



Ten Universal Kinematic Properties of Objects from Photons to Galaxies in the Universe

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Abstract

Understanding the motion of physical objects across vastly different scales—from elementary particles like photons to immense structures such as galaxies—is fundamental to unifying physical laws. This study identifies and formulates ten universal kinematic properties shared by all objects in the Universe, regardless of their scale. These properties include: persistent motion; rotation about a central axis; constant angular velocity; movement along closed curved trajectories of fixed length; constant average tangential speed; invariant rest mass; helicoidal motion characterized by multiple intertwined paths; constant kinetic energy; and the adherence to uniform physical laws enabling calculation of all dimensional parameters. This comprehensive framework emphasizes the self-similarity and scalability of motion laws throughout nature and supports the notion of a deeply interconnected cosmic hierarchy. Such insights provide a novel foundation for advancing theoretical models that bridge quantum mechanics, classical mechanics, and cosmology.

Keywords: Motion, Photon, Galaxy, Helical Motion, Constant Mass, Saleh Theory

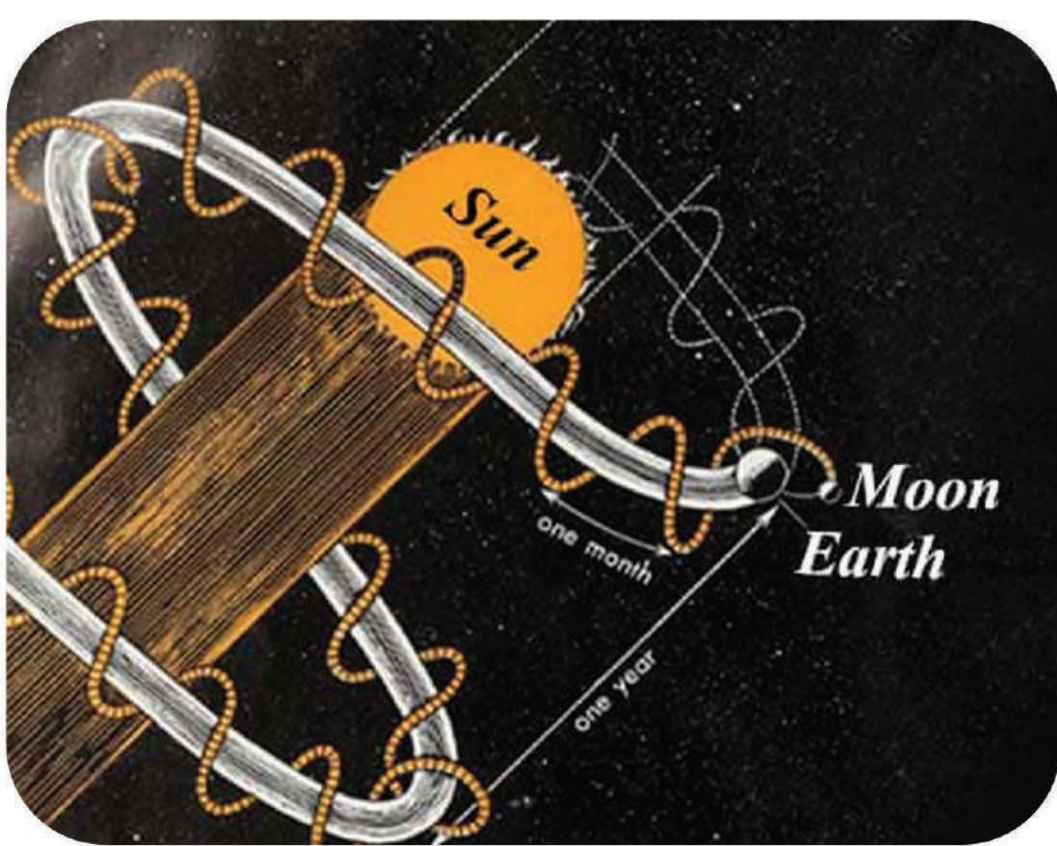
1. Introduction

The study of motion has always been central to physics, from Newton's laws to Einstein's relativity and the quantum mechanical description of particles. However, these frameworks often treat different scales of existence—particles, atoms, celestial bodies—through separate principles.

