Reality works as the Maple V program: Quantum Gravity does already exist

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Abstract

It is argued that the reality works like the Maple V program, the latter uses the formulas of analog theories, but while working with data it has the limited "Digits" value, e.g. if command $Digits := 2$ is given then the being used value of π is just 3.14. Usually in the Maple the data output are the finite resolution figures on the screen of PC. My idea is the continuous (i.e. analog) and digital (i.e. quantum) combined description of reality.

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There is paper [1], where the famous Planck's length does not describe the graininess of spacetime. However, the results of Laurent's paper allow the Planck's length to be the scale of the graininess of spacetime. Indeed, if the speed of particles is calculated by known continuous formulas, and the graininess reflects only at the representation of the output, then this can explain the lack of graininess in the paper of Laurent.

The idea of continuous spacetime faces logical paradoxes, the most convincing ones are the Zeno's Paradoxes. Indeed, the Reality is built upon definitions, just like the Maple V program. The Nature is defined by me as one, which is measured by Scientific Instruments (e.g. meter, thermometer, voltmeter, clock, etc.) and the Instruments are what measure the Nature. The very small distance can not be measured (because the perfect precision of measurement is not possible), thus there must be lower limit of length. Using then the Planck's thoughts about Einstein's theory, one recognizes as such natural limit the Planck's length.

The 2018 paper has used lattice QCD to solve the proton mass puzzle. [2] It was perfect success within the measurement precision. And the paper refuted such thing as scale invariance (thus, the size of an object has fundamental importance). That two facts mean, that there is minimal length and minimal time, the spacetime is quantized.

I suggest that as my idea of Quantum Gravity.

I. QUANTIZATION OF CURVED SPACETIME

One way to quantize the curved spacetime is to use the cosmological time t, latter is global scale time coordinate. Then, researcher places the spacetime points in such a way, that the proper distance between them is no less than Planck's scale. The distances between the points are measured in stationary (in respect to global-scale coordinates t, x, y, z) coordinate frames (tetrads). This is powerful model, but sadly the positions of the points can hardly be expressed in simple mathematics.

So, let us use fixed grid, lattice, in global coordinates, the points are fixed by the lattice (such lattice had full success in [2], so it would be interesting to repeat the Yang's success in a curved spacetime; notably, the proton mass according to Strong Equivalence Principle must be the same throughout the spacetime). Hereby the spacetime separation between the points should be always greater than Planck's scale. So, there should be no such points

near (and below) the event horizon of Black Hole, so such area is special. And the evidence is there: "Gravitational wave echoes provide our most direct and surprising observational window into quantum nature of black holes. Three years ago, the first search for echoes from Planck-scale modifications of general relativity near black hole event horizons" (Jahed in [3]).

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[1] Integral challenges Physics beyond Einstein, phys.org; Laurent, P. and Götz, D. and Binétruy, P. and Covino, S. and Fernandez-Soto, A., Constraints on Lorentz Invariance Violation using integral/IBIS observations of GRB041219A, Phys. Rev. D 83, 121301 (2011).

[2] Yi-Bo Yang, Jian Liang, Yu-Jiang Bi, Ying Chen, Terrence Draper, Keh-Fei Liu, and Zhaofeng Liu, "Proton Mass Decomposition from the QCD Energy Momentum Tensor", Phys. Rev. Lett. 121, 212001 (2018), https://www.sciencenews.org/article/proton-mass-quarks-calculation

[3] Jahed Abedi, Niayesh Afshordi, Echoes from the Abyss: A Status Update, arXiv:2001.00821 [gr-qc], (2020); Jahed Abedi, Hannah Dykaar, Niayesh Afshordi, Echoes from the Abyss: Tentative evidence for Planck-scale structure at black hole horizons, Phys. Rev. D 96, 082004 (2017), arXiv:1612.00266 [gr-qc].