Nothing travels faster than the speed of Light: Evidently proving Einstein's postulation

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Abstract: Albert Einstein's Special Theory of Relativity postulates that the speed of Light is the upper limit beyond which nothing can travel, so that, the essential relation between cause and effect would be maintained. Contrary to this irrefutable Physical Law, controversies related to the speed of Light exist among the scientists; the final solution for this most debated topic in the Physical Sciences is yet under debate. The Speed of Light (299,792 km/sec) was adopted in the year 1983 based on the measurement of a Laser beam, and accordingly, it is thought that Light from the Sun takes about eight minutes to reach our Planet Earth. In truth, there are much dissimilarity between Laser beam and the Sunlight. Laser Light starts off from a two-dimensional output of a narrow cylindrical tube and travels in the form of a beam - retaining the same Intensity. Whereas, Sunlight emanates from the three-dimensional spherical surface of the Sun. Obviously, the Light emanated from the spherical surface of the Sun will not travel in the form of a beam, but only expand away from all around the spherical Sun - simultaneously decreasing the Intensity; we can measure the Intensity of Sunlight as "per unit area", for example: the average Intensity of Sunlight above the Earth's atmosphere is measured as 1,367 watts per square meter (Wm^{-2}), this is not possible with a Laser beam because Laser is a monochromatic and coherent Light, whereas the Sunlight is poly-chromatic - it spreads in all directions. This indicates that the speed of a Laser beam does not apply to Sunlight. Therefore, we need to find out the "actual process" with which the Sunlight makes contact with the Solar Planets, so as to reconcile the existing discrepancies about the "speed of Light".

Keywords: Kinetic Energy; Intensity of Sunlight; Expansion of Sunlight; Concurrent Decrease of Intensity; Enlarged Sphere Form.

1. Introduction

Emission of Energy by the Sun: Under the influence of extreme density, temperature and pressure (density: 1.622×10^5 kg/cm^3, temperature: 1.571×10^7 K, pressure: 2.477×10^{11} bar) [1] nuclear reactions take place in the Sun's Core, thereby exuding tremendous amount of Energy as a by-product. This Energy spreads out through the successive layers of radiative zone and the convective zone to reach the photosphere - eventually escaping into space as Kinetic Energy [2, 3]. This way, the Sun emits Energy from all around its three-dimensional spherical surface with an Intensity of 63,000,000 Wm^{-2} [4], as shown in Figure 1:

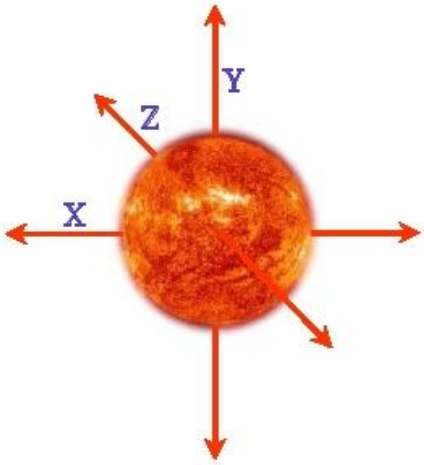

Figure 1 The Sun emits Energy into space from its spherical surface in all dimensions with an Intensity of 63,000,000 Wm^{-2}

The Energy thus emanated with enormous Intensity, expands in all directions - concurrently decreasing the Intensity, and makes contact with the Solar Planets as Sunlight with respective Intensities - in accordance with the Planets' Orbital Distances. Please refer Figure 2:

Figure 2 Sunlight makes contact with the Planets with appropriate Expansion and respective Intensity - according to the Orbital Distance of the Planets

Therefore, we shall analyze the Physical Characteristics of Sun and the Mean Orbital Distance of Planet Earth in a "Three-Dimensional" perspective, so as to find out the "Modus Operandi" behind this phenomenon.

