Orbital Cloud Model of the Atom

Gather Together…
-Notes from last class
-Today's notes Page

Orbital Cloud Model

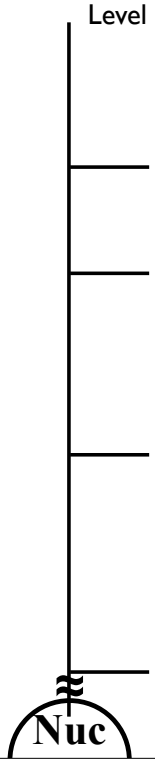
Quantum Numbers Review

- Energy Level Quantum Number (n)
  - Size of energy level (cloud)
  - Values on periodic table from 1-7
  - Capacity = $2n^2$ rule
- Sub-level Quantum Number (l)
  - The number of sub-levels in an energy level is *n*
  - Named s, p, d, f
- Orbital Quantum Number (m)
  - Space occupied by 2 electrons
- Spin Quantum Number (s)
  - up or down

Orbital Cloud Model

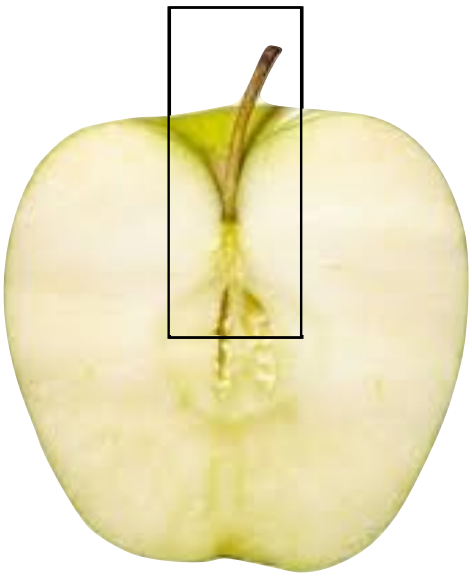
Quantum Numbers

n Energy Level **l** Sub-Level **m** Orbital



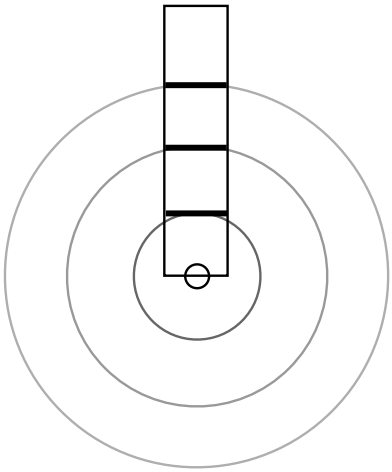
Orbital Cloud Model

Core Sample



Orbital Cloud Model

Core Sample



Orbital Cloud Model

Quantum Numbers

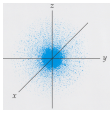
n Energy Level **l** Sub-Level **m** Orbital