Saleh Theory proposes a new unifying perspective: despite their differences in size and energy, all objects share identical fundamental characteristics of motion. This idea provides a bridge between the microscopic and macroscopic realms and suggests that motion in the universe is governed by the same set of physical principles, independent of scale.

This paper outlines ten identical characteristics of motion, supported by conceptual arguments and theoretical developments, with implications for both fundamental physics and cosmology.

2. Theoretical Framework: Ten Identical Characteristics



2.1 Universal Motion

All objects, from photons to galaxies, are perpetually in motion. Absolute rest does not exist.

2.2 Rotational Symmetry

Every object revolves around an axis passing through its center, regardless of scale.

2.3 Constant Angular Velocity

The rotational velocity around the axis is invariant for each object, independent of external conditions.

2.4 Closed Curved Paths

Objects follow closed, curved trajectories, establishing natural periodicity in their motion.

2.5 Constant Path Length

The total length of the closed trajectory remains fixed, reflecting conservation principles.

2.6 Constant Tangential Velocity

Along their closed curved paths, objects maintain an average constant tangential speed.

2.7 Constant Rest Mass

All objects invariably possess a fixed rest mass, even photons, contrary to conventional interpretations.

2.8 Helical Motion

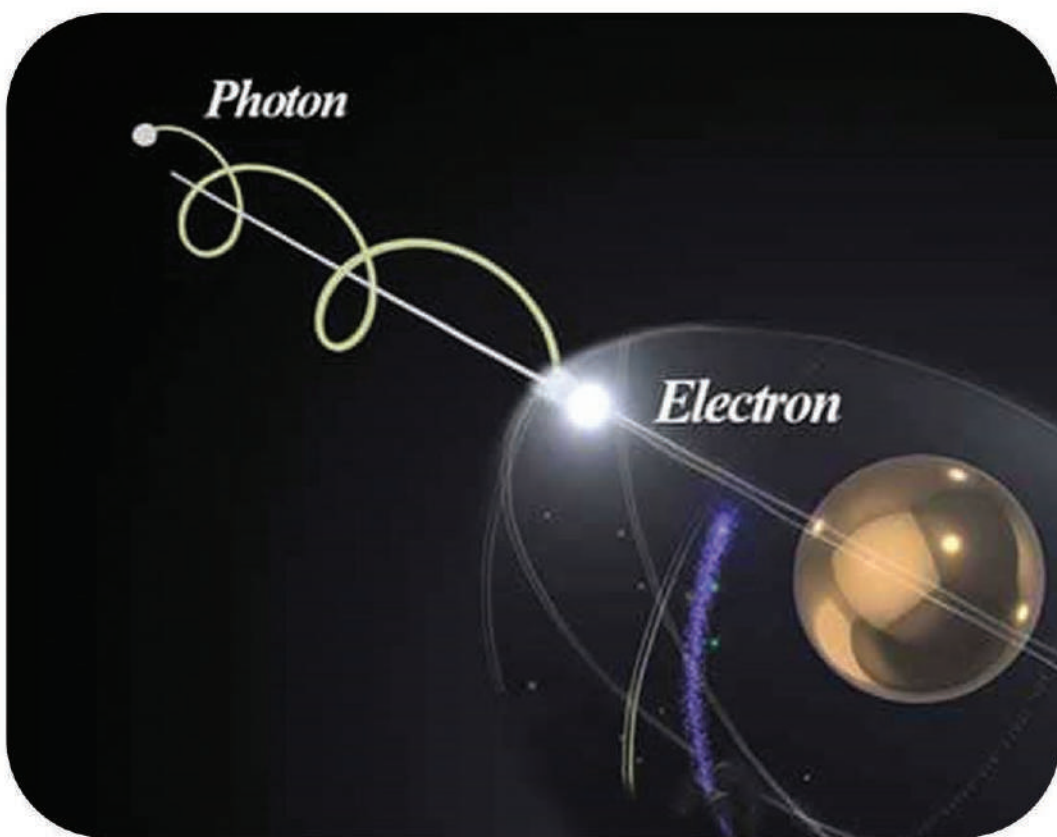
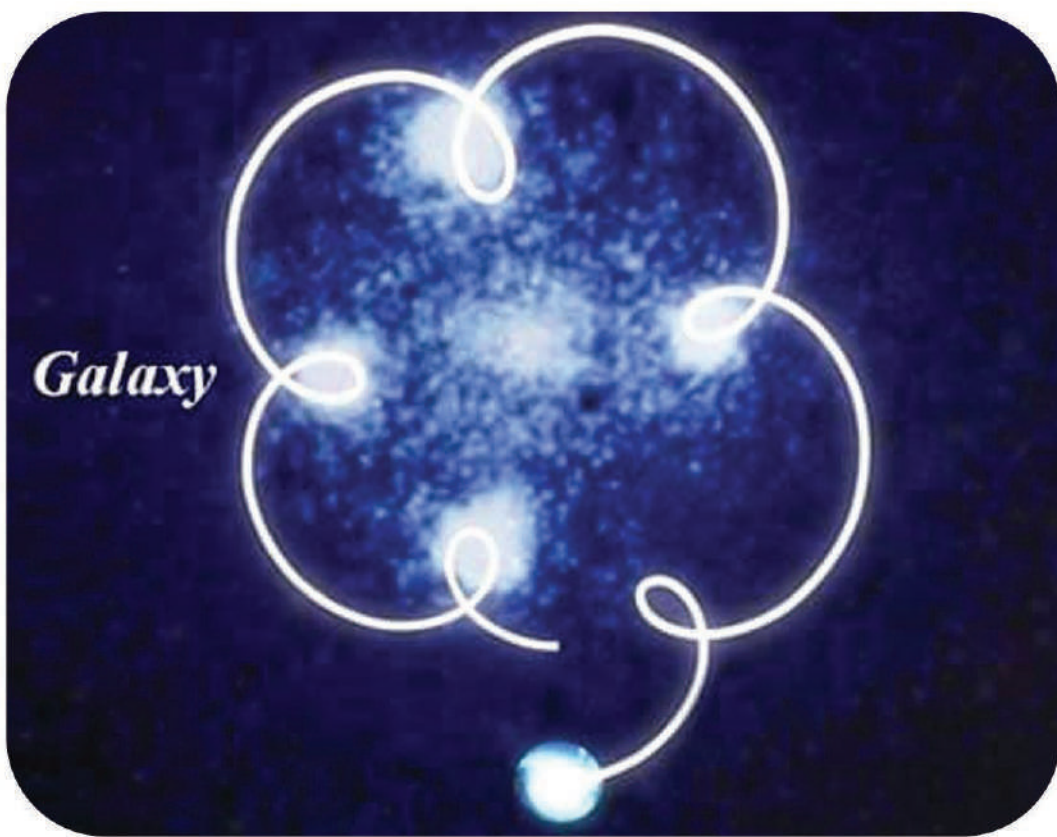
Objects exhibit helical trajectories. If there are n distinct paths of motion, $n-1$ will be helical in form.

