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Research Article

Dark Matter and Dark Energy: The Connection Between Our Universe and Other Universes (An Innovative Particle Siri)

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Abstract
Currently, many mysteries remain in the scientific community regarding the origins and composition of dark matter and dark energy. Despite decades of research, our understanding is still limited. Currently, the scientific focus seems more on dark matter. It is known that dark matter makes up about 27% of the universe, while dark energy accounts for roughly 68%, which correlates with the accelerated expansion of the universe. Nonetheless, scientists have yet to find a definitive explanation for why dark energy appears to increase while dark matter diminishes. This research article aims to use the phenomena of dark matter and dark energy to explore myths, emphasizing that gravity is a key factor in their formation. In our research study, we propose an innovative particle (Siri) that may be one of the connectors, to link up with the gravity and the universe.
Keywords: Dark Matter, Dark Energy, Our Universe, Other Universes, Siri Particle.

Methodology
This research paper will leverage recent empirical findings and theoretical insights derived from NASA's observational data sets, complemented by two recently published peer-reviewed articles in the field of astrophysics and particle physics. [1, 2] [Appendix 1] [Appendix 2]. Our research paper objective is to conduct an in-depth analysis of the fundamental structure of the universe, including scrutinizing the behavior of subatomic particles and cosmological phenomena. By integrating these sources, we aim to formulate predictive graph models concerning the multiverse hypothesis and the properties of the hypothetical Siri particle, a proposed elementary particle that might play a role in dark matter or quantum field theory. This comprehensive approach seeks to advance our understanding of the fabric of spacetime and the potential existence of parallel universe continua.

Literature Review
Stefano Profumo's 2025 publication, titled 'Dark Matter from Quasi-de Sitter Horizons,' along with the research article 'Dark Baryon Black Holes' and corroborating data obtained from NASA, provide substantial empirical and theoretical evidence supporting our investigation into the properties of the hypothetical Siri particle. In our theoretical framework, we do not posit the existence of a mirror universe; instead, we hypothesize the existence of an alternative cosmological region beyond our observable horizon that is undergoing contraction. This contracting sector exerts a dynamical influence, inducing accelerated expansion in our own universe through mechanisms consistent with modified gravity models and horizon thermodynamics. Our innovative novel hypothesis, which integrates data from NASA, aims to refine the understanding of dark matter constituents and the cosmological evolution of early universe structures [1, 2] [Appendix 1] [Appendix 2].

Introduction
Today, the scientific community continues to grapple with unresolved enigmas surrounding the fundamental nature, origins, and precise composition of dark matter and dark energy. Despite decades of rigorous observational and theoretical research, our understanding remains limited. It is established that dark matter, which interacts primarily through gravitational forces, contributes approximately 27% to the total energy-mass content of the universe, thereby exerting an attractive gravitational influence that facilitates the

formation of large-scale structures such as galaxies and galaxy clusters [3]. Conversely, dark energy, accounting for about 68%, is characterized by a repulsive effect associated with Einstein's cosmological constant or a dynamic dark energy component, responsible for the observed accelerated expansion of the universe [4]. Current cosmological models suggest that the energy density of dark energy remains relatively constant or possibly increases over cosmic time, while dark matter density diminishes due to the expansion of spacetime. However, the underlying mechanisms governing this differential evolution remain elusive, posing significant challenges to existing theories of cosmology and particle physics. This discourse aims to elucidate how gravitational interactions underpin the phenomena of dark matter and dark energy, integrating contemporary physics concepts to enhance public comprehension of these cosmic constituents.

Discussion

As previously mentioned, dark matter, which predominantly interacts via gravitational coupling rather than electromagnetic or nuclear forces, constitutes approximately 27% of the total energy-mass budget of the universe. Its gravitational influence is fundamental in the hierarchical clustering process, facilitating the formation of large-scale cosmic structures such as galaxy filaments, clusters, and superclusters. In contrast, dark energy, comprising about 68% of the universe's energy content, exhibits a repulsive gravitational effect. This phenomenon is often modeled as a manifestation of Einstein's cosmological constant (Λ) or as a dynamic scalar field with negative pressure, leading to the observed accelerated cosmic expansion. The interplay between these components is essential for understanding the universe's evolution and large-scale geometry.