7
.
.
.
4 — **32**

3 — **18**

2 — **8**

1 — **2** ⇨ **1s** — **2**

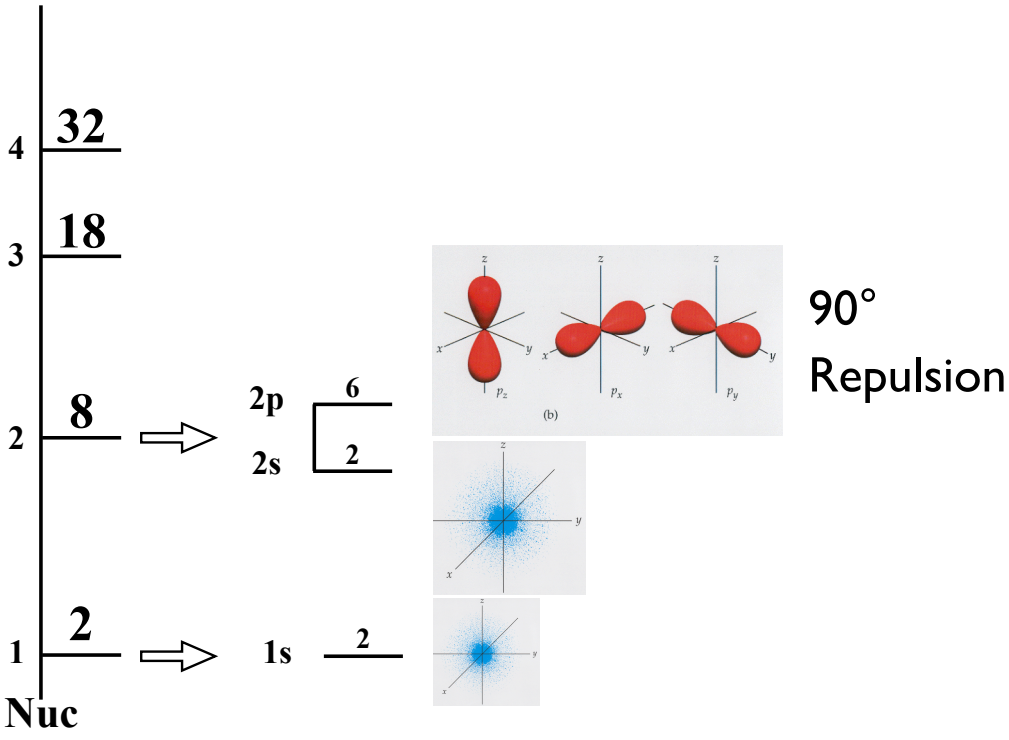


Nuc

Orbital Cloud Model

Quantum Numbers

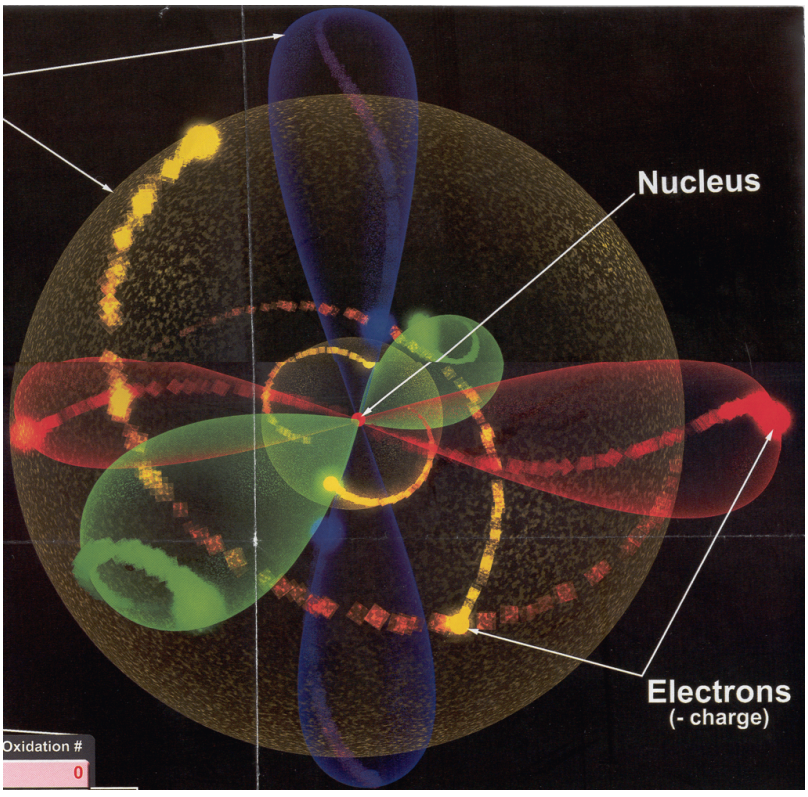
n Energy Level **l** Sub-Level **m** Orbital



