The Strangest Thing in Our Universe

Hahn Jung

01

Introduction

Why I chose This Topic

01 Interesting

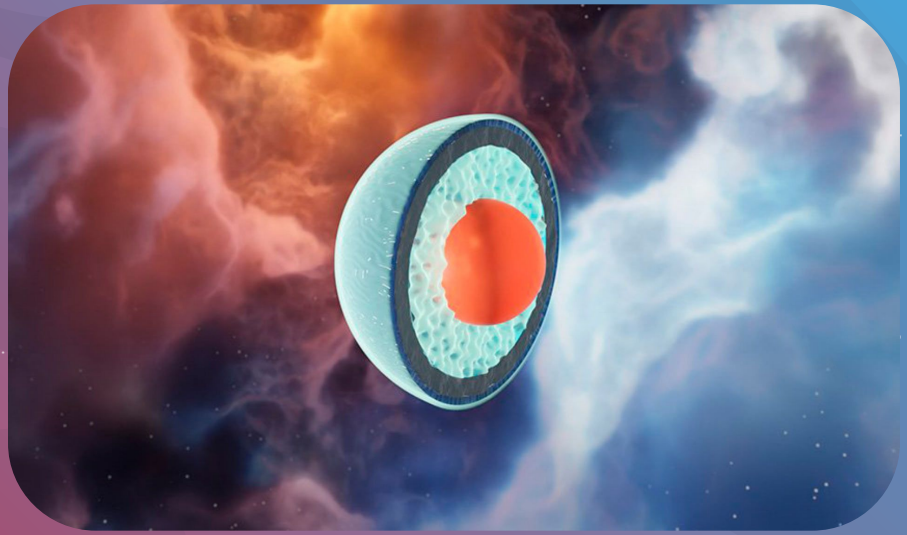
Strange quark could change what we know about the universe

02 Significant

Could revolutionize many fields of physics

The Problem

Theoretical models have predicted the existence of SQM but no direct observation has been made yet



02

Literature Review

LIT REVIEW

Composition/Theoretical Basis

- Theoretical with no direct observations
- Made of equal parts up, down, and strange quarks
- Is within the standard model alongside the quark family

Predicted Properties

- Most stable form of matter (kind of)
- Typically more dense than nuclear matter
    - Exists only under extreme astrophysical conditions (e.g., neutron star cores)

Nature & Phase transition

- Can convert normal matter into strange matter
- Likely caused by quark exchange leading to an energy imbalance
- Chain reaction

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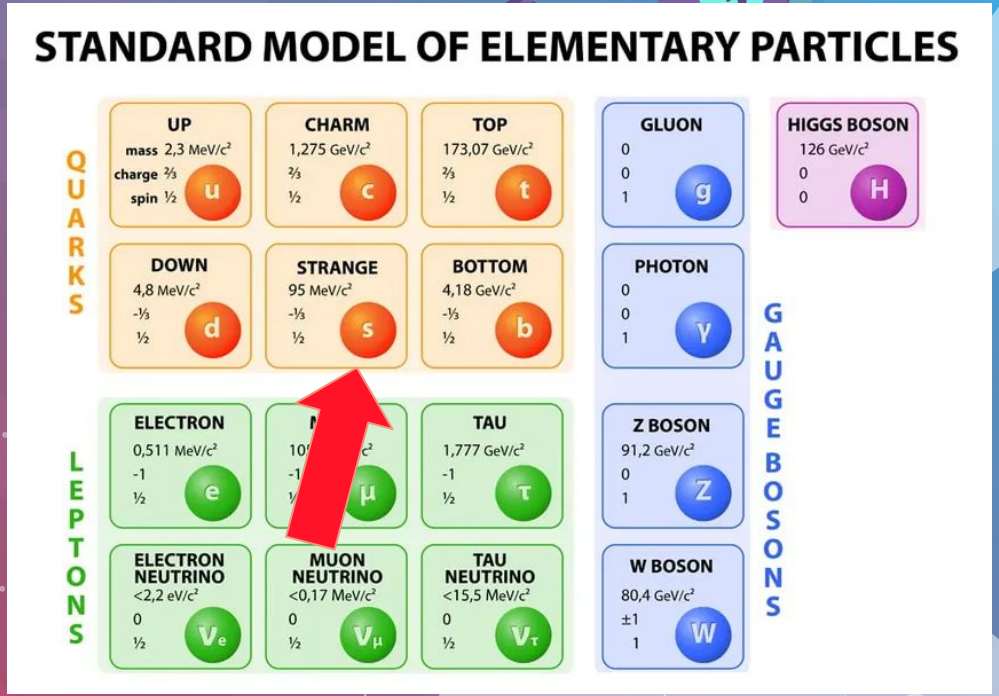