2. Three-Dimensional Analysis on the Sun's Physical Characteristics and Planet Earth's Mean Orbital Distance to find out the Sunlight's Intensity Mathematically

2.1. The Mode of Sunlight's contact with our Planet Earth at its Mean Orbital Distance

The Sun is a near perfect sphere [5]; its Equatorial Radius is 696,342 km [6] and its Surface Area is 6,090,000,000,000 km^2 [7]. To make contact with our Planet Earth at its Mean Orbital Distance i.e. 149,600,000 km [8], the Light emanated from the spherical surface of the Sun

extends in all directions - concurrently decreasing the Intensity, and makes contact with Earth in the form of an "Enlarged Sphere" - the radius (r) of this Enlarged Sphere is the distance from "centre of the Sun to the Mean Orbital Distance (MOD) of Earth", as shown in Figure 3:

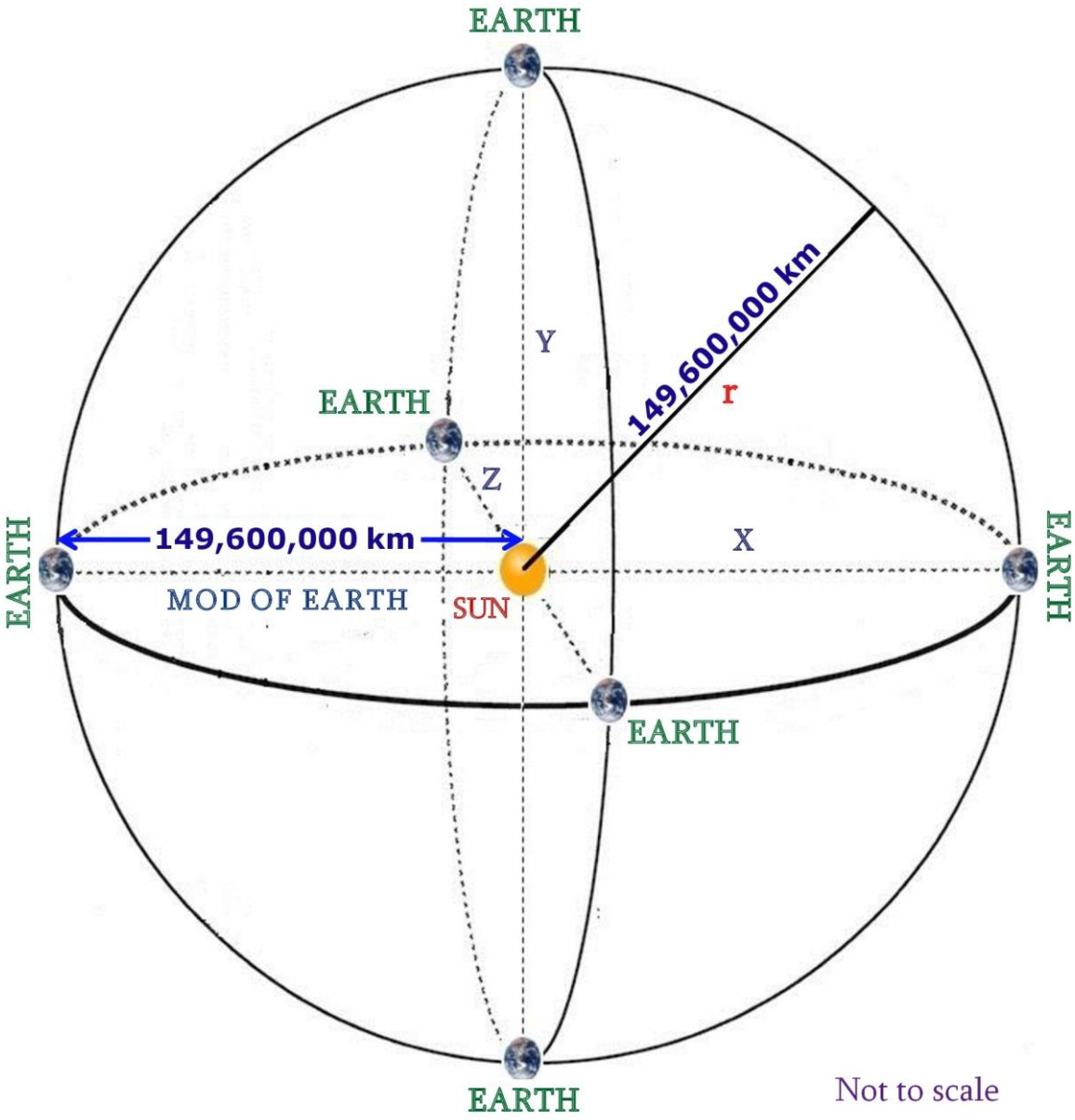

Figure 3 shows Sun at the center - encircled with the Enlarged Sphere formed by the Sunlight at the Mean Orbital Distance of Earth; Planet Earth positioned in any point on the surface of this Enlarged Sphere will get Sunlight with the same Intensity - in all the positions

2.2. Intensity of Sunlight at the Mean Orbital Distance of Earth

To get the Intensity of Sunlight obtainable by Planet Earth, we have to pass through the three steps of computation i.e., Step 1: Calculate the Surface Area of the Enlarged Sphere formed by the Sunlight at the Earth's Mean Orbital Distance, Step 2: Find out the Amount (Number of Times) of Expansion of Sunlight from its "Source" to the "Earth's Mean Orbit", and Step 3: Demonstrate the Intensity of Sunlight obtainable by the Planet Earth.

Step 1: Surface Area of the Enlarged Sphere formed by the Sunlight at Earth's Mean Orbit

