PFTG Element Order: A Scalar Field-Based Framework for Matter Classification

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Abstract

This paper introduces a novel scalar-field-based classification of the periodic table under the Pressure-Field Theory of Gravity (PFTG). Instead of arranging elements by electron configuration, the PFTG Element Order organizes matter into zones based on their interaction with cosmic pressure gradients, energy capacity, and scalar coherence.

1. Zonal Classification

Elements are grouped into dynamic zones reflecting their energetic role in cosmic evolution:

Zone	Range	Color	Field Meaning
Zone 1	1–12	Blue	Primordial pressure anchors (e.g., H, He)
Zone 2	13–36	Green	Structural transition carriers (e.g., Si, Fe)
Zone 3	37–54	Yellow	Boundary mediators (e.g., Ag, Xe)
Zone 4	55–86	Orange	Entropic compression elements (e.g., Pt, U)
Zone 5	87–118	Red	Collapse-formed instabilities (e.g., Fr, Og)

2. Field Interpretation by Zone

Each zone reflects unique scalar pressure responses:

Zone 1 – Foundational Anchors

Light elements like H and He are stable in weak gradients. H acts as a scalar anchor, while He stabilizes voids.

Zone 2 – Structural Carriers

Elements like Si and Fe transmit or buffer pressure energy, ideal for gradient shielding and modulation.

Zone 3 – Boundary Mediators

Ag and Xe reflect or destabilize in scalar zones. Useful for wave feedback and instability detection.

Zone 4 – Entropic Compressors

Heavy atoms like U store high energy but destabilize under overload. Platinum catalyzes scalar stabilization.

Zone 5 – Collapse-Formed Extremals

Og, Fr, and Rn form only in collapse regions. Their coherence fails rapidly, revealing field breakdown limits.

3. Theoretical Framework

Two equations define scalar-field interaction for each element:

3.1 Field Coherence Factor

$$\mathcal{C}(\Phi, Z) = \exp\left(-\beta Z^2 \cdot |\nabla\Phi|^2\right)$$

3.2 Field Energy Capacity

$$\mathcal{E}_{cap}(Z, \Phi) = \alpha \cdot Z \cdot \left(1 + \gamma|\Phi|^2\right)$$

4. Application and Simulation

In pressure-field simulations, $\mathcal{C}$ and $\mathcal{E}_{cap}$ predict element behavior in varying cosmic regions.

5. Example Case

- Hydrogen: $\mathcal{C} \approx 0.98$, $\mathcal{E}_{cap} \approx 10^{-12}$ J
- Uranium: $\mathcal{C} \approx 0.15$, $\mathcal{E}_{cap} \approx 10^{-9}$ J

6. Summary Table

Zone	Range	Example	$\mathcal{C}$	$\mathcal{E}_{cap}$ Behavior
1	1–12	H	High	Low energy, stable
2	13–36	Si	Medium	Gradient capacitor
3	37–54	Ag	Low-mid	Reflective storage
4	55–86	U	Low	High but unstable
5	87–118	Fr	Very Low	Peaks then collapses

7. Coherence and Energy Visualization