90°
Repulsion

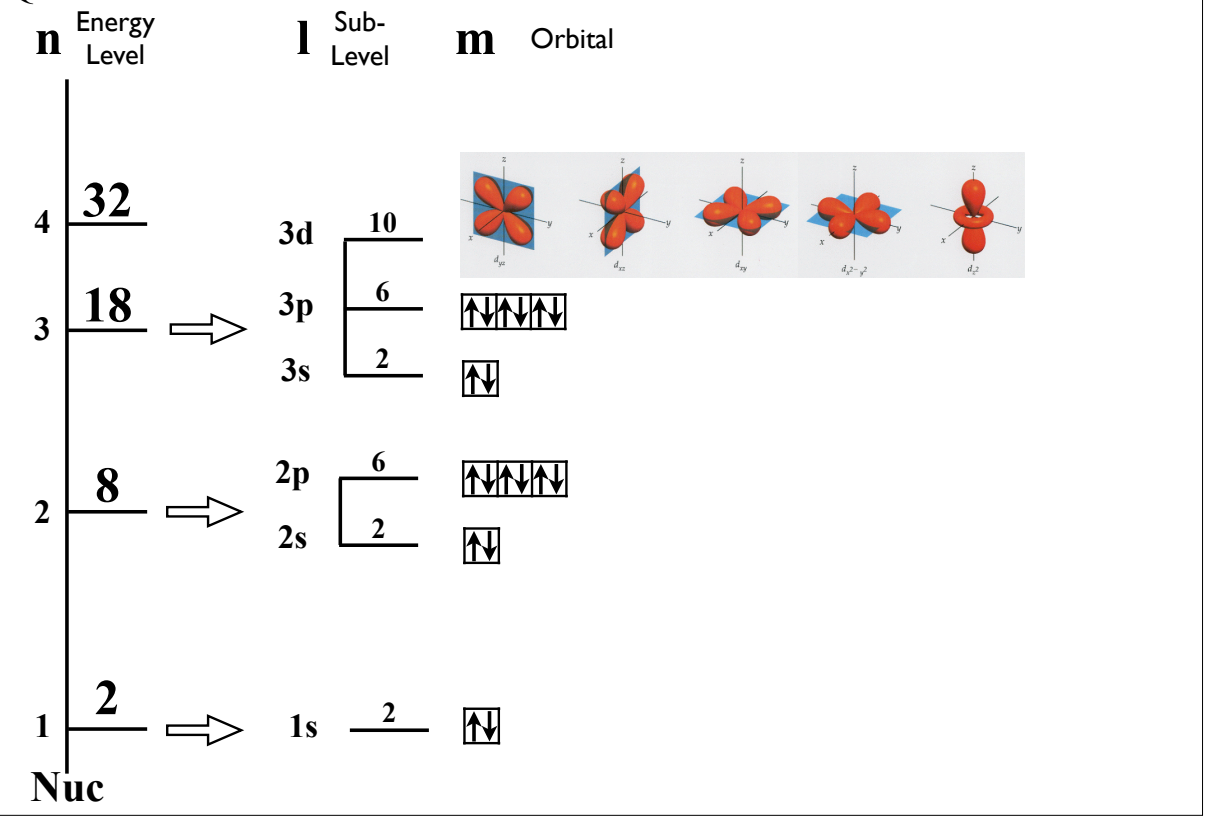
Orbital Cloud Model

Quantum Numbers



Orbital Cloud Model

Quantum Numbers



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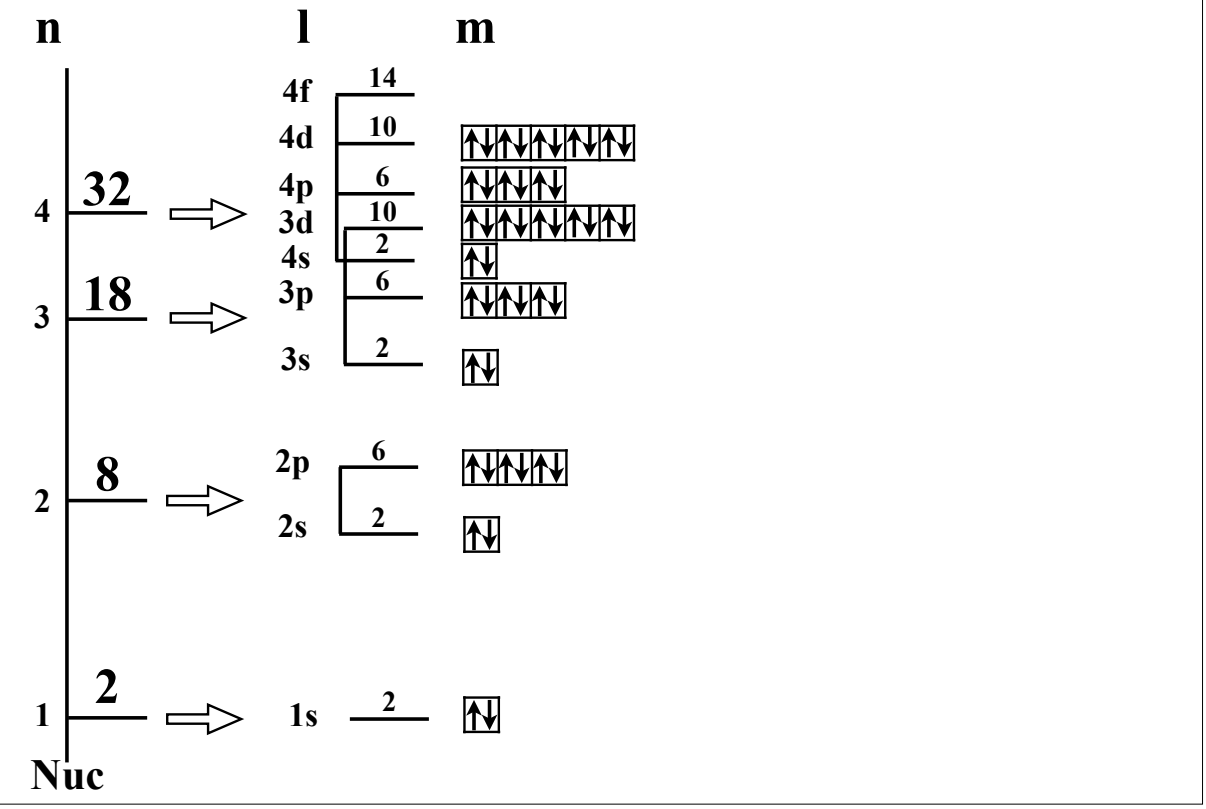
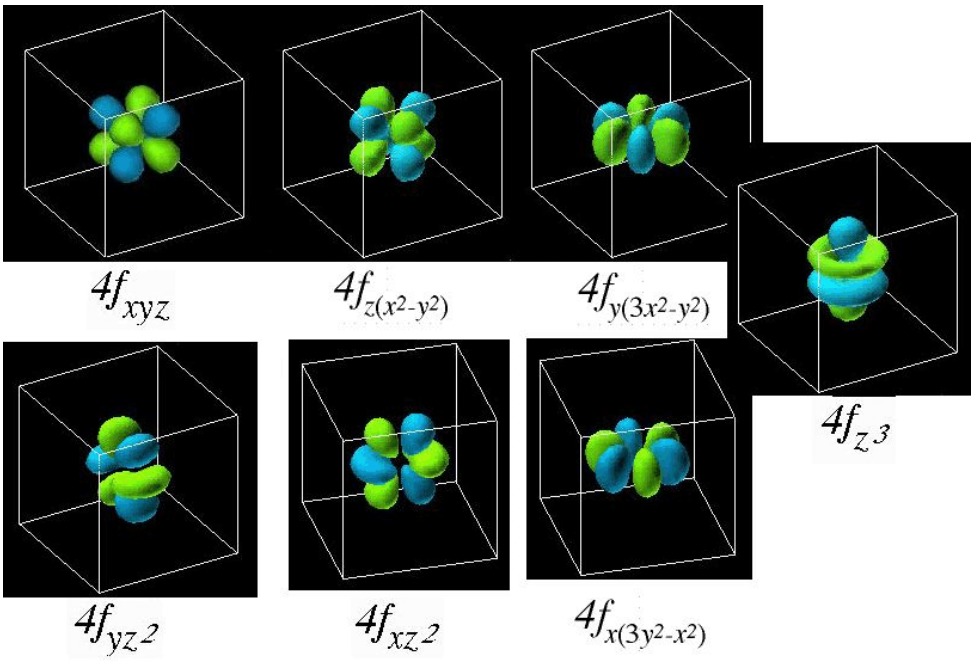
Quantum Numbers



