

# Review of: "Dark Matter as Dimensional Condensate"

İzzet SAKALLI<sup>1</sup>

<sup>1</sup> Eastern Mediterranean University

**Potential competing interests:** No potential competing interests to declare.

I am writing to provide my review of the article titled "Dark Matter as Dimensional Condensate" by Ervin Goldfain, submitted to Qeios.

Ervin Goldfain's article explores the concept of fractional statistics (FS) and its connection to dark matter within the framework of minimal fractal manifold (MFM). The author introduces the notion that dark matter may be a consequence of the Cantor Dust, a phase created by the topological condensation of continuous dimensions in early cosmological evolution. The article presents a theoretical framework connecting FS,  $q$ -bosons, and dimensional condensates, suggesting a novel perspective on the nature and origin of dark matter.

The article introduces a novel and intriguing hypothesis that dark matter could be related to fractional statistics and minimal fractal manifolds. While the concept is innovative and thought-provoking, it is essential to consider the extent to which this hypothesis aligns with current observational evidence and how it can be tested or validated experimentally.

The author acknowledges that the article is presented in a draft form, and it is clear that further development and validation of the ideas are needed. However, the presentation of the concepts, equations, and their connections could benefit from more clarity and organization. It would be valuable to improve the readability of the article for a broader scientific audience.

The article mentions several references, but it would be beneficial to provide a more comprehensive review of the relevant literature, including recent research on dark matter and fractional statistics. Additionally, the author should address how this hypothesis fits into the broader context of existing cosmological and particle physics theories.

It is crucial to discuss potential experimental or observational tests that could validate or refute the hypothesis presented in the article. How might the proposed connection between dark matter and fractional statistics be empirically tested or constrained?

The article would benefit from a more structured conclusion that summarizes the main points, emphasizes the implications of the findings, and provides a clear direction for future research.

**Recommendation:** Given the innovative nature of the hypothesis presented in this article, I recommend that it undergoes further review and revision to address the above-mentioned points. The author should consider incorporating additional supporting evidence and clarifying the presentation of the concepts. Furthermore, the potential experimental and observational implications of this hypothesis should be discussed in greater detail. Once these concerns are addressed,

the article could contribute significantly to the field of cosmology and particle physics by offering a new perspective on the nature of dark matter. I recommend that the article could be considered for publication in a peer-reviewed journal after revisions have been made to improve its overall quality and scientific rigor.

Thank you for considering my review, and I look forward to seeing the revised version of this article.

Sincerely,

Prof. Dr. İzzet Sakallı