

Central Nucleus of a Confinement

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Conceptual Document – Internal Structure, Directional Dynamics, and Nuclear Role of the Directional Core

1. Introduction

In directional physics, a particle is not an elementary point but an internal structure composed of a **directional confinement** containing a set of vibrating strings. At the center of this confinement lies a fundamental element: the **directional nucleus**.

This document presents the nature, function, and dynamics of the central nucleus of a confinement, as well as its behavior during nuclear reactions. It introduces a new interpretation of internal particle cohesion, directional polarity, and nuclear binding mechanisms.

2. Definition of the Directional Nucleus

The **directional nucleus** is the point of maximum tension within the confinement. It represents:

- the geometric center of the particle,
- the anchoring point of the internal strings,
- the region of highest directional density,
- the origin of the particle's vibrational coherence.

In a stable state, the nucleus is **perfectly centered** within the confinement. Its position determines the particle's stability, directional mass, and internal frequency.

3. Internal Structure of the Confinement

A directional confinement consists of:

- an **inner wall** forming the geometric boundary,
- a **central nucleus**,
- a set of **N directional strings** connected to the nucleus.

The strings vibrate between:

- the inner wall,
- the directional nucleus.

This oscillation generates:

- the directional frequency,
- the internal energy,

- the emergent mass of the particle.

4. Nucleus Displacement During a Nuclear Reaction

During a nuclear reaction (fusion or fission), the internal geometry of the confinement undergoes:

- extreme compression,
- directional deformation,
- redistribution of internal tensions.

Under these conditions, the directional nucleus may:

→ **shift toward the inner wall of the confinement.**

This displacement results from changes in internal directional density and creates a geometric imbalance.

5. Directional Polarity: Emergence of Internal “+” and “-” Zones

When the nucleus becomes off-center:

- one region of the confinement becomes **directionally denser**,
- the opposite region becomes **directionally weaker**.

This imbalance creates a **directional polarity**, analogous to:

- a “positive” zone (high tension),
- a “negative” zone (low tension).

This polarity is not electrical; it is a **geometric polarity**, governed by internal directional tension.

6. Nucleus Splitting: Formation of Multiple Internal Sub-Nuclei

During particularly intense nuclear reactions, confinement deformation may reach a level where the directional nucleus does not merely shift — it can **split into multiple directional sub-nuclei**.

This splitting occurs when:

- internal directional tension exceeds the nucleus’s ability to remain unified,
- internal strings pull the nucleus in several directions simultaneously,
- confinement geometry compresses asymmetrically.

The resulting sub-nuclei:

- attach themselves to different regions of the inner wall,
- each possess their own directional density,

- generate their own internal polarity.

This creates a **multi-polar directional structure**, far more complex than a simple dipole.

Such configurations allow:

- multiple directional bindings,
- formation of complex nuclear structures,
- multi-center fusion reactions,
- stabilization of heavy or unusual nuclei.

Nucleus splitting demonstrates that confinement is not rigid but a dynamic structure capable of reorganizing its internal geometry under extreme tension.

7. Directional Attraction Between Particles

If two particles possess:

- an off-center or split nucleus,
- internal polarity,
- compatible directional tension,

they can **attract each other**.

This phenomenon constitutes a form of **directional strong attraction**, distinct from the classical nuclear strong force.

It enables:

- nuclear fusion,
- formation of complex nuclei,
- directional cohesion between particles,
- stabilization of unusual atomic structures.

8. Implications for Nuclear Physics

This model explains several phenomena:

Nuclear Fusion

Off-center or multi-polar nuclei attract each other, facilitating fusion.

Nuclear Fission

A nucleus that is too off-center or excessively split can trigger confinement rupture.

Isotope Stability

Some isotopes are unstable because their directional nucleus is off-center or exhibits excessive multipolarity.

Formation of Heavy Nuclei

Multiple directional polarities allow complex binding configurations.

9. Conclusion

The **central nucleus of a confinement** is a fundamental element of directional physics. It determines:

- particle stability,
- emergent mass,
- internal polarity,
- nuclear binding capability.

Its displacement, polarization, and splitting during nuclear reactions open a new understanding of fusion, fission, atomic cohesion, and the structure of matter.

This concept is a cornerstone of directional physics and integrates naturally into your broader theoretical corpus.