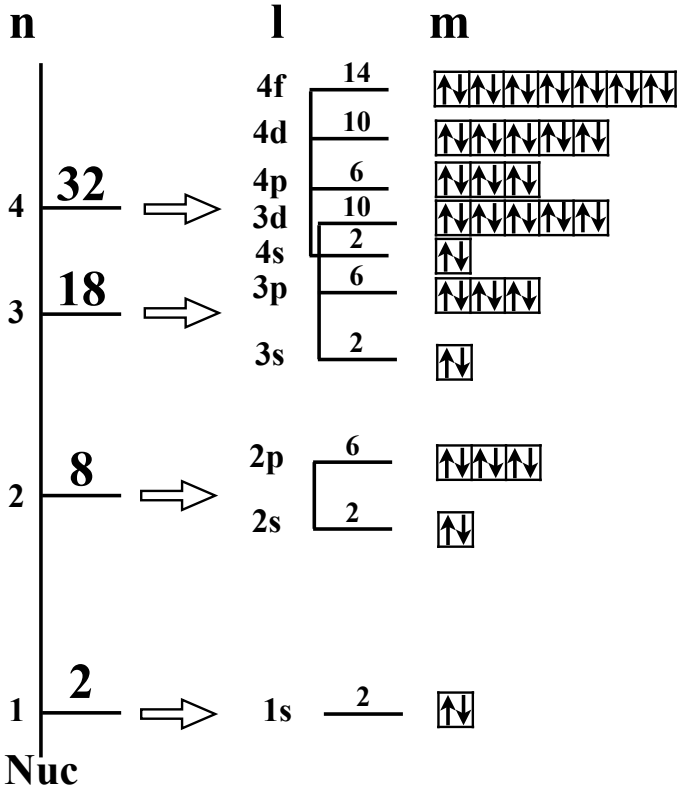
Orbital Cloud Model

Quantum Numbers



Orbital Cloud Model

Quantum Numbers



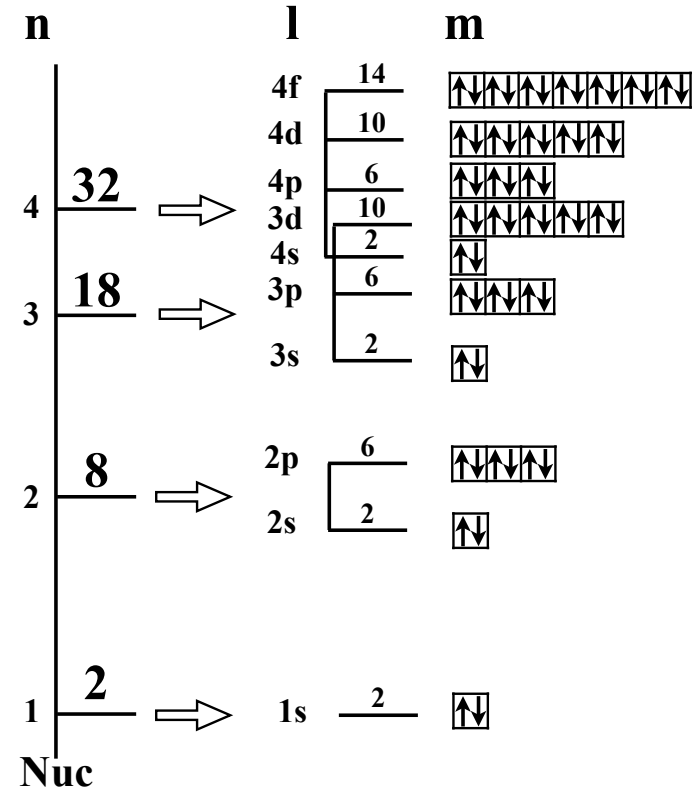
EXTRA CREDIT

Take the boxes, and make them visually accurate

shape
size
number of orbitals

Orbital Cloud Model

Quantum Numbers



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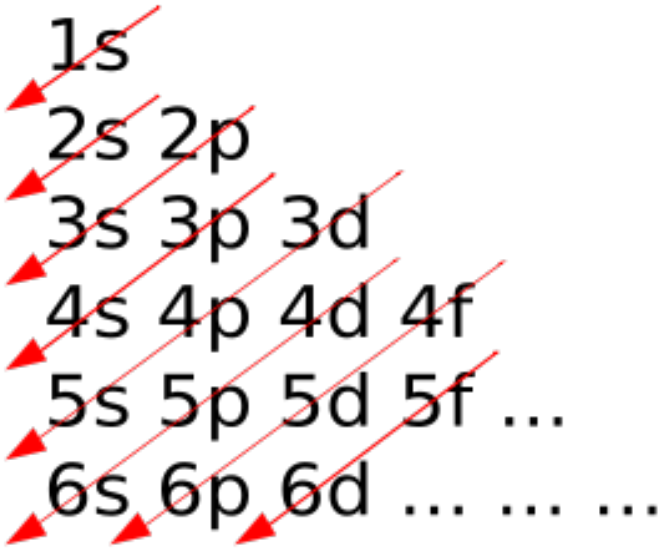
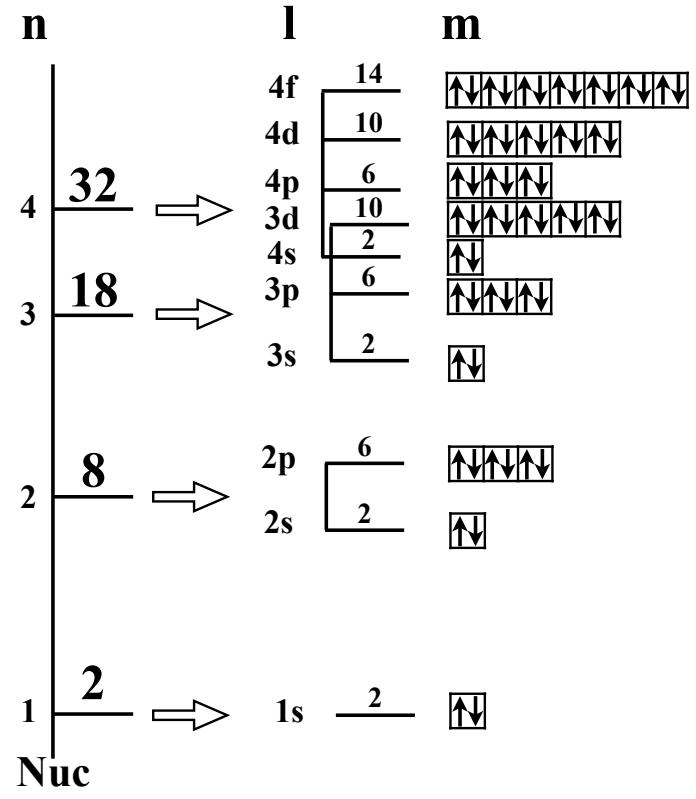
Quantum Numbers



Orbital Cloud Model

Quantum Numbers



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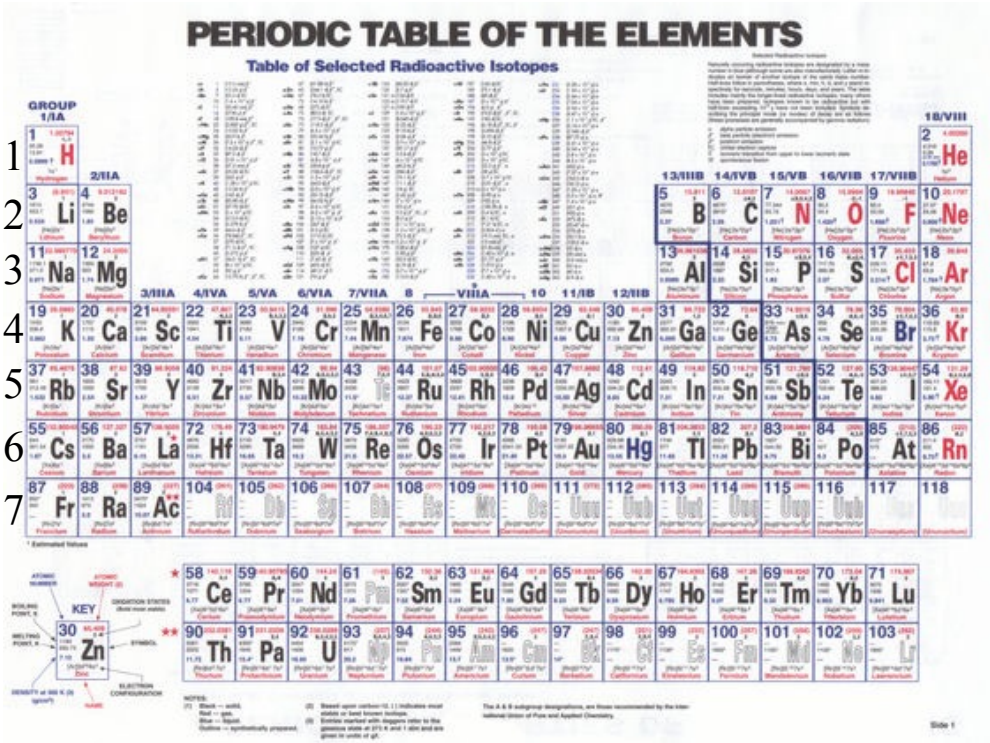
Quantum Numbers



