

What do p orbitals look like?

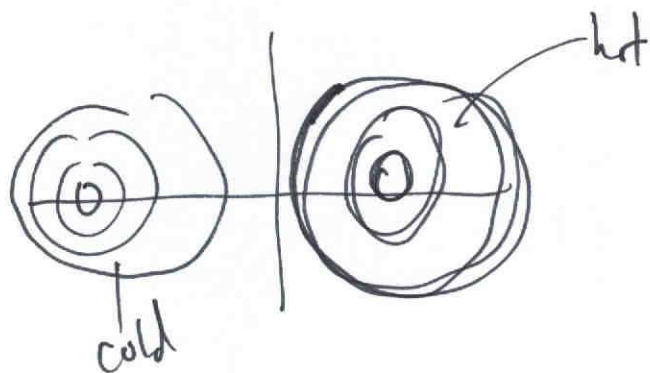
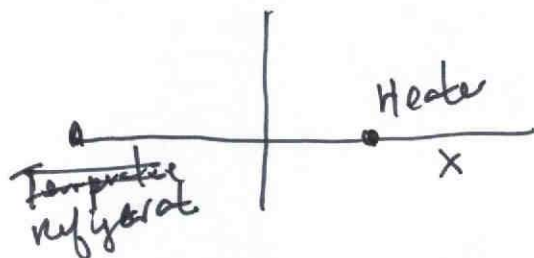
For now let's consider 2p orbitals.

First you must know ^{an} orbital is a function, a spatial function. A ^{spatial} function is a way to associate a number to every point in space.

Two examples:

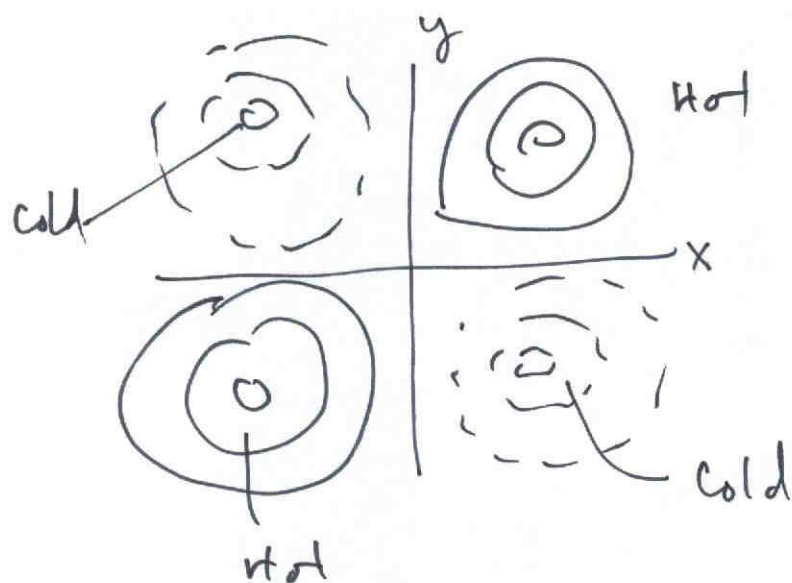
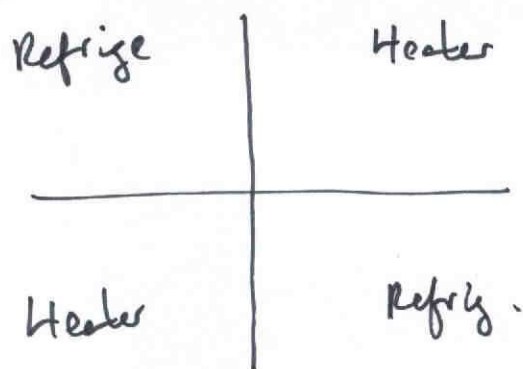
① Brightness: We associate to every point in the room an amount of brightness. It is bright near the overhead projector. It is dark under the chairs.

② Temperature: It is warm near the projector, near people, cold next to the windows or doors. Consider a room which has a heater & a refrigerator located:



This is a 2p_x orbital in shape.

A d-orbital can correspond to 2 heaters + 2 refrigerators



That looks a lot like a d-orbital,
the $3d_{xy}$ orbital in fact.