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A Theoretical Investigation on the Emergence of Monopoles in the Quantum Vacuum

Matheus Pereira Lobo

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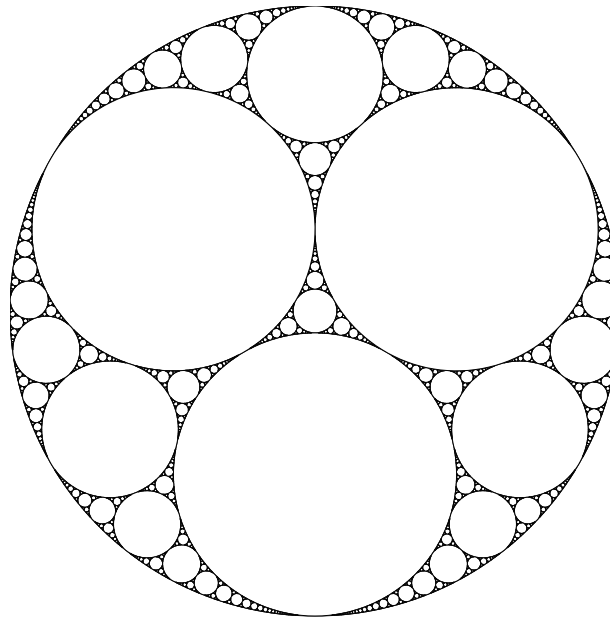
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[awaiting peer review]

1. Emergent magnetic charge in an antiferromagnet was revealed using diamond quantum magnetometry. [1]
2. In this white paper, I present a conjecture regarding the supposed existence of a geometric configuration capable of creating a non-null magnetic field only in a given region in such a way as to characterize it as a magnetic monopole.
3. Conjecture: ***There exists a geometric configuration in a multidimensional mathematical space such that the result of the "circulation" of the electric current density in its physical dimensions generates a magnetic monopole.***
4. Note that the mathematical space mentioned in (3) does not imply that all mathematical dimensions are physical space-like dimensions.
5. The number of mathematical dimensions may be greater than the number of physical dimensions.
6. The mathematical dimensions may include: space-like dimensions, time, physical dimensions, and non-physical dimensions.
7. The conjecture (3) is applicable at the Planck scale.
8. As an example, consider an Apollonian Gasket-type configuration of electric charge densities that satisfies conjecture (3). [image credits: [wikipedia](https://en.wikipedia.org/wiki/Apollonian_gasket)]



9. Calculations from pure and applied mathematics may (dis)prove the conjecture.
10. The importance of discovering the fundamental structure of the Planck scale lies primarily in our ability to manipulate spacetime properly, especially for human transportation by antigravity.

Open Invitation

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References

1. Tan, A. K. C., Jani, H., Högen, M., Stefan, L., Castelnovo, C., Braund, D., ... Atatüre, M. (2023). Revealing emergent magnetic charge in an antiferromagnet with diamond quantum magnetometry. *Nature Materials*, 23(2), 205–211. <https://doi.org/10.1038/s41563-023-01737-4> ↵