International Journal of Advanced Research in Physical Science (IJARPS)
Volume 6, Issue 11, 2019, PP 36-37
ISSN No. (Online) 2349-7882
www.arcjournals.org

Invariant Light

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Abstract: *Invariant fundamental physical quantities – speed, mass, time and distance – of light are in Heracletean dynamics explained by the specific set of dynamics constants for each photon wavelength.*

Keywords: *invariant speed, mass, time and distance of photons*

1. Introduction

Photons possess invariant physical quantities. Let us see how the concerned invariance can be explained in Heracletean dynamics.

The invariant speed:

$$a_{relativistic} = a_{ground} = a = 1. \quad (1)$$

The invariant mass:

$$m_{relativistic} = m_{ground} = m. \quad (2)$$

The invariant time:

$$t_{relativistic} = t_{ground} = t. \quad (3)$$

And the invariant distance:

$$s_{relativistic} = s_{ground} = s. \quad (4)$$

Taking into account three dynamics equations [1] we can conclude that each photon has its own set of three dynamics constants, i.e. for mass, time and distance.

2. The Dynamics Constant for Photon Mass

It is the solution of the relativistic equation for mass (5) at the invariant speed (1) and invariant mass (2):

$$m_{relativistic}^2 c^2 a^2 = e^{\frac{m_{ground}^2 c^2 - k_m(1-lnk_m) + m_{relativistic}^2 c^2 (a^2-1)}{k_m}}. \quad (5)$$

Since for $a = 1$ and $m_{relativistic} = m_{ground} = m$ the next dynamics constant for the photon mass is given:

$$k_m = m^2 c^2. \quad (6a)$$

Or shortly because of $m = \frac{h}{\lambda c}$:

$$k_m = \frac{h^2}{\lambda^2}. \quad (6b)$$

3. The Dynamics Constant For Photon Time

It is the solution of the relativistic equation for time (7) at the invariant speed (1) and invariant time (3):

$$t_{relativistic}^2 c^2 a^2 = e^{\frac{t_{ground}^2 c^2 - k_m(1-lnk_m) + t_{relativistic}^2 c^2 (a^2-1)}{k_m}}. \quad (7)$$

Since for $a = 1$ and $t_{relativistic} = t_{ground} = t$ the next dynamics constant for the photon time is given:

$$k_t = t^2 c^2. \quad (8a)$$

Or shortly because of $t = \frac{\lambda}{c}$:

$$k_t = \lambda^2. \quad (8b)$$

4. The Dynamics Constant for Photon Distance

It is the solution of the relativistic equation for distance (9) at the invariant speed (1) and invariant distance (4):

$$s_{ground}^2 c^2 a^2 = e^{\frac{s_{relativistic}^2 c^2 - k_m(1-lnk_m) + s_{ground}^2 c^2 (a^2-1)}{k_m}}. \quad (9)$$

Since for $a = 1$ and $s_{relativistic} = s_{ground} = s$ the next dynamics constant for the photon distance is given:

$$k_s = s^2 c^2. \quad (10a)$$

Or because of $s = \lambda$:

$$k_s = \lambda^2 c^2. \quad (10b)$$

5. Conclusion

In Heracletean dynamics light differs from the ordinary matter by the specific set of dynamics constants belonging to each photon according to its wavelength. Contrarily, the ordinary matter should possess the unique set of dynamics constants independent of its mass or the corresponding wavelength of mass.

References

[1] Janez Špringer, (2019).Three Relativistic Constants. International Journal of Advanced Research in Physical Science (IJARPS) 6(10), pp.23-24, 2019

Citation: *Janez Špringer, (2019). Invariant Light. International Journal of Advanced Research in Physical Science (IJARPS) 6(11), pp.36-37, 2019.*

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