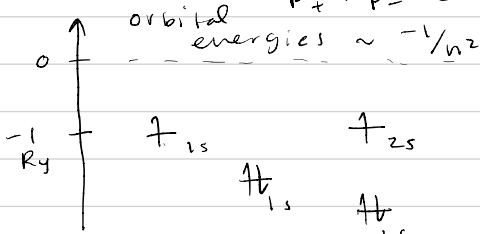
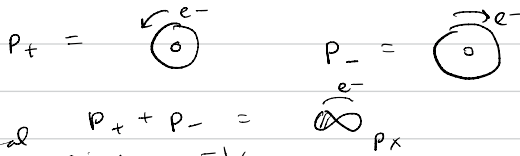


Lecture 12

Last Time: Quantum Superposition

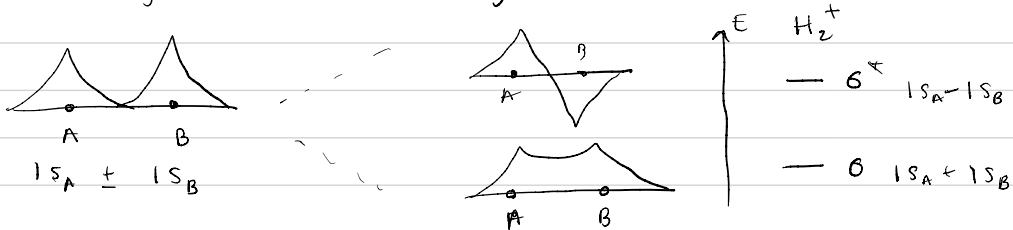
ex: atomic orbitals



$IP(He) > IP(H)$

He is more "electronegative"

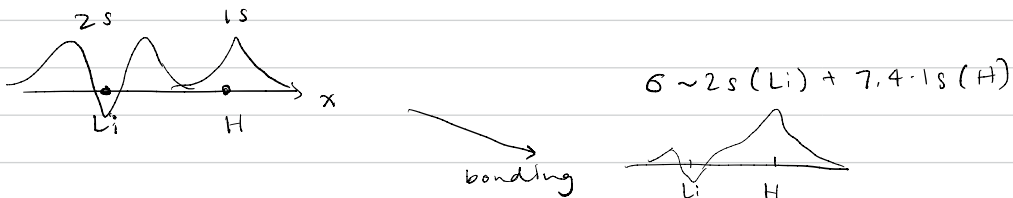
ex: bonding and antibonding superpositions



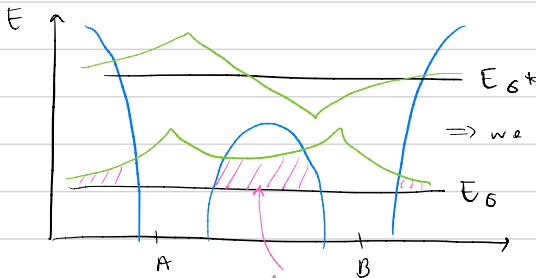
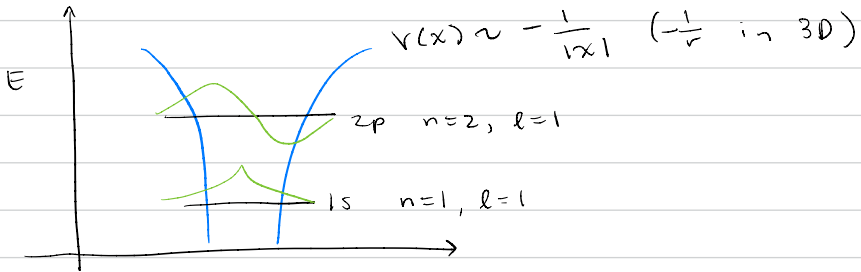
Today: more bonding and antibonding

"if 2 eigenstates have same (similar) energy, then any linear combination (eg $1s_A \pm 1s_B$, $P_+ \pm P_-$) is also an (approximate) eigenstate"

ex: non-symmetric bonding Li-H



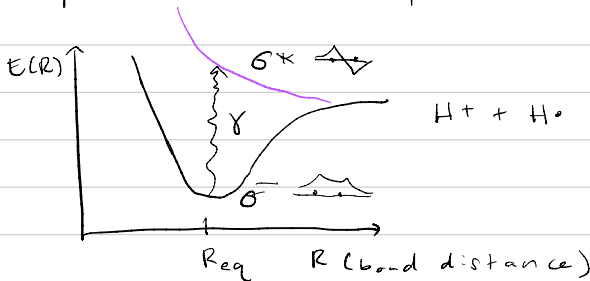
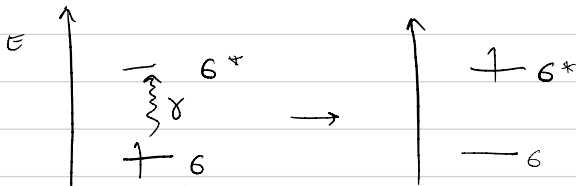
Why is bonding explained by QM and not CM?



\Rightarrow we need QM so the e^- can spend time in the classically forbidden region!

classically forbidden region
b/t the molecules

Spectroscopy = excite the electron in H_2^+ molecules



Other atomic orbitals can do bonding/antibonding combination = superposition as well

