The Connection of Mass Particles to the Origin of the Universe

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Abstract

This paper explores the hypothesis that all mass particles in the universe contain a connection to their origin at the time of the Big Bang. This connection manifests as a curvature in space-time towards the past, explaining the uniform properties of particles and suggesting a deeper interconnection within the cosmos.

1 Introduction

The uniformity of properties among mass particles in the universe is a well-observed phenomenon. This paper proposes that this uniformity is not a result of random chance but rather a fundamental connection to the origin of the universe. This connection is hypothesized to be a curvature in space-time that links each particle to the moment of its creation.

2 Density of Mass and Space-Time Curvature

To understand this hypothesis, we first consider the density of mass in particles such as protons and compare it to the density of mass in black holes.

2.1 Density of a Proton

The radius of a proton is approximately $0.84\,\mathrm{fm}$ (femtometers) or $0.84 \times 10^{-15}\,\mathrm{m}$. The mass of a proton is $1.6726 \times 10^{-27}\,\mathrm{kg}$.

The volume of a proton, assuming it is spherical, is given by:

$$V_{\text{proton}} = \frac{4}{3}\pi r^3 = \frac{4}{3}\pi(0.84 \times 10^{-15})^3 \approx 2.48 \times 10^{-45}\,\mathrm{m}^3$$

The density of mass of the proton is:

$$\rho_{\text{proton}} = \frac{\text{Mass}}{\text{Volume}} = \frac{1.6726 \times 10^{-27}}{2.48 \times 10^{-45}} \approx 6.74 \times 10^{17}\,\mathrm{kg/m}^3$$

2.2 Density of a Black Hole

For a black hole, we use the Schwarzschild radius:

$$R_s = \frac{2GM}{c^2}$$

where G is the gravitational constant, M is the mass of the black hole, and c is the speed of light.

Considering a black hole with a mass equal to the mass of the Sun (1.989×10^{30} kg), the Schwarzschild radius is:

$$R_s = \frac{2 \times 6.674 \times 10^{-11} \times 1.989 \times 10^{30}}{(3 \times 10^8)^2} \approx 2.95\,\mathrm{km}$$

The volume of a sphere with this radius is:

$$V_{\text{black hole}} = \frac{4}{3}\pi R_s^3 = \frac{4}{3}\pi(2.95 \times 10^3)^3 \approx 1.08 \times 10^{11}\,\mathrm{m}^3$$

The density of mass of the black hole is:

$$\rho_{\text{black hole}} = \frac{1.989 \times 10^{30}}{1.08 \times 10^{11}} \approx 1.84 \times 10^{19}\,\mathrm{kg/m}^3$$

3 Implications of the Hypothesis

The hypothesis that all mass particles are connected to the origin of the universe through a curvature in space-time has several profound implications:

3.1 Uniformity of Particle Properties

This connection could explain why all particles with mass share identical properties, as they all originate from the same point in space-time.

3.2 Cosmic Interconnection

The idea of a shared origin suggests a deep interconnection within the universe, where each particle carries a ”memory” of the Big Bang.

3.3 New Perspectives in Physics

This hypothesis could inspire new theories and models in physics, potentially leading to a unified understanding of quantum mechanics and general relativity.

4 Conclusion

The proposed hypothesis offers a novel perspective on the nature of mass particles and their connection to the origin of the universe. Further research and collaboration are needed to explore and validate these ideas.

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References

- Víctor Estrada Diaz's Other Works