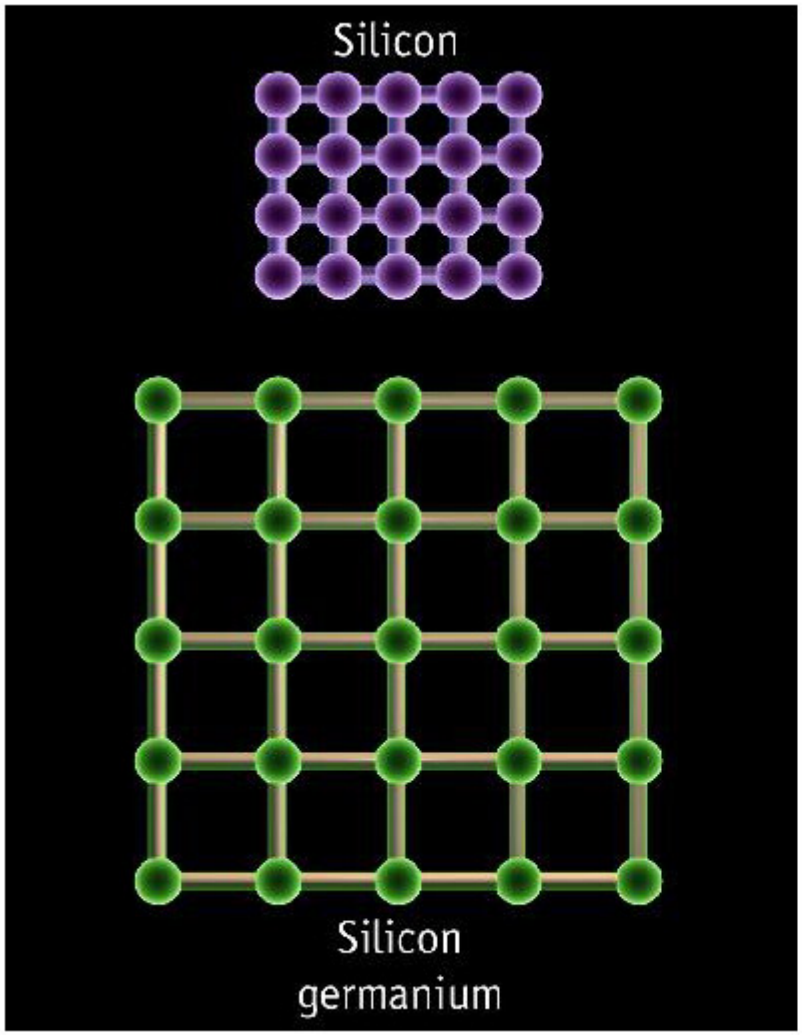
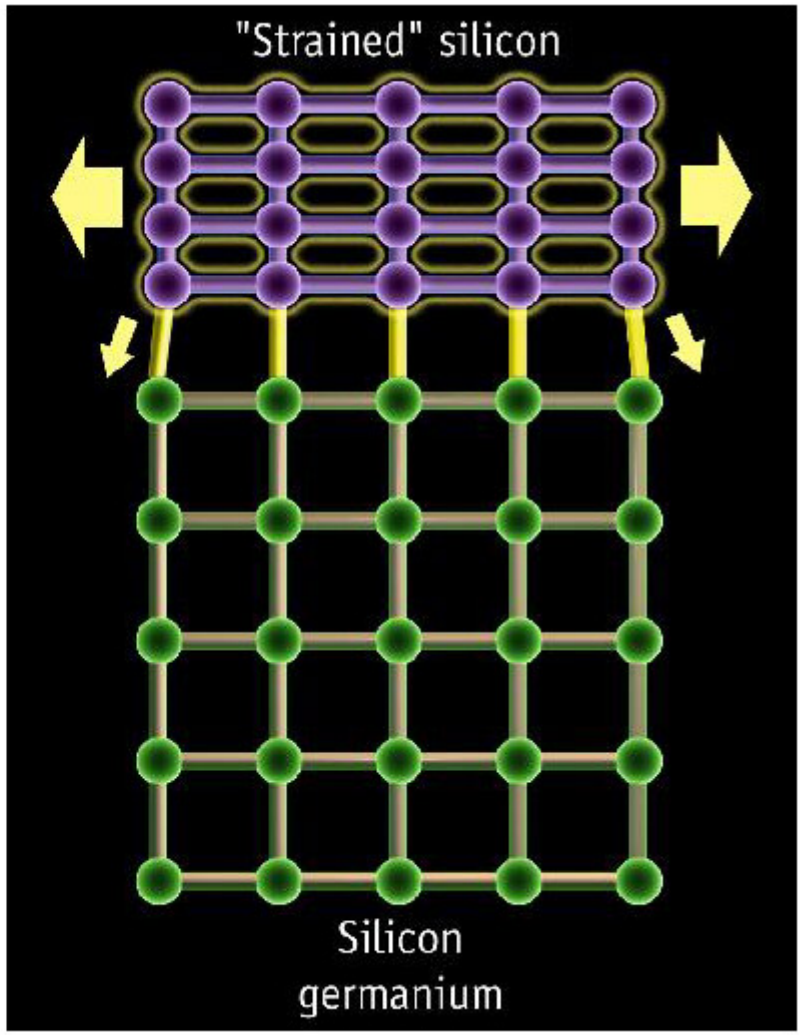
Strain at interfaces

