Golden Ratio at Luminal Speed

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Abstract: *The golden ratio between the radius of a sphere of a null object and the radius of a sphere of a golden object at the speed of light was presented.*

Keywords: *Heraclitean dynamics, golden object, null object, luminal speed, golden ratio (GR), elliptic sphere*

1. INTRODUCTION

In previous articles the relativistic mass of the golden object [1] as well as of the null object [2] obeying Heraclitean dynamics at the speed of light (luminal speed) was presented:

$$m_{golden\ luminal} = 1.147\ 002\ 177\ 624\ 696\ 953\ 950\ 911\ 747\ 514\ 5\ldots x\ 10^{-21} kg. \tag{1}$$

And

$$m_{null\ luminal} = 0.901\ 717\ 342\ 230\ 420\ 258\ 061\ 652\ 351\ 764\ 25\ldots x\ 10^{-21} kg. \tag{2}$$

Interestingly, the ratio of their squares is the golden ratio (GR):

$$\frac{m_{golden\ luminal}^2}{m_{null\ luminal}^2} = 1.618\ 033\ 988\ 749\ 894\ 848\ 204\ 586\ 834\ 365\ 6\ldots = \frac{1+\sqrt{5}}{2} = GR. \tag{3}$$

2. EXPLANATION

A golden object [1] has a golden ratio (GR) between a pair of extreme speeds (maximum and minimum), where the minimum speed in the pair is luminal, allowing for the following relativistic mass:

$$m_{golden\ luminal} = \frac{e^{\frac{\ln(GR)+\ln k-1}{2}}}{c}. \tag{4}$$

Where the dynamics constant $k = \sqrt{1 + \frac{1}{c^2}}\ hc$ is defined by the precise values of Planck's constant $h = 6.62607015\ x\ 10^{-34} \mathrm{kgm^2 s^{-1}}$ and the speed of light $c = 2.99792458\ x\ 10^8 ms^{-1}$.

On the other hand, a null object has zero ground mass at infinite speed, as well as relativistic mass at luminal speed [2] as follows:

$$m_{null\ luminal} = \frac{e^{\frac{\ln k-1}{2}}}{c}. \tag{5}$$

The square of the ratio of the respective relativistic masses gives:

$$\frac{m_{golden\ luminal}^2}{m_{null\ luminal}^2} = \frac{\left(\frac{e^{\frac{\ln(GR)+\ln k-1}{2}}}{c}\right)^2}{\left(\frac{e^{\frac{\ln k-1}{2}}}{c}\right)^2} = \frac{e^{\ln(GR)+\ln k-1}}{e^{\ln k-1}} = e^{\ln(GR)}. \tag{6a}$$

Or

$$ln\ \frac{m_{golden\ luminal}^2}{m_{null\ luminal}^2} = \ln(GR). \tag{6b}$$

And

$$\frac{m^2_{golden\ luminal}}{m^2_{null\ luminal}} = GR. \tag{6c}$$

3. CONSEQUENCES ON THE ELLIPTIC SPHERE

On an elliptic sphere, it appears that the inverse relationship between the square of the mass and the radius of the sphere applies to both length and time [3]:

$$m^2 x\ R_{sphere} = constant. \tag{7}$$

So

$$\frac{m^2_{golden\ luminal}}{m^2_{null\ luminal}} = GR = \frac{R_{null\ luminal}}{R_{golden\ luminal}}. \tag{8}$$

What does it mean that the ratio between the radius of the sphere of a null object and the radius of the sphere of a golden object at luminal speed is golden.

4. CONCLUSION

The golden ratio remains golden even if we somehow convert the constant in Heraclitean dynamics into a parameter of dynamics.

DEDICATION

To Merry Christmas 2025 and Happy New Year 2026

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