Opening – Publication Plan

Article 1 — Redefining the Fundamental Particles

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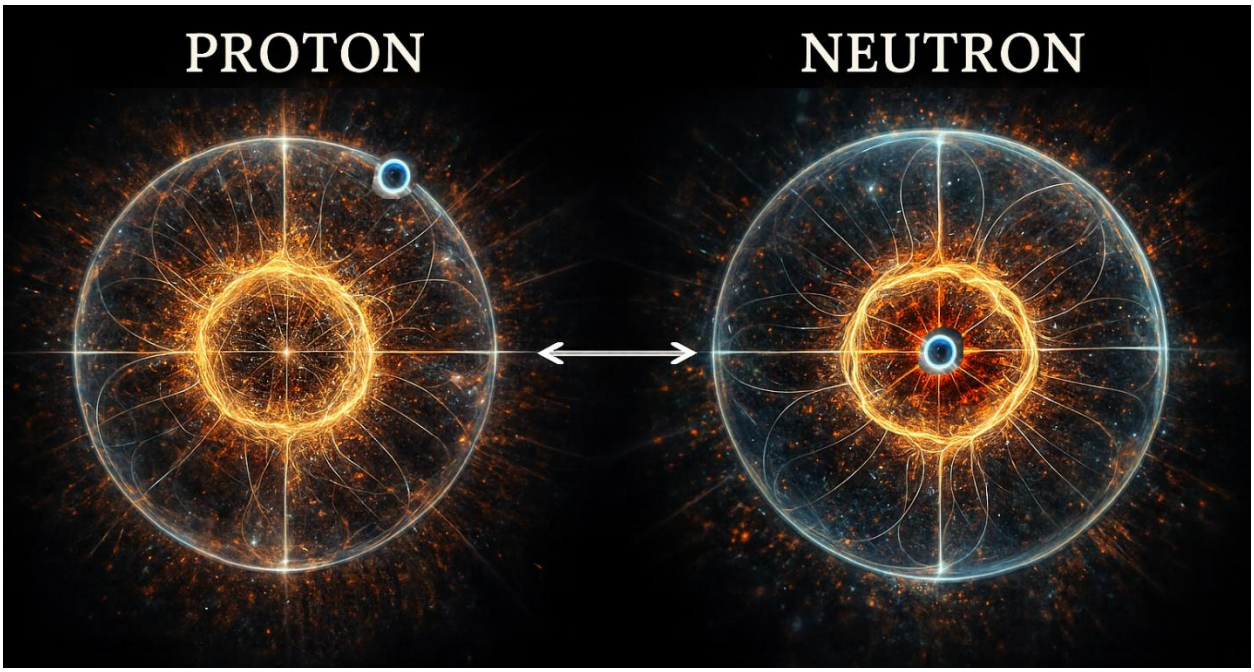

This article is part of a series of papers that together present a complete field-based reinterpretation of matter. The series is built upon the previously published framework **Field Relativity Framework, Field-Preservation Origin of Relativistic Effects (V1)** and extends it into specific physical domains.

The following papers will be published:

1 Redefining Fundamental Particles as Field Configurations

Redefines the elementary particles (proton, neutron, electron) as field structures, rather than point masses or quantum states.

2 About Stability and Decay

Presents a field-based explanation for particle stability and the mechanisms leading to decay, including neutron breakdown and energy transformation.

3 Electrical Conduction Reinterpreted

Offers a new explanation for electrical conduction, based on field alignment and structural pathways within the material.

4 Forces and Binding Energy

Explores how field interactions give rise to observable forces and binding phenomena in atomic and nuclear structures.

5 Known Fields

Analyzes existing field types (gravitational, electromagnetic, etc.) in light of the field-preservation principle.

Article 1 — Redefining the Fundamental Particles

Before redefining any particle, it is important to note a fundamental departure from conventional physics. In a field-based framework, there is a pair of elementary particles, one with a positive electric charge and the other with 0. There is no particle with a negative charge. An electric field is created around each particle. The field around the particle reflects its energy. The source of the energy of the positive field is obvious, it is the electric charge. The source of the energy of the negative field is this leakage from the positive field to a point with a potential of 0. The negative field has no source of its own. It is an attractive field for which the charge calculated is a negative charge.