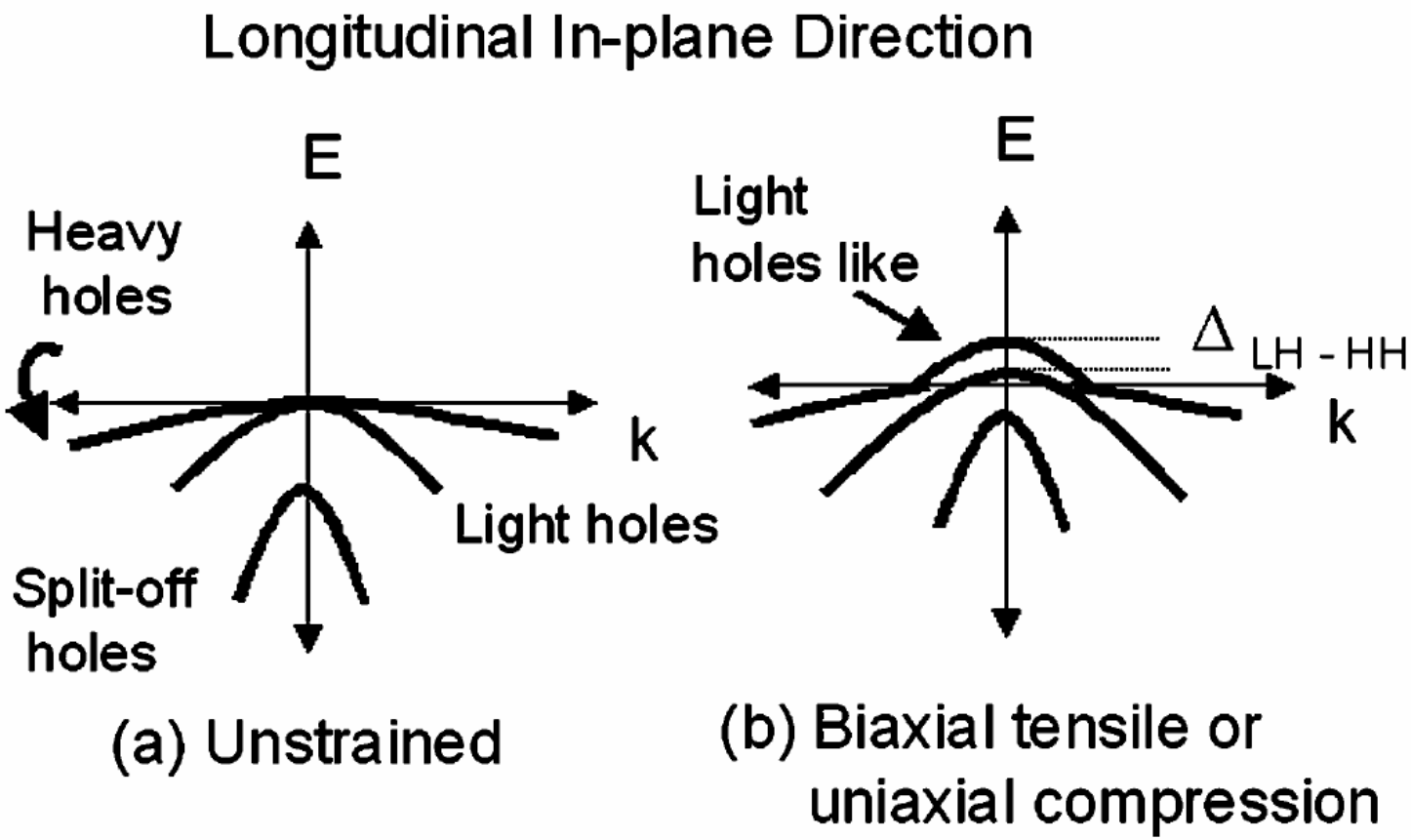


Before: $a=a_0$



After: $a>a_0$, tensile strain
$a<a_0$, compressive strain

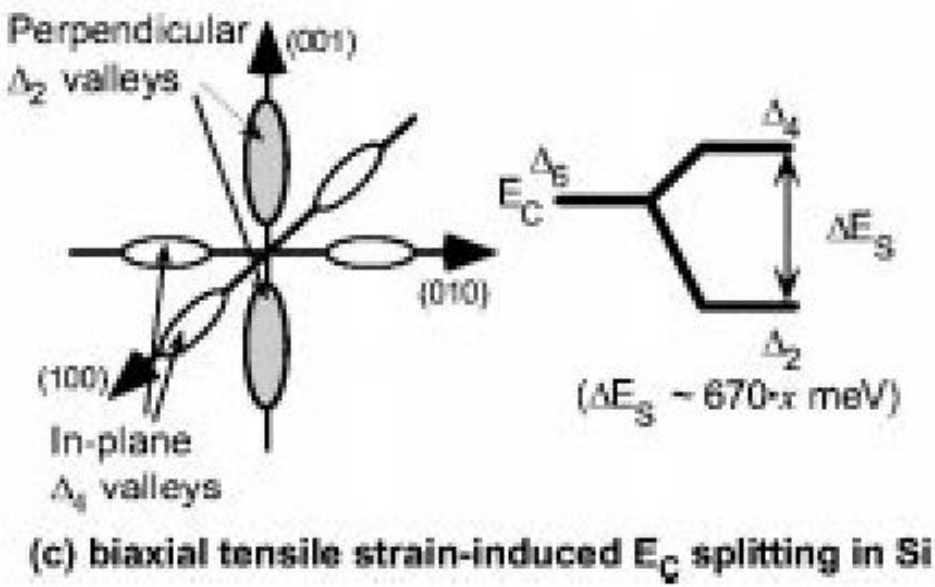
Effects of strain on holes



$m^* \downarrow$,interband scattering$\downarrow \Rightarrow \tau \uparrow \quad \Rightarrow \mu = e\tau/m^* \uparrow$

for both tensile and compressive strain

Effects of strain on electrons



(c) biaxial tensile strain-induced E_C splitting in Si

Curvature doesn't change,
but 6-fold valley degeneracy lifted

Compressive strain lowers the energy band in the direction of the strain
Tensile strain raises the energy band in the direction of the strain

$m^*=m_t$, intervalley scattering$\downarrow \Rightarrow \tau \uparrow \Rightarrow \mu=e\tau/m^* \uparrow$

for tensile strain only