Formula for the Surface Area of a Sphere is $4\pi r^2$; then, Surface Area of the Enlarged Sphere formed by the Sunlight at the Earth's Mean Orbit will be:

$$4\pi\left(Mean\ Orbital\ Distance\ of\ Earth\right)^2$$

$$=\left(4\times 3.14\right)\left(149,600,000km\right)^2=\left(12.56\right)\left(22,380,160,000,000,000km^2\right)$$

$$=281,094,809,600,000,000km^2 \quad (1)$$

Therefore, Surface Area of the Enlarged Sphere formed by the Sunlight at the Earth's Mean Orbit is 281,094,809,600,000,000 km^2.

The Sunlight emanated from the spherical surface of the Sun pervades throughout the space around the Sun - leaving no room for an "External Mediation", and makes contact with Planet Earth in the form of an Enlarged Sphere

Step 2: The Amount (Number of Times) of Expansion of Sunlight

The Amount of Expansion of the Sunlight at the Mean Orbit of Earth shall be arrived at by dividing the "Surface Area of the Enlarged Sphere" by the "Surface Area of the Sun":

$$=\frac{281,094,809,600,000,000km^2}{6,090,000,000,000km^2}=46,157 \quad (2)$$

Thus, the "Surface Area of the Enlarged Sphere" formed by Sunlight at the Earth's Mean Orbit is 46,157 Times bigger than the "Surface Area of the Sun".

Step 3: Intensity of Sunlight at top of the Earth's Atmosphere

The Intensity of Sunlight at the Earth's Mean Orbit (on all sides of the Enlarged Sphere formed by Sunlight at the Earth's Mean Orbit) shall be found as shown below:

$$Intensity\ of\ Sunlight\ at\ the\ Earth's\ Mean\ Orbit=\frac{Intensity\ of\ Sunlight\ at\ its\ Source}{Amount\ of\ Expansion\ of\ Sunlight}$$

$$=\frac{63,000,000\ Wm^{-2}}{46,157\ Times}=1,365\ Wm^{-2} \quad (3)$$

Please refer Figure 4.