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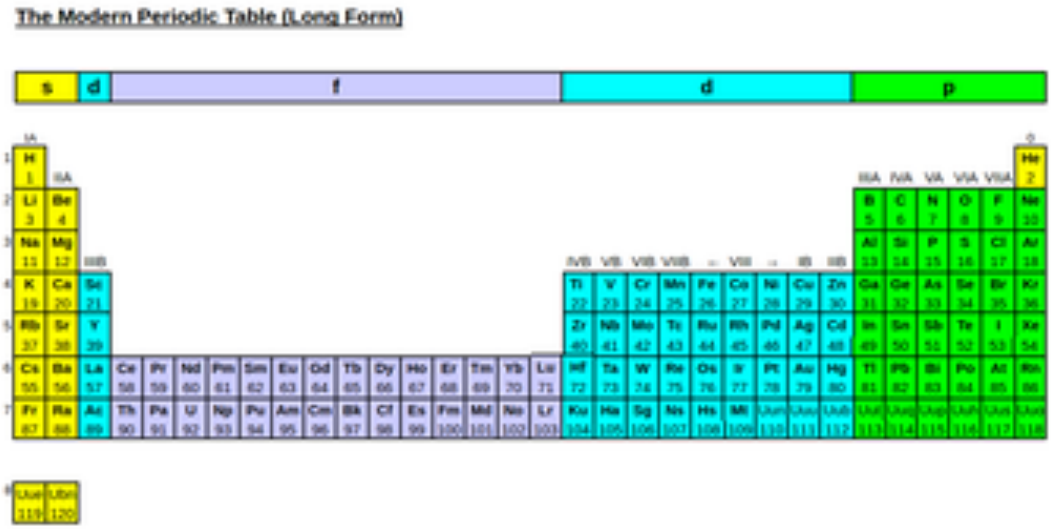

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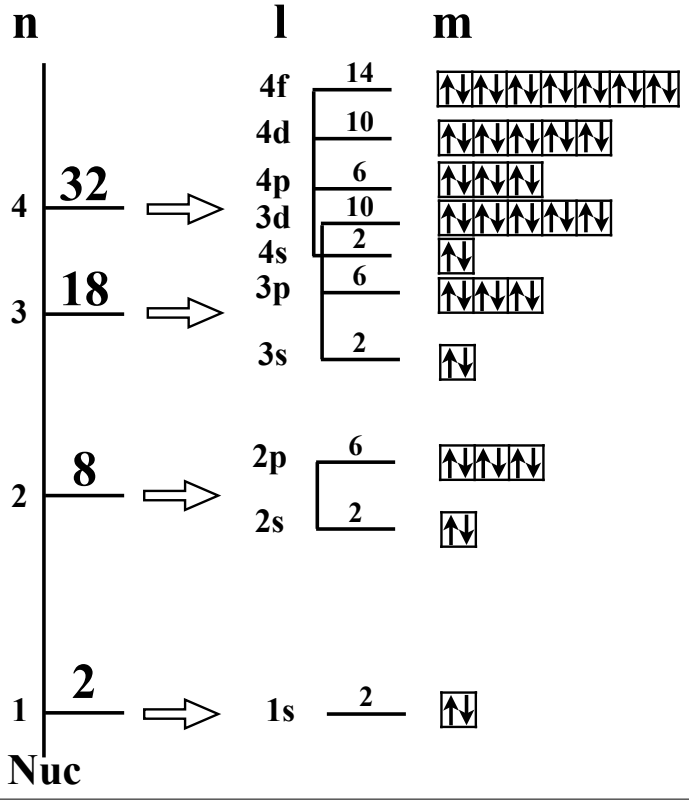

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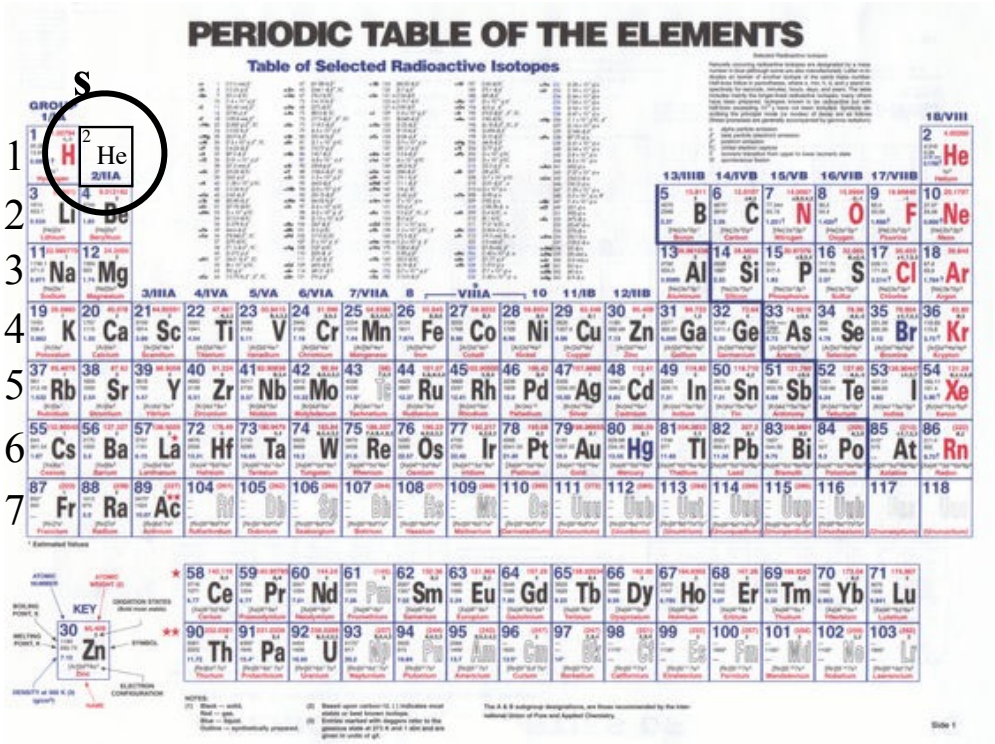

