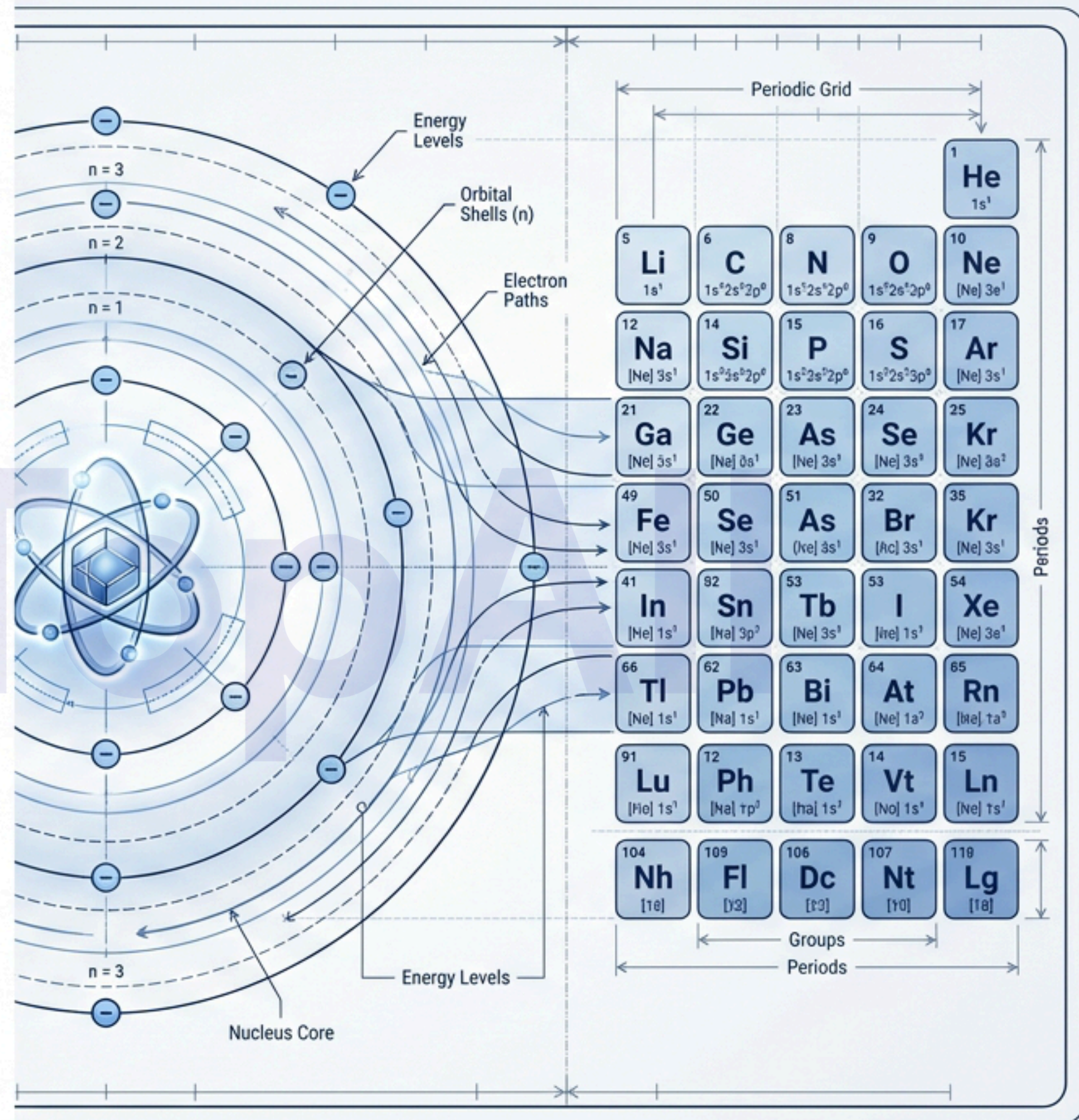


Electronic Configuration

The Periodic Table Code

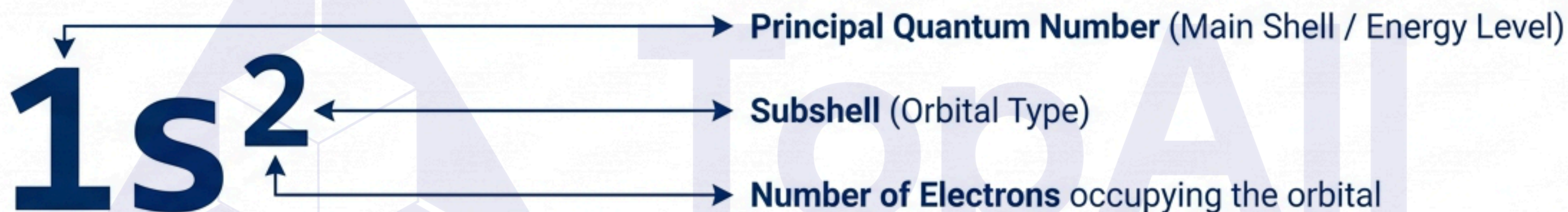
Decoding the quantum mechanics behind the universe's ultimate organizational map.



What is electronic configuration?



The distribution of electrons into orbitals of an atom.



	s-block	p-block	d-block	f-block
Maximum Capacity	Max 2 e ⁻ (Width: 2 columns)	Max 6 e ⁻ (Width: 6 columns)	Max 10 e ⁻ (Width: 10 columns)	Max 14 e ⁻ (Width: 14 columns)
Configuration Code	ns^{1-2}	ns^2np^{1-6}	$(n-1)d^{1-10}$ ns^{0-2}	$(n-2)f^{1-14}$ $(n-1)d^{0-1} ns^2$
Element Classification	Reactive Metals	Main Group / Representative Elements	Transition Elements	Inner-Transition Elements (Lanthanoids/Actinoids)



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$$E=mc^2$$



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The Element

Sodium (Na)

Atomic Number
Z=11

(11 electrons to place)

