

In Class 5: Quantum Theory, Orbitals, Electron Configurations, and Radial Probability Diagrams

What combination of quantum numbers describes

a 4s orbital?

a 5f orbital?

a 3d orbital?

Draw a general picture of what a d_{xy} orbital looks like. How is this different from a $d_{x^2-y^2}$ orbital?

Prove that there are 18 electrons in the 3rd principal quantum level!

When putting electrons in atoms, we are able to put 6 electrons in p orbitals in a given quantum level, but 14 electrons in an f orbital with the same principal quantum number.

Chem 130, Eppley

Write the electron configurations for the following atoms. How many unpaired electrons does each have? Is each one diamagnetic or paramagnetic?

In

Eu

For each of the following orbitals, identify as many quantum numbers as you can. Draw them, label their axes, and their angular and radial nodes. Then draw a radial probability diagram for each.

$4p_z$

$4d_{xz}$