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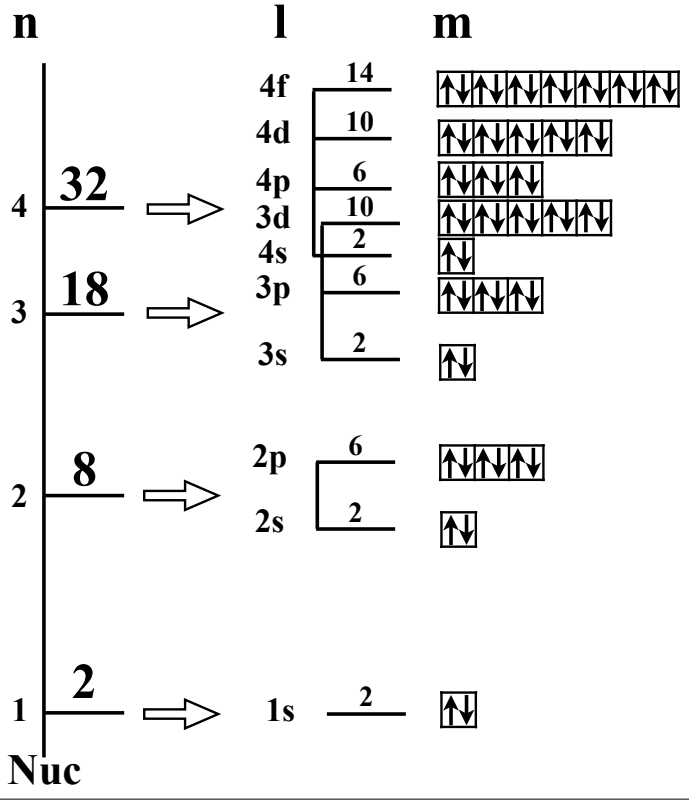

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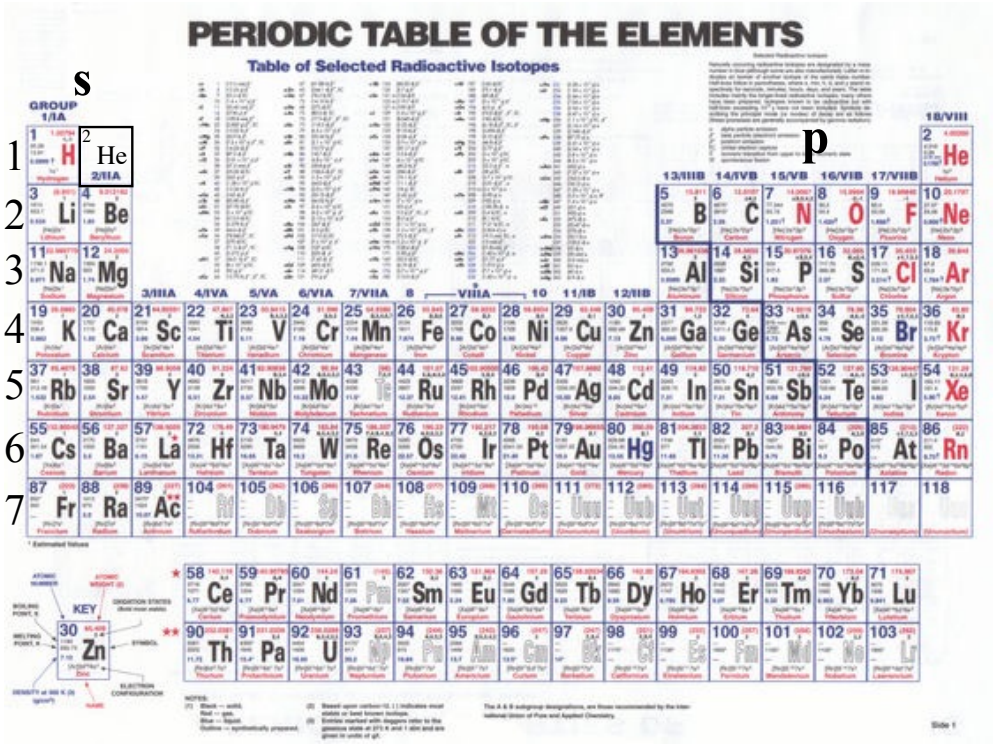