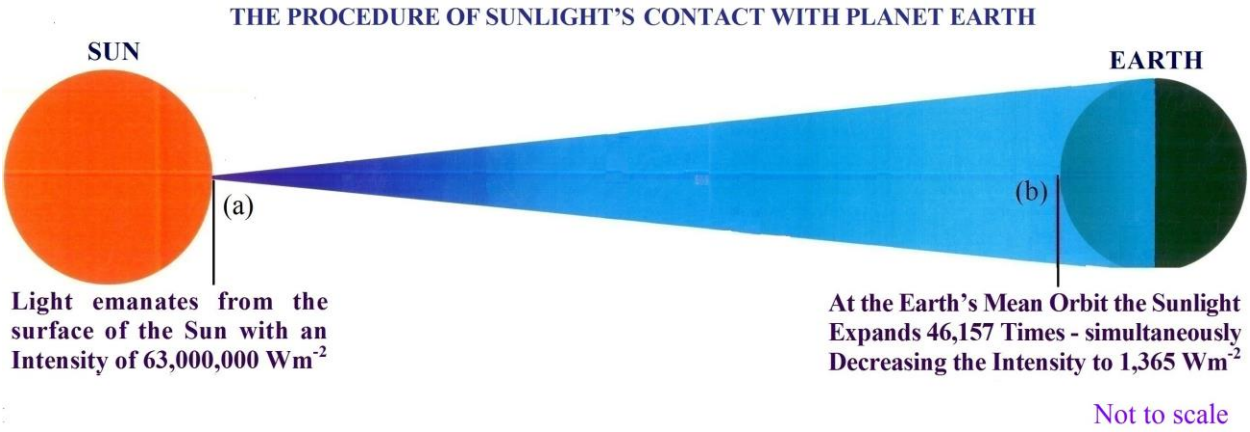

Figure 4 Because the Intensity of Sunlight is perfectly in tandem with its Expansion: $\frac{63,000,000\ Wm^{-2}}{46,157\ Times} = 1,365\ Wm^{-2}$, there is no propagation delay in this phenomenon; the *Sunlight at its Source* "(a)" and the *Expanded Sunlight at the Earth's Orbit* "(b)" are instantly connected with each other (please refer the above Figure)

The above analysis shows that the Light emanated from the spherical surface of the Sun with an Intensity of 63,000,000 Wm^{-2}, expands 46,157 Times - concurrently decreasing the Intensity, and makes contact with Planet Earth in the form of an Enlarged Sphere with an Intensity of 1,365 Wm^{-2}; the same Intensity will be existing all around the Enlarged Sphere.

Surprisingly, the Intensity of Sunlight at the Earth's Mean Orbit - as per the Theoretical Calculations precisely agrees with the Practical Data collected by way of satellites [9] as shown in Figure 5:

