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Plausible and Implausible Dimensionality

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Abstract: *The implausible dimensionality on the double surface was assumed.*

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1. Introduction

Following the double surface concept the dimensionality (of space and time) R and the elliptic length n expressed in Compton wavelengths of the matter are related as follows [1]:

$$R = 2\sqrt{1 + \frac{\pi^2}{n^2}} - 1. \qquad (1a)$$

Or

$$n = \frac{\pi}{\sqrt{\left(\frac{R+1}{2}\right)^2 - 1}}. \qquad (1b)$$

And the elliptic length n can be deduced from the average elliptic-hyperbolic length $s(n)$ given by the next formula:

$$s(n) = n\left(2 - \frac{1}{\sqrt{1 + \frac{\pi^2}{n^2}}}\right). \qquad (2)$$

The dimensionality choice lies between the next numbers:

$$1 < R < 10.66 \ldots \qquad (3a)$$

And taking into account the space-time limitations $R \in \mathbb{N} + 0.5$ the next ten of them are chosen as plausible:

$$R = 1.5, 2.5, 3.5, 4.5, 5.5, 6.5, 7.5, 8.5, 9.5 \ and \ 10.5. \qquad (3b)$$

2. Length Characteristics of Plausible and Implausible Dimensionality

Plausible dimensionality length characteristics including the nearest interesting but implausible dimensionality are collected in Table1.

Table1. *Length characteristics of plausible and implausible dimensionality*

Dimensionality R	Elliptic length n (in $\lambda_{Compton}$)	Average elliptic-hyperbolic length s(n) (in $\lambda_{Compton}$)	Fraction by the matter occupied length (inversed length $\frac{1}{s(n)}$)	Dimensionality characteristic
1.5	4.188 790 204 8	5.026 548 245 7	0.198 943 678 9	plausible
1.506 311 788	4.159 682 955 2	5	0.2	implausible
2.5	2.187 524 340 4	3.125 034 772 0	0.266 910 953 8	plausible
2.636 262 021	2.068 987 448 2	3	0.333 333 333 3	implausible
3.5	1.558 666 443 9	2.424 592 460 7	0.412 440 447 7	plausible

4.519 985 968	1.221 239 624 9	2	0.5	implausible
4.5	1.226 352 199 9	2.006 758 145 3	0.498 316 153 5	plausible
4.519 985 968	1.221 239 624 9	2	0.5	implausible
5.5	1.015 930 850 5	1.719 267 593 1	0.581 643 022 9	plausible
10.661 565 554	0.546 897 427 7	1	1	implausible
6.5	0.869 234 031 2	1.506 672 320 8	0.663 714 323 4	plausible
10.661 565 554	0.546 897 427 7	1	1	implausible
7.5	0.760 551 348 2	1.342 149 379 9	0.745 073 547 7	plausible
10.661 565 554	0.546 897 427 7	1	1	implausible
8.5	0.676 550 651 3	1.210 669 586 6	0.825 989 197 3	plausible
10.661 565 554	0.546 897 427 7	1	1	implausible
9.5	0.609 558 510 3	1.103 010 637 6	0.906 609 570 1	plausible
10.661 565 554	0.546 897 427 7	1	1	implausible
10.5	0.554 818 816 3	1.013 147 403 7	0.987 023 207 4	plausible
10.661 565 554	0.546 897 427 7	1	1	implausible

We can summarize from Table1 that at given dimensionality $R \in \mathbb{N} + 0.5$ the average elliptic-hyperbolic length $s(n)$ expressed in Compton wavelengths of the matter $\lambda_{Compton}$ is not a natural number, i.e. $s(n) \notin \mathbb{N}$. If matter would try to possess such an interesting length $s(n) \in \mathbb{N}$ the absorption and emission feature of energy during the event is expected. For instance, if the 1.5- space-time is transformed to 1.506…- space-time with the intention to shrink the average elliptic-hyperbolic length from an irrational length of $5.0265482457\ldots\lambda_{Compton}$ to the natural length of 5 $\lambda_{Compton}$ the concerned event should be accompanied by the absorption and emission feature at (0.2 – 0.1989436789 = 0.0010563211) mc^2. In the case of proton with $m_p c^2 = 938272\ keV$ the mentioned energy amounts to 991.12 keV as follows:

$$\Delta E_{proton} = (0.2 - 0.1989436789)\,.\,938272\ keV = 991.12\ keV. \quad (4)$$

3. Coincidental Result

The result coincides with that one belonging to the reaction 27Al + p → 28Si*, where the 28Si nucleus, exited by the incident energetic protons, subsequently emits gamma radiation in the amount of 991.88 keV [2].

4. Dedication

To the sentence: “Give me five!”

References

[1] Janez Špringer. " Dimensionality Choice" International Journal of Advanced Research in Physical Science (IJARPS), vol 11, no. 11, pp. 1-2, 2024.

[2] Kelly, Ralph. Calibration of a 1.7 MV Pelletron Accelerator at the University of Florida. 03 October 2019.

[3]web-docs.gsi.de/~wolle/TELEKOLLEG/KERN/LECTURE/Wollersheim/2022/34-nuclearfusion.pdf

Addendum

Let's repeat the exercise for number 2 where the 3.5- space-time is transformed to 4.519985968- space-time with the intention to shrink the average elliptic-hyperbolic length from an irrational length of 2.4245924607… $\lambda_{Compton}$ to the natural length of 2 $\lambda_{Compton}$ as presented in the next part of Table1:

Dimensionality R	Elliptic length n (in $\lambda_{Compton}$)	Average elliptic-hyperbolic length s(n) (in $\lambda_{Compton}$)	Fraction by the matter occupied length (inversed length $\frac{1}{s(n)}$)	Dimensionality characteristic
3.5	1.558 666 443 9	2.424 592 460 7	0.412 440 447 7	plausible
4.519 985 968	1.221 239 624 9	2	0.5	implausible

Now the concerned event should be recognized by the energy difference of (0.5 – 0.4124404477 = 0.087559553) mc^2 which in the case of proton with $m_pc^2 = 938272\ keV$ amounts to 82.155 MeV as follows:

$$\Delta E_{proton} = (0.5 - 0.412\ 440\ 447\ ) \,.\, 938272\ keV = 82.155 MeV. \qquad (a)$$

The result coincides with the energy of mass defect noticed in hot fusion reaction of magnesium Mg and curium Cm to hassium Hs [3]:

$$Mg^{26} + Cm^{248} \rightarrow Hs^{274}$$

$$\Delta mc^2 = (25.983 + 248.072 - 274.143) \,.\, 931478\ keV = -82.153\ MeV. \qquad (b)$$

What could mean that in the present hot fusion one proton becoming a part of Hassium has strengthened its dimensional profile to higher degree.

The result is also in accordance with the energy of mass defect noticed in cold fusion of iron Fe and lead Pb to hassium Hs [3]:

$$Fe^{58} + Pb^{208} \rightarrow Hs^{266}$$

$$\Delta mc^2 = (57.933 + 207.977 - 266.130) \,.\, 931478\ keV = -205.092\ MeV. \qquad (c)$$

Since

$$\frac{\Delta mc^2}{\Delta E_{proton}} = \frac{205.092\ MeV}{82.155} = 2.50 \qquad (d)$$

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