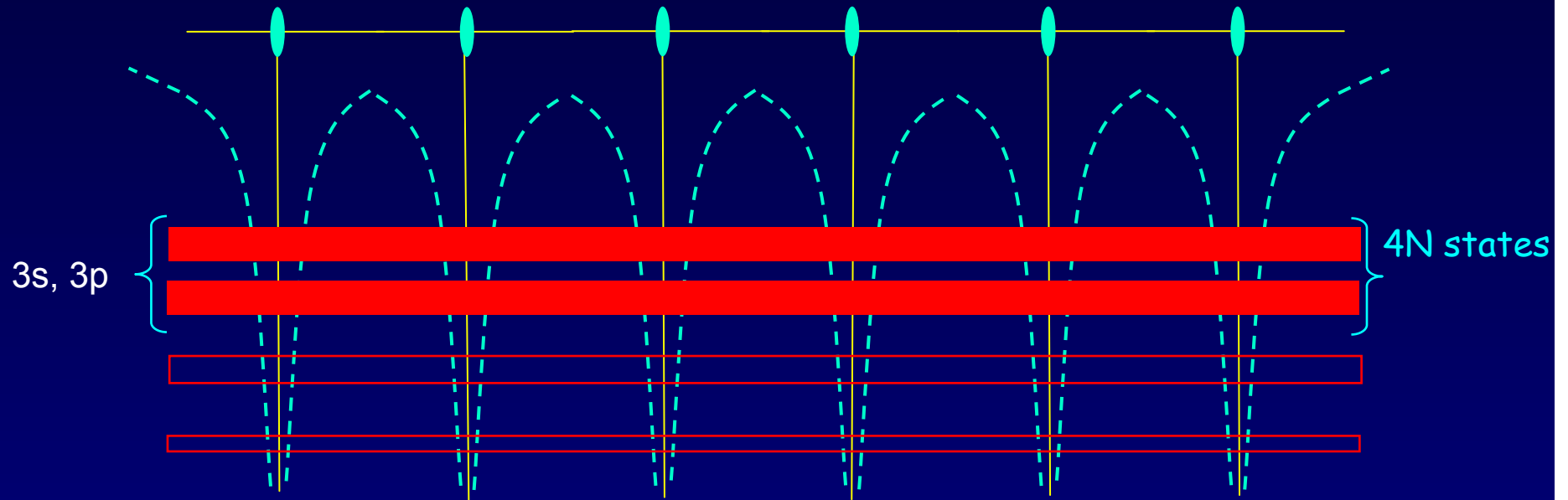# Energy Bands in Si

$Z = 14: 1s^2 2s^2 2p^6 3s^2 3p^2$

3s, 3p

4N states

In Si, the $3s^2$ and $3p^2$ hybridize to form four equivalent sp^3 –hybrid states. These eigenstates are linear combinations of s and p states:

$3s^2$ $3p_x$ $3p_y$ $3p_z$

sp^3 –hybridization

sp^3 sp^3 sp^3 sp^3