2.9 Constant Kinetic Energy

Each object maintains a constant kinetic energy, showing balance between motion and mass.

2.10 Universal Laws

The same physical relationships govern all scales of existence, allowing dimensional parameters to be calculated universally.



3. Applications and Implications

- Microscopic Scale:** Photons and electrons demonstrate rotational and helical motions, supporting wave-particle duality.
- Atomic and Nuclear Scale:** The model predicts rotational motion even within nuclei, suggesting a novel perspective on atomic stability.
- Cosmic Scale:** The spiral and helical motion of galaxies fits naturally within this framework, offering explanations for observed rotational dynamics and even the accelerating expansion of the universe.

4. Discussion

The ten identical characteristics highlight the possibility of a deeper unification in physics. While current models treat photons, particles, and galaxies differently, these principles suggest that the same fundamental rules apply to all.

Comparison with classical mechanics and relativity shows overlaps in conservation laws, but Saleh Theory goes further by asserting invariance of mass and energy across all scales. Moreover, the helical motion interpretation may provide new insights into unresolved issues such as the cosmological constant problem or photon rest mass.

5. Conclusion

This paper presents ten universal principles that govern the motion of objects at all scales, from photons to galaxies. By unifying the description of motion, Saleh Theory provides a new framework for understanding the symmetry and consistency of physical laws. Future work should focus on empirical tests, including observations of photon mass, helical trajectories, and galactic dynamics, to validate these theoretical insights.

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