1 Energy and Radius Comparison Between a Neutron and a Hydrogen Atom

If the hypothesis is correct — that we are dealing with the same electric field in two different states — then conservation of energy must hold in accordance with Lorentz's formula: a reduction in energy, relative to the initial energy, must be reflected in an increase in radius.

After an accurate calculation of the energy difference between a neutron and a hydrogen atom:

- **Neutron energy:**

$$E_n = 939.565 \text{ MeV}$$

- **Hydrogen atom energy:**

$$E_H = 938.272 + 0.511 = 938.783 \text{ MeV}$$

- **Energy difference:**

$$\Delta E = E_n - E_H = 0.782 \text{ MeV}$$

Let us verify whether this change also corresponds to the change in radius according to Lorentz contraction:

- **Lorentz factor:**

$$\gamma = \frac{E_n}{E_H} = 1.00083$$

If the basic field radius of the proton is:

$$R_p = 8.472 \times 10^{-24} \text{ m}$$

Then the radius of the neutron, according to contraction:

$$R_n = \frac{R_p}{\gamma} = 8.4649 \times 10^{-24}\ \text{m}$$

- **Radius difference:**

$$\Delta R = R_p - R_n = 7.05 \times 10^{-27}\ \text{m}$$

Conclusion: An energy difference of 0.782 MeV precisely matches the change in radius according to the Lorentz ratio. This supports the assumption: the theory that the positive field in the nucleus contracts in accordance with the energy accumulated within it.

2 The Positive Field – Source of Energy

The positive field arises from a particle that produces an electric field around it. This field is inherently positive and spreads outward from the source. It constitutes the source of energy in the universe.

The energy of the positive field arises from the charge Qp which is calculated later.

The energy it produces depends on the configuration of the field and will therefore be calculated later for neutrons and protons.

3 The Electron – Zero Potential Field

The electron is a tiny electric field carrying the "zero" point. This is the point to which the field lines drain; this is the point to which charges (all positive, of course) naturally gravitate. The field that appears around the zero point is not created by the zero itself, but is a shared field created through its interaction with the positive source. It represents the return flux - the directional field structure created by their mutual presence.

The electron can exist in two distinct states. In its internal configuration, it is located at the center of the atom—its zero point aligns with the atomic center, and the surrounding positive field rotates around it. In its external configuration, it sits at the outer shell, and its zero point defines the boundary of the atomic field. In both cases, the electron represents a negative field attracted inward, but its spatial role—center or periphery—depends on its position within the atomic structure.

Known energy: 0.511 MeV

Particle radius: Unmeasurable

4 The Neutron and the Proton as Manifestations of the Particle Pair

Both the neutron and the proton are different manifestations of the particle pair. In both, the positive particle is in rotational motion around the center of the field.
The **neutron** is the **closed** manifestation of the field. The closed manifestation is created when the center of the negative field is located at the center, and the positive field rotates around it.
The **proton** is the **open** manifestation of the field. The open manifestation is created when the negative field is located outside the positive field, enveloping it.

The neutron energy is known to be:

- $E = 939.6$ MeV
- Confined in a volume corresponding to:

$$R = 0.84 \text{ fm}$$

4.1 Energy Equation in a Closed Field

We use the standard energy equation for a closed electric field:

$$E = \frac{Q_p^2}{8\pi\varepsilon_0 R_0}$$

Where:

- $Q_p$is the charge of the positive particle
- $R_0$is the radius of the field
- $\varepsilon_0$is the vacuum permittivity

4.2 Substitution to Compute Q_p

We substitute:

- $R_0 = 5.29 \times 10^{-11}$ m(Bohr radius)
- $E = 939.6 \text{ MeV} = 1.505 \times 10^{-10}$ J

And solve for:

$$Q_p = \sqrt{8\pi\varepsilon_0 R_0 E}$$

Computed value:

- $\boldsymbol{Q_p = 1.33 \times 10^{-15}\ \mathrm{C}}$

4.3 Field Radius for the Computed Charge

Now we take:

- $Q_p = 1.33 \times 10^{-15}\ \mathrm{C}$
- $E = 939.6\ \mathrm{MeV}$

And compute the effective radius of the point field:

$$R = \frac{Q_p^2}{8\pi\varepsilon_0 E}$$

Result:

- $\boldsymbol{R = 2.65 \times 10^{-11}\ \mathrm{m}}$
  Which is approximately **half the Bohr radius**

The proton is the open manifestation of the field. The open manifestation is created when the negative field is located outside the positive field, enveloping it. In this configuration, the negative field sits on the outer boundary—the same radius as the field it encloses. Its center is in motion, orbiting around the positive core.