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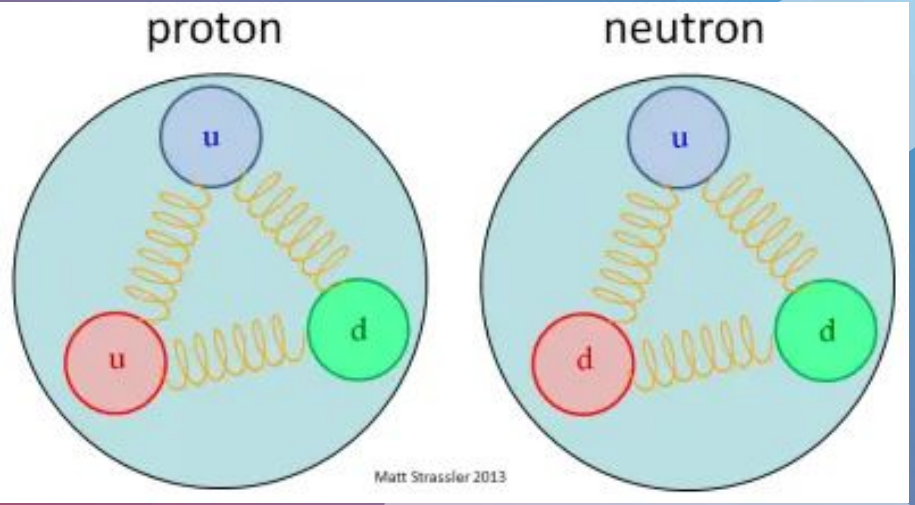

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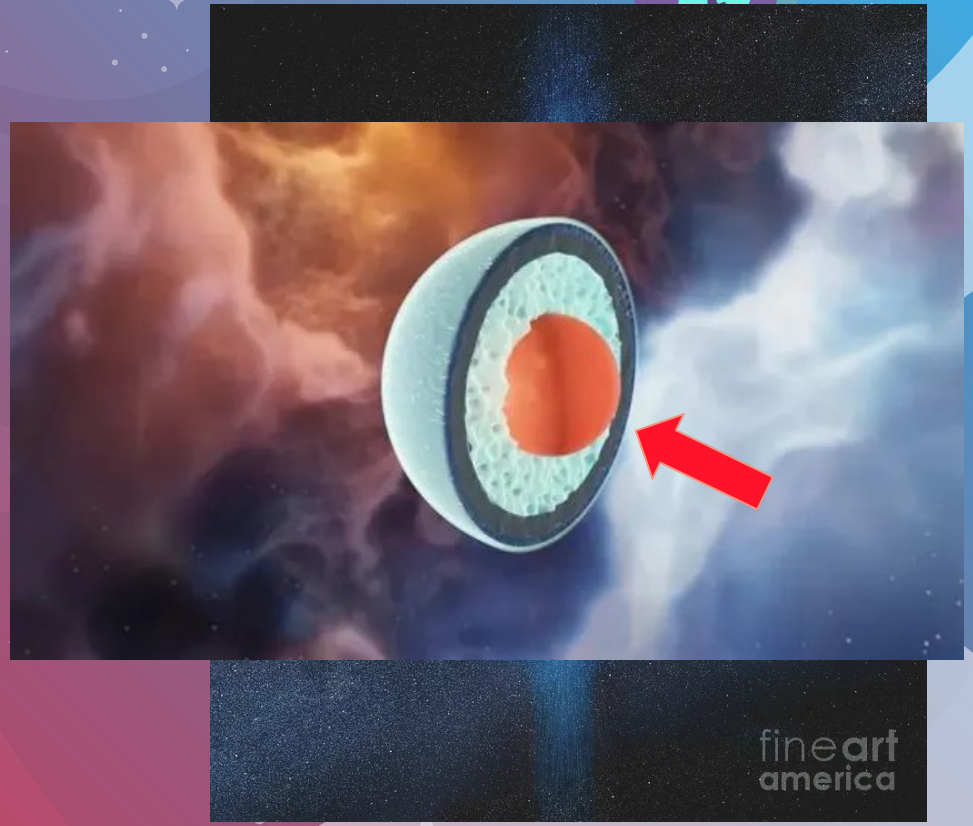


03

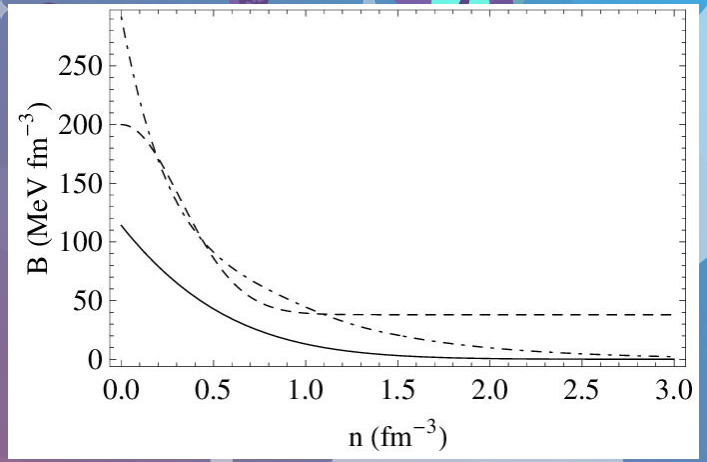
Research Methodologies

Descriptive Approach

In this research inquiry, a **descriptive approach** was applied to analyze existing literature and data to explore the concept of strange quark matter (SQM). Specifically it was used to review and synthesize the findings from existing studies on SQM, as it allowed for a clear understanding of current theories and predictions

Strange Matter Hypothesis

The strange matter hypothesis suggests that SQM might be the true ground state of matter. And the formation of SQM may only happen in extreme environments such as in the core of a neutron star. This is where it would transition from hadronic matter to quark matter. Quark matter is a hypothetical state of matter where quarks are deconfined and move around freely



Impact on the Field of Physics

Because of the complicated nature of observing quarks and inside of neutron stars, everything is highly theoretical with no empirical or direct evidence to support anything. But if we manage to learn of its existence and measure it’s B value for the bag model, it would completely change the standard model and call for a reform as a new fundamental form of matter governed by the strong force emerges.