The Code

1s²

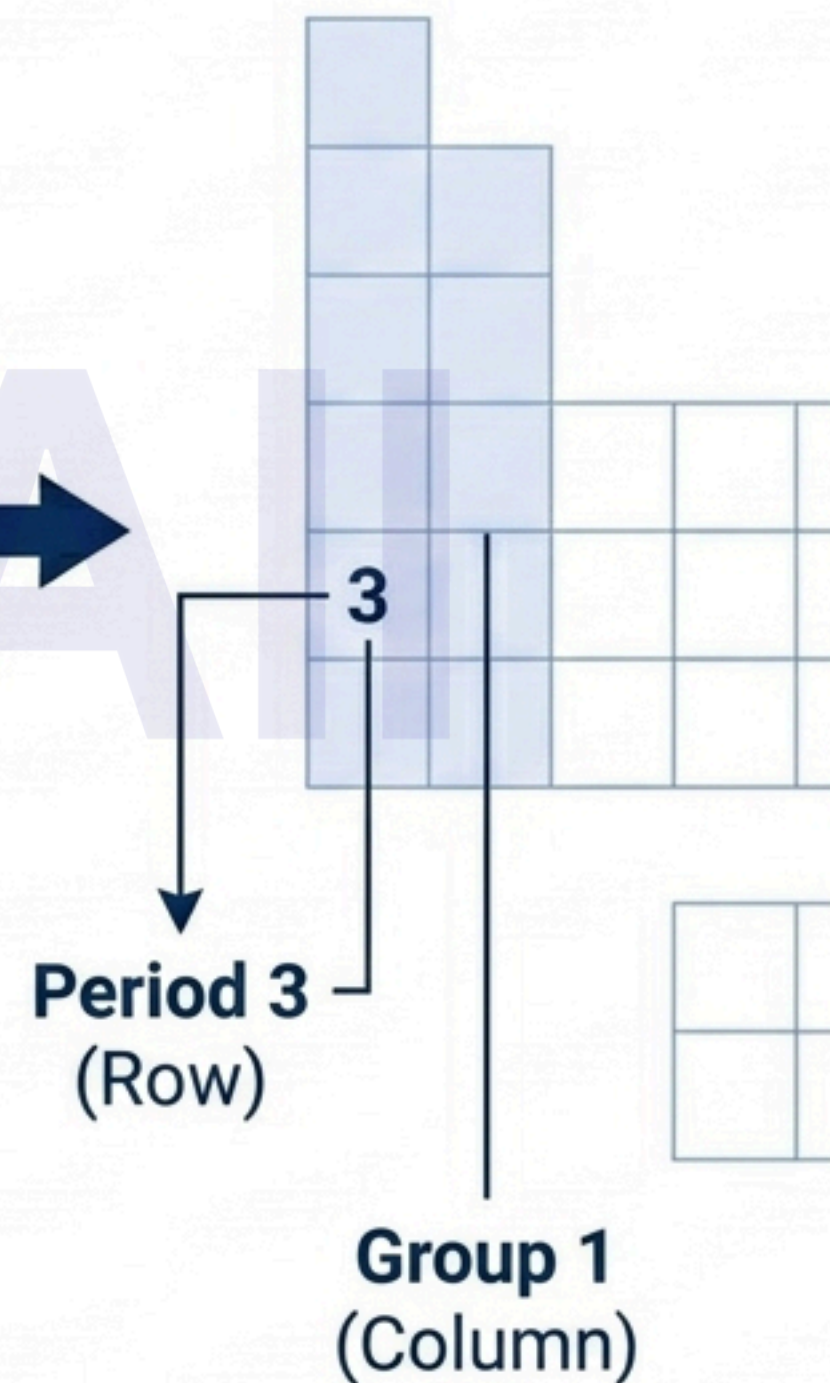
2s²

2p⁶