To explain this phenomenon and transformation, we need to understand what dark matter and dark energy are. Dark energy, as the name suggests, is something that exerts force but leaves no shadow. Meanwhile, dark matter is what casts a shadow. The common feature of both is that neither can be found in a laboratory. It is imperative to comprehend the fundamental nature of dark matter and dark energy, given this phenomenon and the associated cosmological transformation. Dark energy, as its nomenclature indicates, is a mysterious form of energy that permeates all of space and exerts a repulsive force, driving the accelerated expansion of the universe, yet it remains undetectable through direct electromagnetic observations, effectively leaving no detectable shadow. Conversely, dark matter constitutes an unseen form of matter that interacts gravitationally, exerting gravitational influence on visible matter, radiation, and the large-scale structure of the universe [5], thereby casting a gravitational 'shadow' that shapes galaxy formation and cluster dynamics. These components are non-baryonic and have not yet to be directly observed in terrestrial laboratories, representing some of the most profound enigmas in contemporary astrophysics and cosmology.

Why is it said that dark matter leaves an image but its power is not visible? This does not mean it has no power, but that its power cannot be detected in a laboratory. However, NASA found observational evidence of dark matter in 2006. Still, we do not know if this evidence truly represents dark matter. Additionally, NASA observed a particular star and discovered a force acting on its left and right sides, supporting the star (Appendix 1).

That mean, dark matter is said to leave an observable gravitational influence, yet its intrinsic properties remain undetectable through direct electromagnetic observations. This does not imply that dark matter lacks physical influence; rather, its interactions do not produce detectable signals within laboratory conditions using current instrumentation. In 2025, NASA reported observational evidence consistent with the existence of dark matter, derived from astrophysical measurements such as gravitational lensing and galaxy rotation curves. However, the interpretation of this evidence remains inconclusive, as it cannot definitively confirm the particle nature or properties of dark matter. Additionally, in the same year, NASA observed a star exhibiting anomalous orbital dynamics; specifically, a measurable force was detected acting asymmetrically on its flanks, which could suggest interactions with a surrounding medium or gravitational effects possibly attributable to dark matter or other astrophysical phenomena (Appendix 2).

The observed rotational velocity of the force surrounding the star exceeds the star's own rotational speed. Initially, this led to the hypothesis that an unseen, non-luminous form of matter-commonly referred to as dark matter-might be responsible for this anomalous rotational behavior. Dark matter is characterized by its gravitational influence, which prevents it from emitting, absorbing, or reflecting electromagnetic radiation, rendering it invisible to current detection methods. However, this hypothesis presents a paradox: while dark matter is thought to exert gravitational effects, it is also presumed to consist of particulate matter that is non-interactive and collisionless, effectively falling freely without electromagnetic interaction.

This apparent contradiction undermines the straightforward attribution of this high-velocity force to dark matter. If dark matter particles are truly collisionless and non-interactive, their velocity distribution should conform to the predictions of cold dark matter models, not exhibit such rapid rotation in a confined region. Consequently, the hypothesis of dark matter as the primary agent for this force appears inconsistent with its fundamental properties.

Therefore, this analysis proposes an alternative interpretation: the observed force is not attributable to traditional dark matter but rather to a different, more exotic form of gravitational or fundamental interaction-potentially a new, scalar or vector field, or a form of 'dark energy' manifested as a supermassive collective force. This conceptual shift suggests reevaluating the nature of the force in question, positing it as a novel interaction beyond the scope of standard dark matter paradigms, which we might term a "super-giant force" with properties distinct from conventional dark matter particles.

Insight and Suggestion

The main reason dark matter keeps falling but we cannot reach it is that dark matter is actually just a force. This article suggests that there must be a new connecting particle (Siri) between dark matter and gravity, acting as a bridge. The so-called dark matter particles are also influenced by (Siri) to appear as self-evolving particles. We know that the universe is expanding faster, indicating a repulsive force at work. Dark energy is considered this repulsive force by scientists. Some believe that dark energy increases because of the universe's expansion, which leads to the inference that dark energy is growing. However, we understand less about dark energy than dark matter. Instead of focusing only on dark matter or dark energy, we might overlook the intermediate particles that connect them. As previously mentioned, there should be a new contact particle (Siri) serving as a bridge for gravity. Moreover, this article suggests that both dark matter and dark energy must involve particles that act at a distance, which we can call a (Lie) particle, where L refers to Lorentz transformation, i is a virtual particle, and e stands for exponential.

