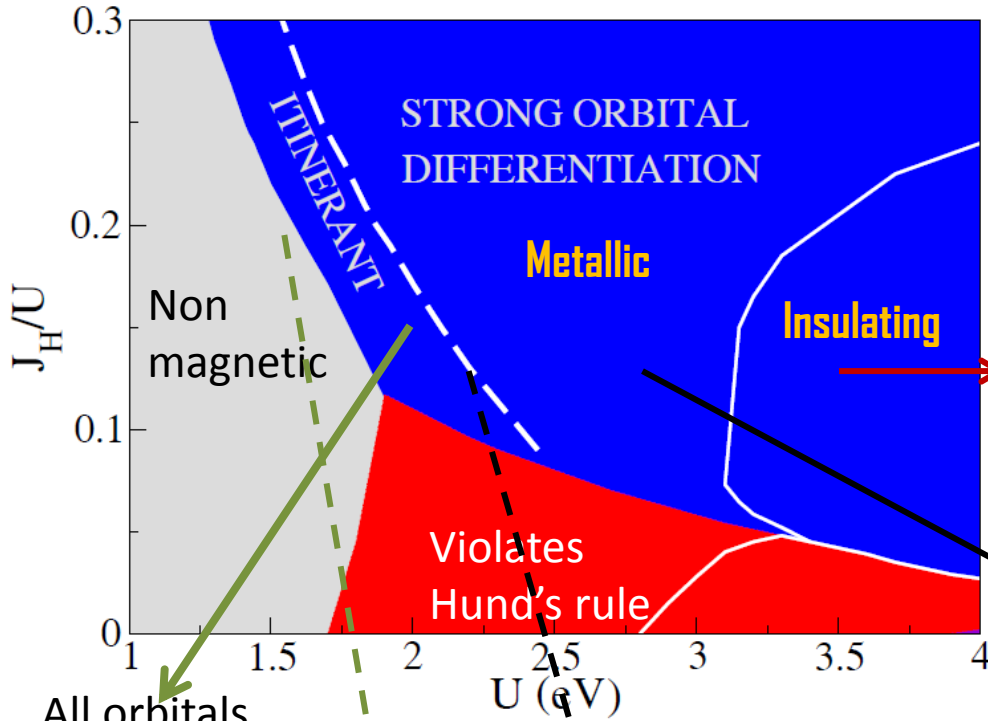
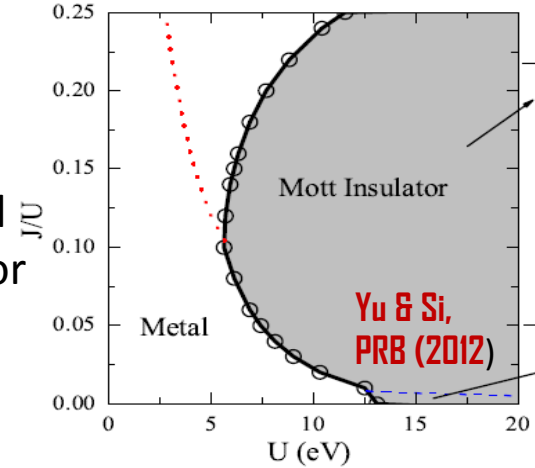


