

Tortuosity and the Flatness of Local Spacetime

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Abstract

In this note, the authors discuss the reason why spacetime appears locally flat to our information processing brains.

Consider tortuous axon tracts in the brain with ephaptic coupling. These tracts are studied extensively in papers such as [1]. Next consider flat tracts of axons, but in curved spacetime. Juxtaposing these two pictures, we may wonder if they are somehow dual to one another. If this can be shown rigorously, perhaps then the tortuosity might have as its purpose the nullification of the effect of spacetime curvature¹. This in turn would mean that information processing can make spacetime appear locally flat when it actually (globally) is not so.

References

- [1] Aman Chawla and Salvatore Domenic Morgera. On the geometry of interacting axon tracts in relation to their functional properties. *Commun. Math. Biol. Neurosci.*, 2024:Article-ID, 2024.
- [2] Aman Chawla and Salvatore Domenic Morgera. Mechanism of universal quantum computation in the brain. *Journal of Applied Mathematics and Physics*, 12(2):468–474, 2024.
- [3] Andras Pellionisz, R Llina, et al. Space-time representation in the brain. the cerebellum as a predictive space-time metric tensor. *Neuroscience*, 7(12):2949–2970, 1982.

¹This remark should be read in conjunction with [2, 3].