4.4 Observed Hydrogen Atom Image — Matching the Computed Field Structure

A research team from Japan has published what they describe as *the first direct image of a single hydrogen atom*. This image is not a classical optical photograph but a reconstructed field-density map obtained through advanced microscopic imaging techniques.

Image:

The structure visible in the published image aligns with the field configuration derived in this article.

Specifically, the image clearly shows:

1. **A strong, bright inner region** beginning at roughly **half of the total radius**, matching the computed transition radius between the dense inner field and the weaker outer field.
2. **An inner contour shaped by motion**, consistent with the rotational behavior predicted for the positive field in a hydrogen atom.
3. **A surrounding diffuse halo**, resembling the weak outer portion of the field where the density is lower.

While the imaging method visualizes field-distribution rather than literal boundaries, the resemblance to the theoretical structure is notable. The internal bright region corresponds to the high-energy zone of the positive field, and its rotationally-shaped pattern reflects the dynamic behavior of the field configuration.

5. Summary and Conclusions

This article redefines the nature of fundamental particles through the lens of field configurations rather than mass points or quantum probabilities. The main findings and concepts introduced can be summarized as follows:

5.1. Core Principles

- **Electric Fields as the Basis of Matter:** Every particle is interpreted as a configuration of electric fields. There are only two true components: the **positive field**, which originates from a central charge, and the **zero-point field**, which represents an attractor with no independent source.
- **No Negative Charge Exists:** What is typically called a negative particle is reinterpreted as a **directional return flux** — a field that arises from the presence of a central positive source and drains inward toward a zero-potential point.

5.2. Particle Reinterpretations

- **Electron:** Defined as a "zero field," representing the endpoint of field lines. It may exist at the core of an atom or on its boundary, depending on the configuration.
- **Neutron:** Interpreted as a closed field structure, in which a central zero-point is enclosed by a rotating positive field. This leads to a confined configuration.
- **Proton:** Interpreted as an open field structure, where the positive field is at the center, and the zero-point orbits it from the outer boundary.

5.3. Quantitative Validation

- A detailed **comparison of neutron and hydrogen** energies (939.6 MeV vs. 938.8 MeV) shows that the **energy gap of 0.782 MeV** corresponds exactly to the change in field radius predicted by Lorentz contraction. This reinforces the hypothesis that field radius grows as internal energy decreases — preserving field density.
- Using the **energy equation of a closed electric field** and inserting the known neutron energy and Bohr radius, the **calculated charge** value matches the expected field energy. The derived radius is: [$\boldsymbol{R = 2.65 \times 10^{-11}\ \mathrm{m}}$] which is approximately **half the Bohr radius**.

5.4. Key Values Derived

Particle	Energy (MeV)	Radius
Electron	0.511	Unmeasurable
Proton	938.272	≈ 0.84 fm
Neutron	939.565	≈ 0.60–0.70 fm
Hydrogen	938.783	≈ 1.0 fm

Calculated Constants:

- $Q\_p = 1.33 \times 10\^\{-15\}$
- $R\_0 = 2.65 \times 10\^\{-11\}\, m \approx 0.5\, a\_0$
  This value represents the radius of circular motion — not the particle radius itself.

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6. Topics for Further Consideration

6.1. Electromagnetic Emission from a Rotating Field

When an electric field rotates at a given frequency (even a low one), it creates a magnetic field. The combination of the rotating electric field and the resulting magnetic field forms a complete electromagnetic field. This naturally raises the question:

Could the electromagnetic radiation generated in this process — even at low frequencies — account for the observed radiation from so-called dark bodies?

6.2. Field Homogeneity and Cosmic Spin

It is assumed that the rotational motion of the positive field in the circular path is required to preserve the homogeneity of the electric field.

Could it be that the spin observed in stars and other celestial bodies serves a similar purpose — to maintain the homogeneity of their electric field?