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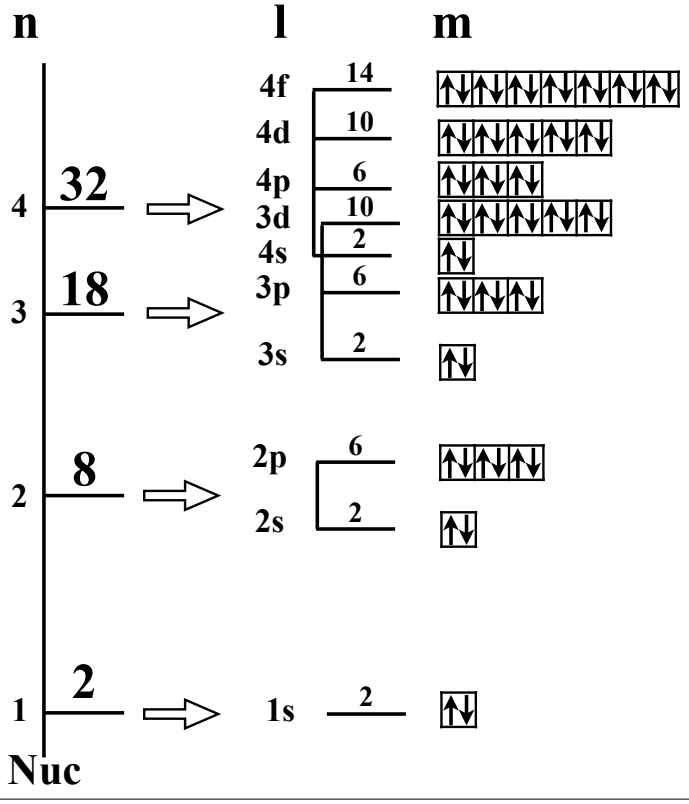

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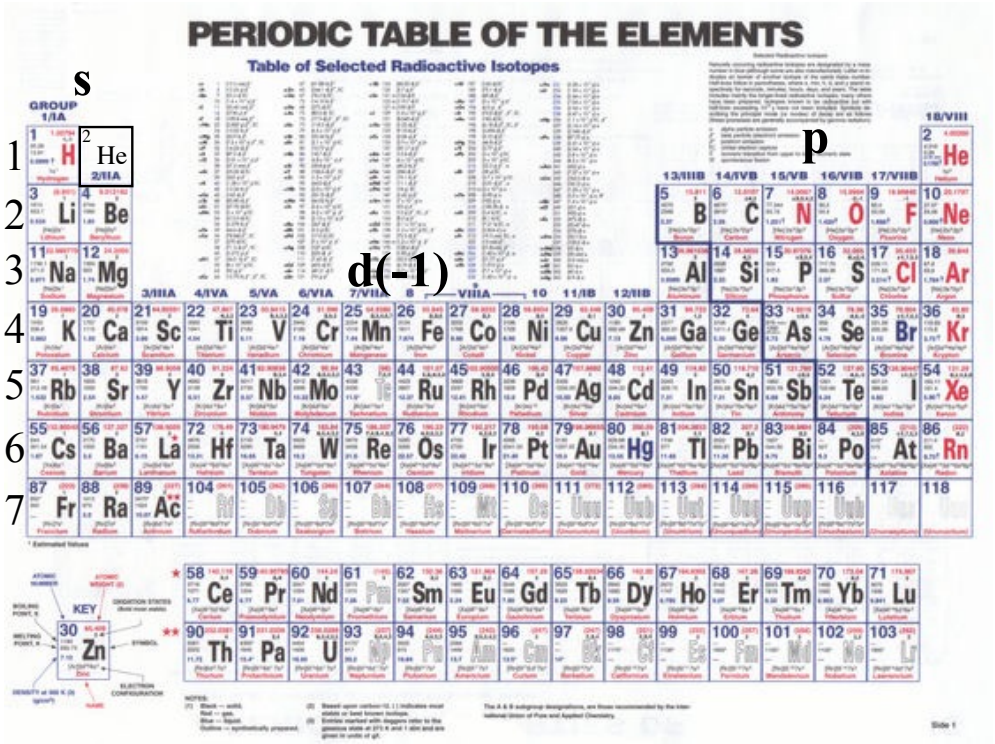

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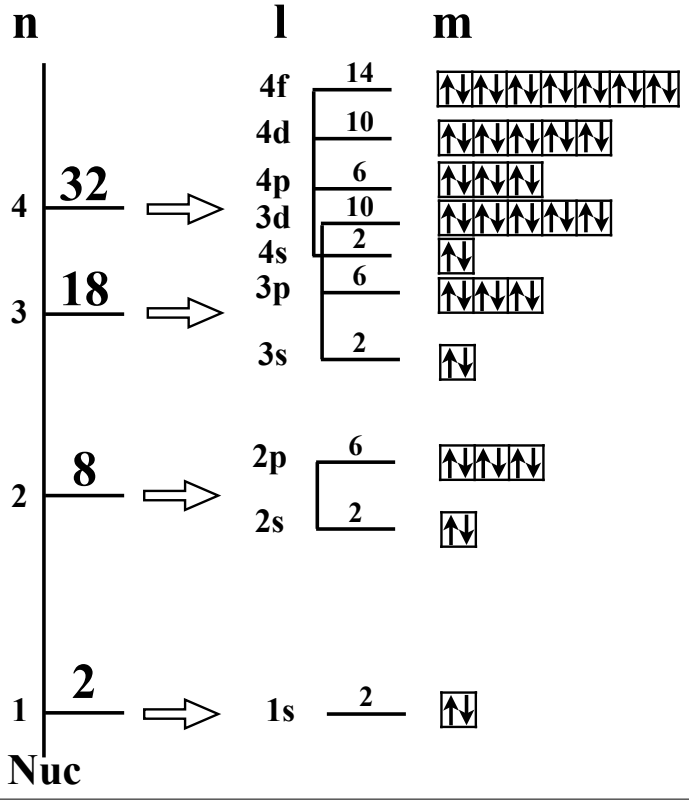