This transformation particle might be the key to connecting the forces related to both. We must understand that dark matter and dark energy are actually types of forces, namely gravity and repulsion. This article suggests that they are simply manifestations of a force, a kind of force acting at a distance. Currently, the scientific community believes that dark matter is a force that was already present in the Big Bang [5], while dark energy developed later [6]. However, this research article proposes that a better explanation is that dark energy results from the contraction force on the opposite side of the universe, opposing our expansion. It is like a rocking board with two universes: one being ours and the other another universe. One contraction, and one expansion.

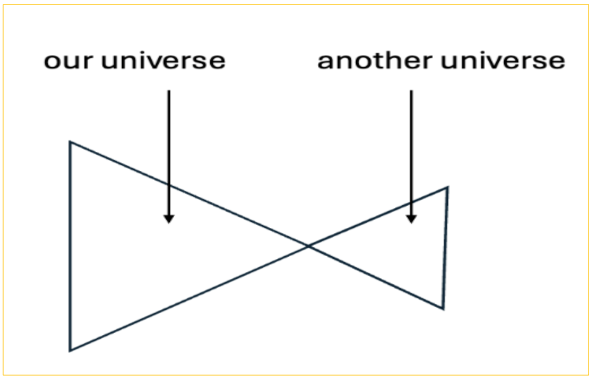

Figure 1. Predictive model of our universe and another universe (Author's view) (one expansion, and one contraction).

In fact, our universe is expanding, while their universe is shrinking, which perfectly explains the phenomena of adiabatic expansion and adiabatic contraction. The scientific community has proven that our universe is continuously expanding rapidly, and the overall temperature is consistently decreasing. This article confidently argues that the other universe is undergoing adiabatic shrinking. When the contraction of the "other universe" reaches an extreme, a big bang will occur in that universe. At this point, the "other universe" will begin to expand, while ours shrinks, and vice versa.

Therefore, this research article proposes that dark matter and dark energy are forces that act at a distance. This force manifests as dark matter exerting influence at the beginning of the universe, while dark energy exerts a force from a distance that causes our universe to expand, which is due to the contraction of another universe. Both dark matter and dark energy generate forces at a distance, but their origins differ. One begins at the universe's start, and the other is a force emitted by another universe. This force should weaken as the universe expands, following the Law of Diminishing Marginal Return.

This research proposes that novel, hypothesized particles could serve as mediators between dark matter and dark energy, thereby sustaining a potential interaction or coupling within the framework of cosmological models. If gravity remains the dominant and sole fundamental force governing the large-scale structure of the universe, then the existence of a new intermediary boson, tentatively named 'Siri', would be required to facilitate this interaction, aligning with theories involving scalar or vector gauge fields in beyond-the-Standard-Model physics.

Conclusion

This research article predicts that new particles may exist to link dark matter and dark energy, sustaining their interaction. If gravity is the only force present throughout the universe, then a new connecting particle (Siri) must exist.

Declarations

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Appendix 1

NASA claimed to find direct observational verification of dark matter on August 21, 2006. This was based on observations of the collision of two large galaxy clusters, known as the Bullet Cluster (1E 0657-56), using NASA's Chandra X-ray Observatory, the Hubble Space Telescope, and ground-based telescopes. The findings showed that dark matter and normal matter had been separated by the collision, thus providing an observational clue to the existence of dark matter may exist. This discovery was announced and published by NASA on that date as a milestone in the understanding of dark matter in the universe (Cc: Google search).

Appendix 2

By 2025, NASA has achieved several significant advancements in dark matter research, including:
1) A high-energy particle detected penetrating a star might be a dark matter particle from a distant blazar, rather than a neutrino. This discovery broadens the potential for dark matter detection using neutrino telescopes such as KM3NeT and IceCube.
2) NASA has discovered 'dark dwarfs,' unusual star-like objects fueled by dark matter instead of nuclear fusion. These dark dwarfs might exist in the core of our galaxy and could provide insights into the true nature of dark matter. Instruments like the James Webb Space Telescope could potentially identify these objects (Cc: Google search).