Open Letter to Nassim Haramein: The Four You Wrote Down First

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Dear Mr. Haramein,

I am writing because in my book *Theory of Space, Volume 1: Structure* you appear as the first witness of a number that I believe is more important than it has so far been given credit for: the proton charge radius equals four of its reduced Compton wavelengths (§5.3 and Appendix A5.3).

What you wrote first. In "Quantum Gravity and the Holographic Mass" (2012–2013) you counted Planck spherical units (PSU) in the volume of the proton and on its surface and obtained the proton mass to within 0.04 %. In the same paper you inverted the formula into a prediction of the radius, $r_p = 4 \cdot l_P \cdot m_P / m_p = 0.841236$ fm (Eq. 30) — when the accepted value was still the "large" radius of about 0.877 fm. In Section 4 you reduced it to $m_p = 4\hbar/(c \cdot r_p)$. Since $l_P \cdot m_P = \hbar/c$, this is exactly

$$r_p = 4\hbar/(m_p c) = 4 \cdot \lambda\!\!\!^{-}_p$$

In 2025, with Dr. Alirol and Dr. Guermonprez, you wrote $\lambda\!\!\!^{-}_p = r_p/4$ explicitly and called it exact. In my book you are presented as the first to write this relation down.

Independent confirmation. The same four, in a different notation ($\pi r_p = 2\lambda\!\!\!^{-}_p$), was derived independently by the Danish physicists Ole Trinhammer and Henrik Bohr from Lie group theory (EPL, 2019). With the latest CODATA 2022 radius, 0.84075(64) fm, the measured ratio is 3.9977 ± 0.0030 — 0.76σ from four. Your 2012 prediction agrees with measurement today.

Where our pictures meet. Following Fuller, you have long drawn the "64-tetrahedron grid" in which the gaps between tetrahedra form octahedra, and you take it as the structure of the vacuum. This is the same tetrahedral-octahedral structure that I study as a lattice of space, counting its levels by doubling from the Planck length. Your choice to define the PSU by its diameter l_P — the distance from node to node — is the right one for this lattice too: it is exactly the edge of level zero.

Where our answers differ. In your model the four comes from the sphere: a sphere's surface equals four great circles (Archimedes). In the lattice it comes from geometry of another kind: two doubling steps ($2^2 = 4$) between the levels of the Compton wavelength (64) and the charge radius (66), and the ratio of the octahedron's volume to the tetrahedron's, $V(\text{Oct})/V(\text{Tet}) = 4$. These are two different answers to one question. The book keeps both side by side and treats you as a witness whose number is confirmed by measurement; which geometry is its true source is an open question. One technical point I would be glad to discuss: closest packing of real spheres changes your count by a factor of $\sqrt{(3/2)}$, while counting cells of a gapless tiling does not.

My questions:

1. In your 2025 preprint the four is exact (Eq. 48). In your view, what fixes it — the geometry of the sphere, or something deeper?
2. Do you regard the 64-tetrahedron grid as the face-centered cubic lattice with octahedral and tetrahedral voids?
3. How do you explain the factor 2 in the proton formula that is absent from the black-hole formula? (In the book, one unit serves two scales that differ exactly by a factor of two — neighboring levels of the lattice.)

An invitation. The full calculation is in the book (§5.3 and Appendix A5.3); the open laboratory with an interactive model of the lattice is at https://theoryof.space. I would be glad if you or your colleagues checked the numbers, and I would be happy to send you a printed copy.

This letter is published at theoryof.space. Your reply, if you send one, will be published in full and without editing only with your explicit consent; otherwise it will be summarized in my own words and marked as private correspondence. Replies can be sent to stakhoff@gmail.com.

With respect and gratitude — you were the first to write down the four,

Yevhenii Stakhov

References

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