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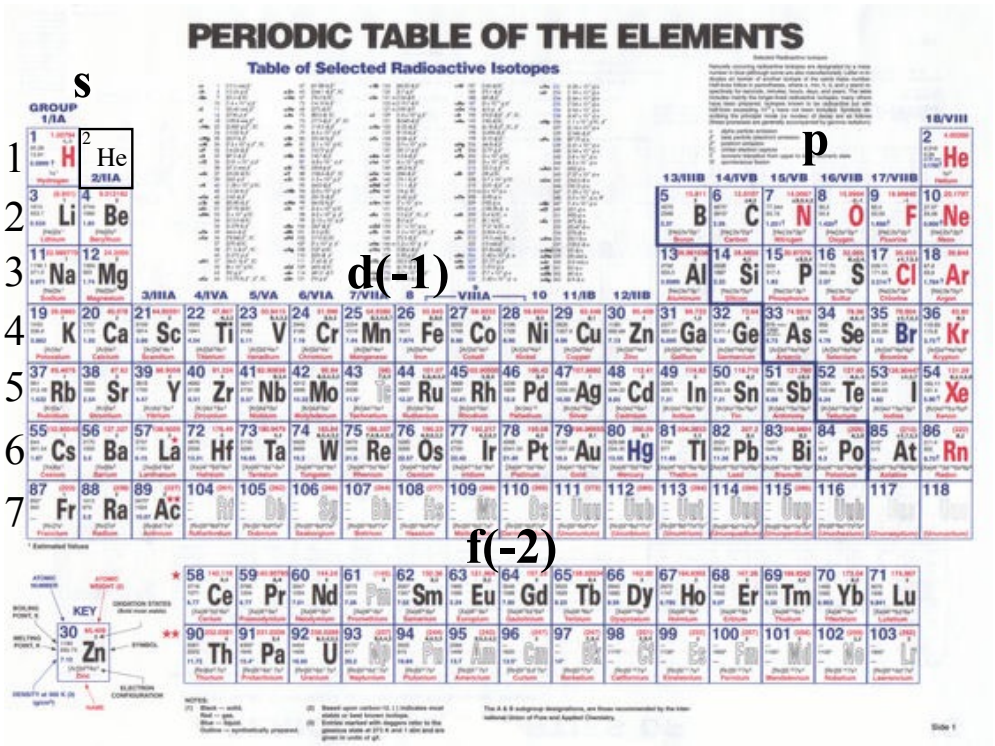

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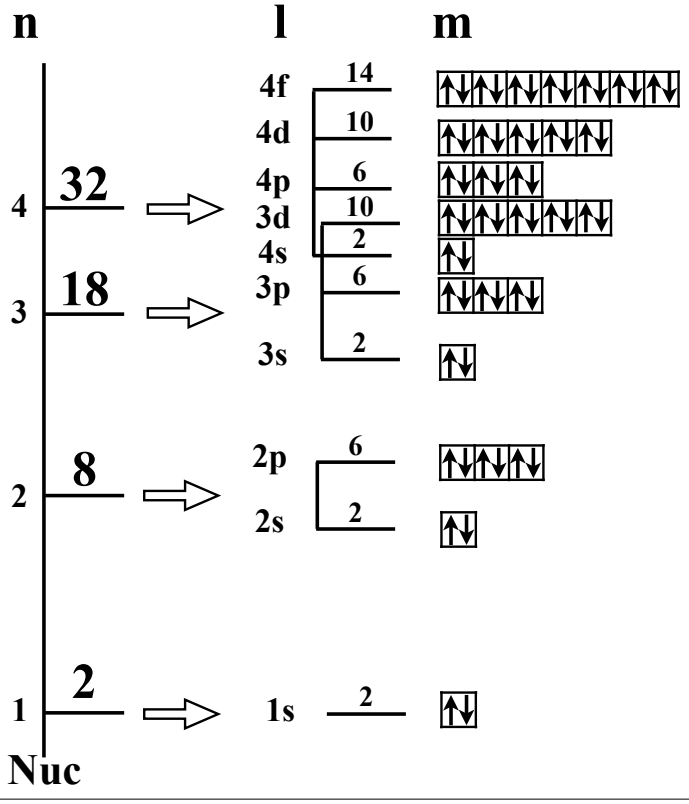

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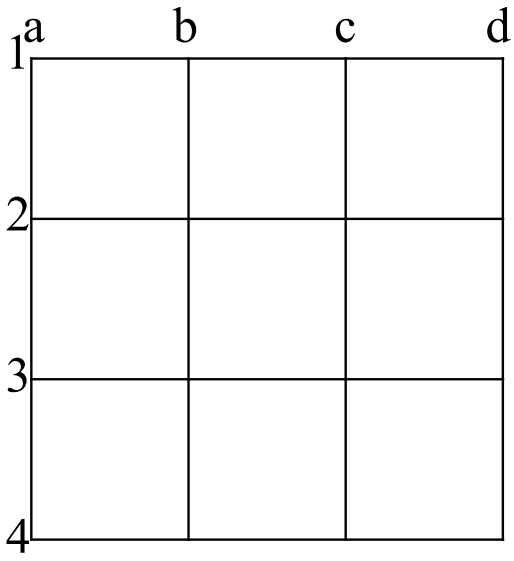

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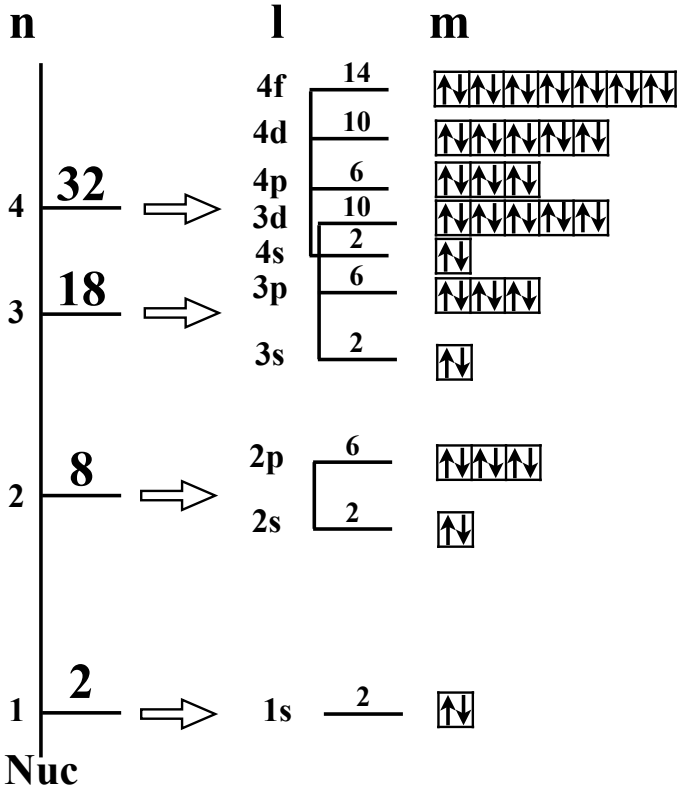

Orbital Cloud Model

Representing Electron Structures

- Orbital Filling Diagrams
  - Oxygen
  - Copper