The Last
Filled Orbital

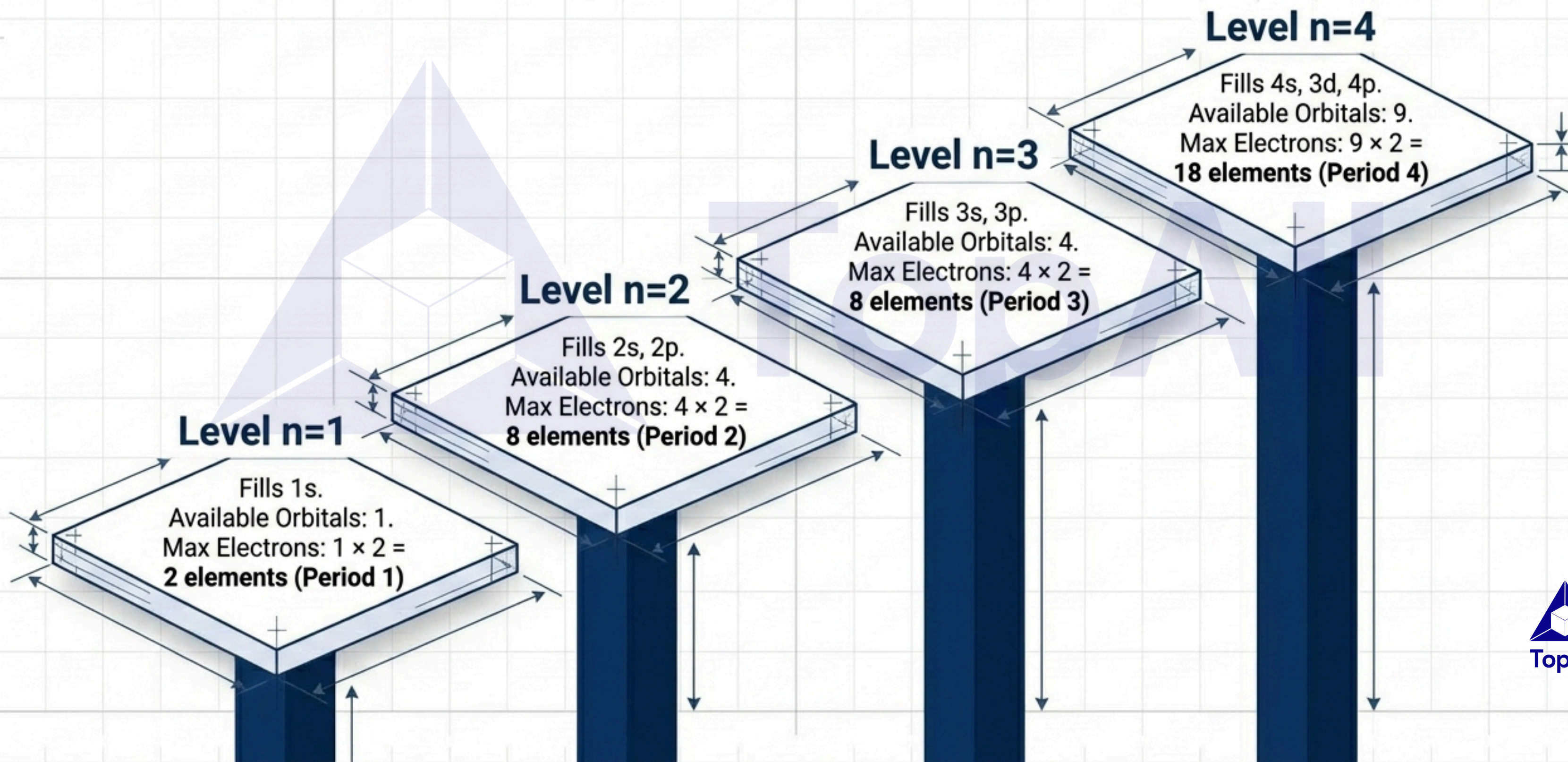
[3s¹]