Which is the nature of columnar $(\pi,0)$ magnetism? $(\pi,0)$ ordering imposed



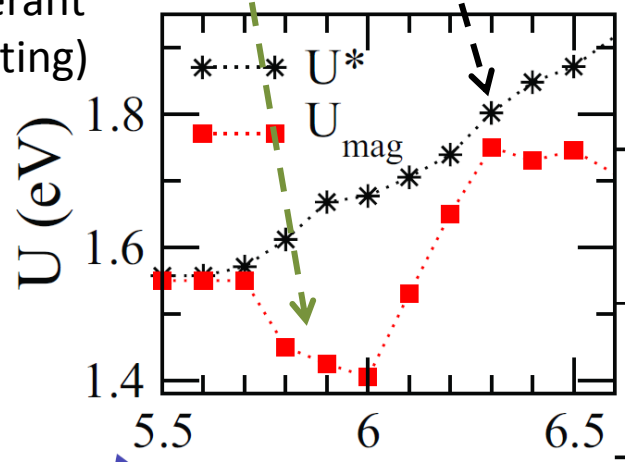
Hartree-Fock, 6 electrons in 5-orbitals

Behavior expected from J_1 - J_2 model for localized spins

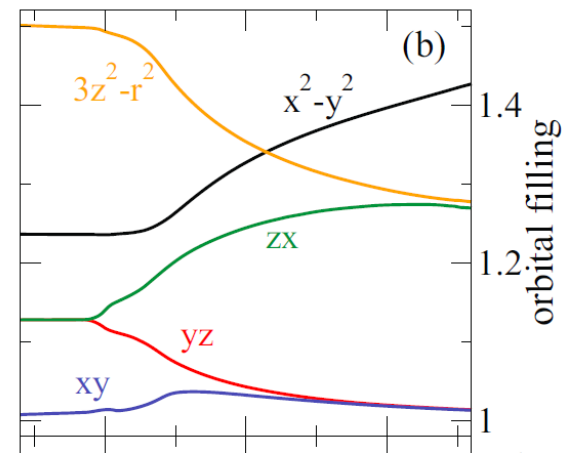


$zx, 3z^2-r^2, x^2-y^2$: itinerant
 xy, yz : half-filled gapped orbitals

All orbitals Itinerant (nesting)

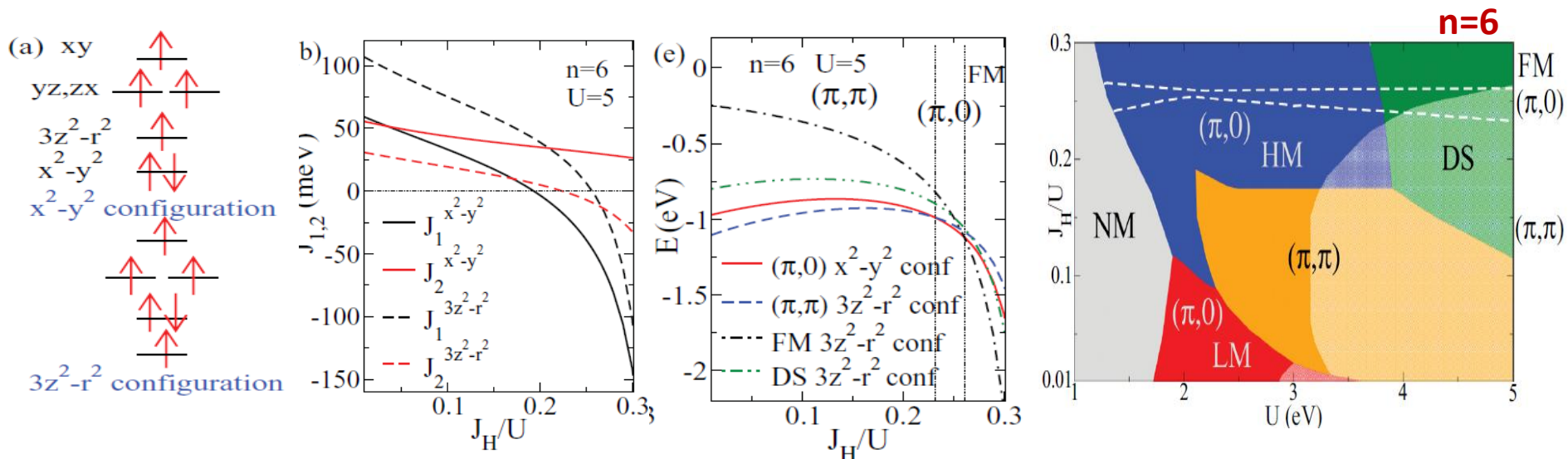


Both localized & itinerant orbitals responsible for magnetism



A gap opens at the Fermi level in the half-filled orbitals

Competition between magnetic states and mapping to Heisenberg



Doping dependence

Angle dependence