The Coordinate

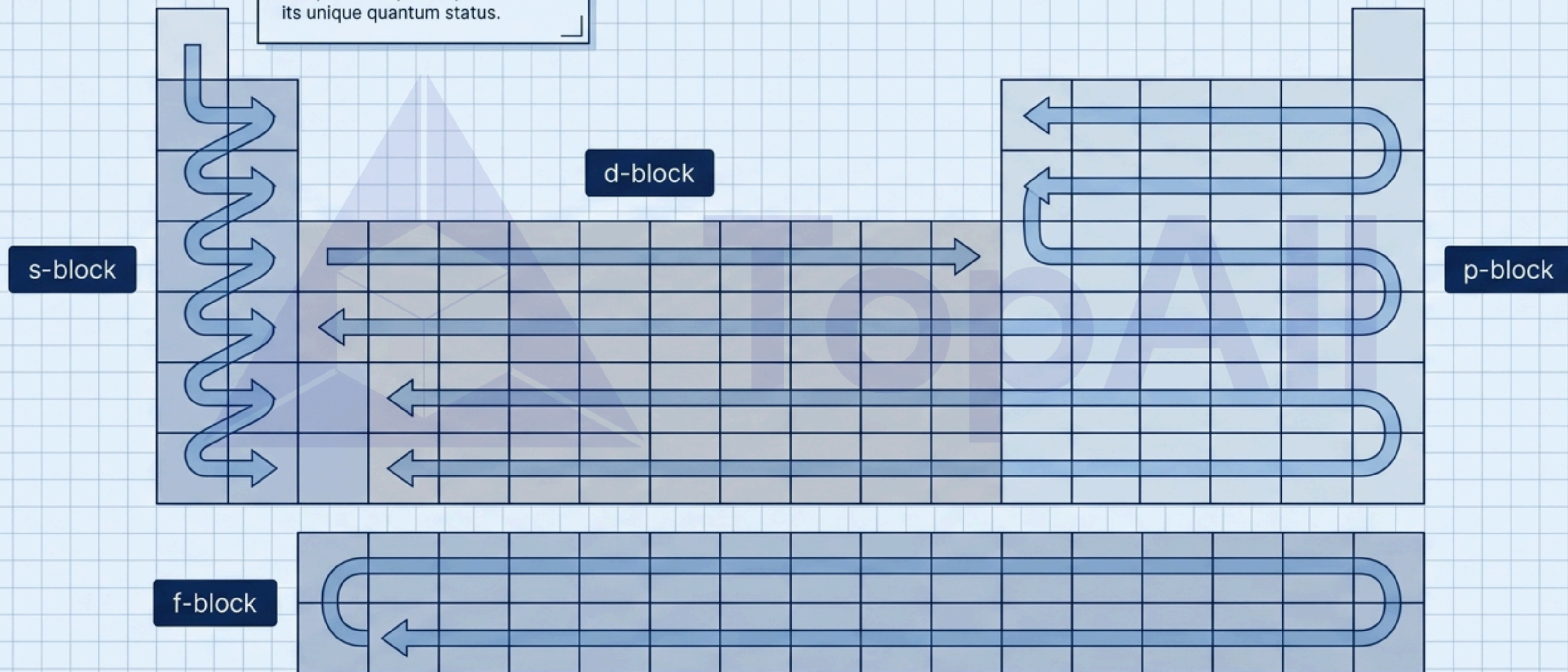


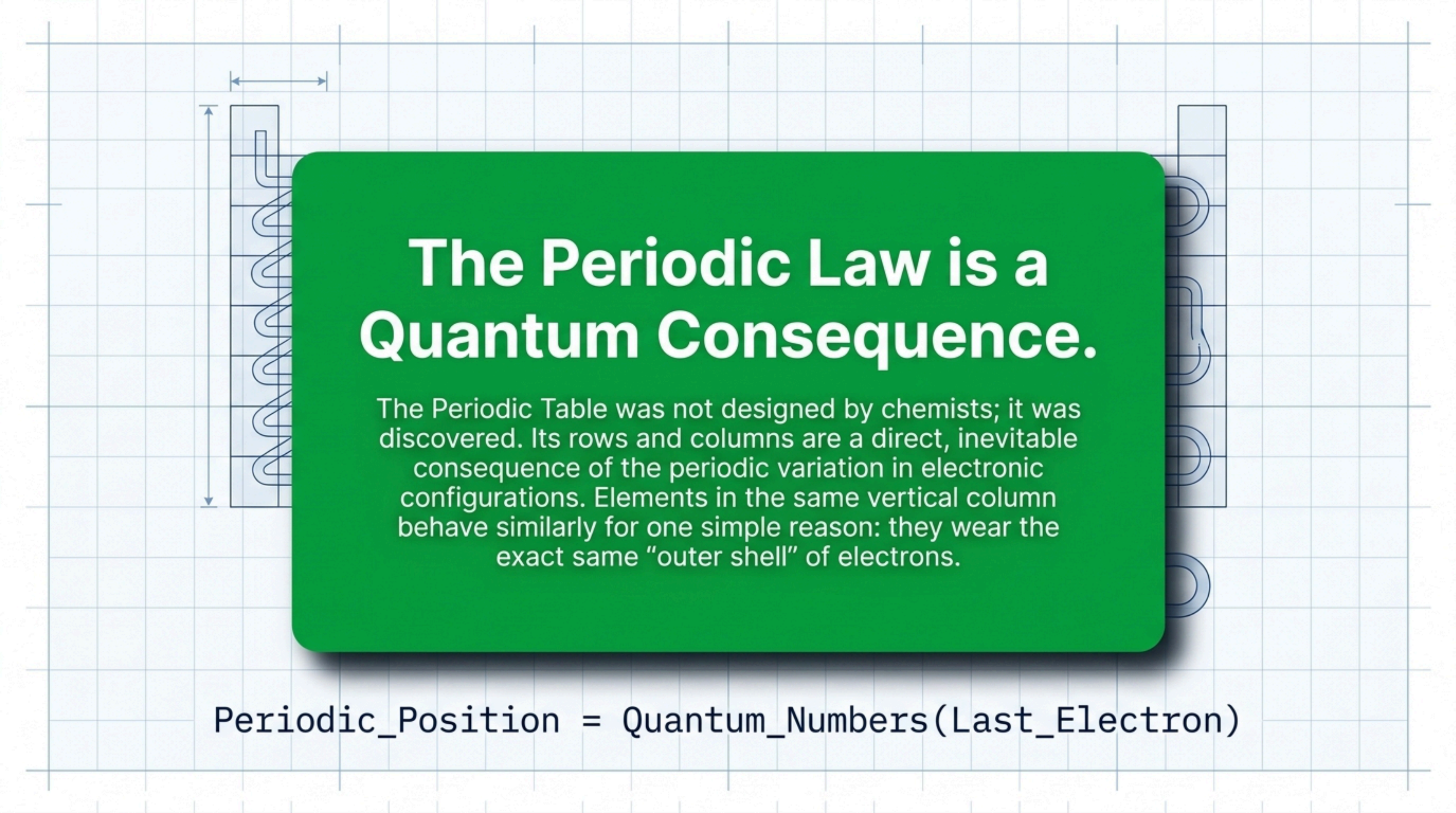
Code Exception: Helium's configuration ends in 1s². Strictly speaking, it is an s-block element, but it is placed in Group 18 (p-block) because its completely filled valence shell gives it noble gas properties.

The Period number (**n**) represents the outermost principal energy level. The length of the period is mathematically determined by the **number of available atomic orbitals** in that level.



Hydrogen ($1s^1$) sits atop Group 1, but can also behave like Group 17. It is placed separately to reflect its unique quantum status.





The Periodic Law is a Quantum Consequence.

The Periodic Table was not designed by chemists; it was discovered. Its rows and columns are a direct, inevitable consequence of the periodic variation in electronic configurations. Elements in the same vertical column behave similarly for one simple reason: they wear the exact same "outer shell" of electrons.

`Periodic_Position = Quantum_Numbers(Last_Electron)`



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