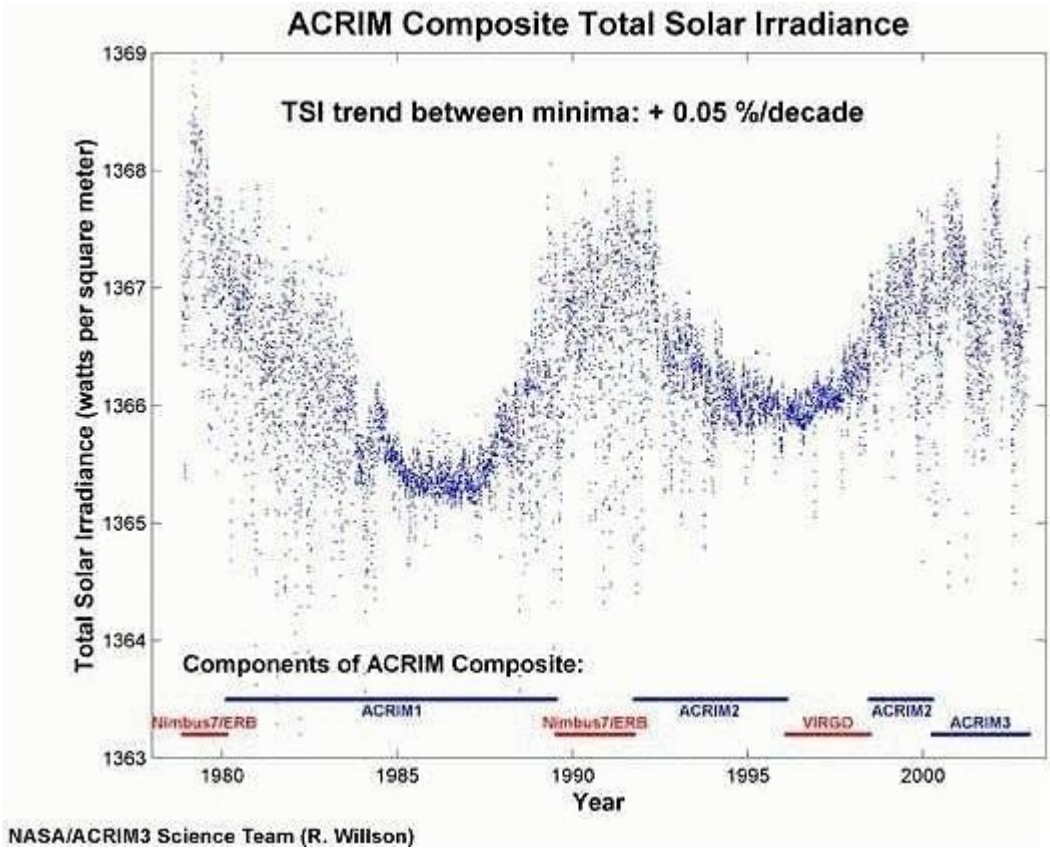

Figure 5 The average Intensity of Sunlight outside the Earth's atmosphere during the period from 1980 to 2005 - as measured by the satellites, is shown in the Figure above

Therefore, it is evident that the Amount of Expansion of Sunlight (46,157 Times) at the Earth's Mean Orbit and the Intensity of Sunlight obtained by the Planet Earth (1,365 Wm^{-2}) are perfectly synchronized i.e., the Sunlight Expands 46,157 Times concurrently Lessening the Intensity by exactly the same amount of its Expansion (46,157 Times):

$$\frac{63,000,000\ Wm^{-2}}{46,157\ Times} = 1,365\ Wm^{-2}$$

This ensures that the Intensity of Sunlight is Inversely Proportional to its Expansion. Likewise, we can find out the Intensity of Sunlight obtainable by all the Solar Planets using the Formula shown below:

$$Intensity\ of\ Sunlight\ Obtainable\ by\ the\ Planet\ underway = \frac{Intensity\ of\ Sunlight\ at\ its\ Source}{Amount\ of\ Expansion\ of\ Sunlight} = \frac{63,000,000\ Wm^{-2}}{\text{“}x\text{”}\ Number\ of\ Times}$$

5. Conclusions

The Light emanated from the spherical surface of the Sun with immense Intensity, extends in all directions - concurrently decreasing the Intensity, so as to make contact with the Planets in the form of an Enlarged Sphere. When the Planet underway is positioned in any point on the surface of this Enlarged Sphere i.e., when the Planet is located in any direction from the Sun - at the same distance, the Planet will get Sunlight with the same Intensity - in all the positions. Because the Light emanated from the Sun pervades throughout the expanse around the Sun - leaving no room for an “External Mediation” and as the Amount of Expansion of Sunlight is perfectly in tandem with its Intensity, there is no consumption of time in this phenomenon. Light of all the three-dimensional natural sources like: the Stars, Galaxy Cores, etc., also follow the same fashion. Albert Einstein’s remarkable postulation on Light is thereby justified authentically.

Acknowledgements

The author is grateful to the Scientists of NASA and ESA for painstakingly collecting the vital data of our Solar System - by way of satellites and space probes, and for making them accessible in the public domain. The author is also grateful to the Scientists for making available the important physical characteristics of the Sun. These established facts have been very essential in this Three Dimensional Study on the Intensity of Sunlight.

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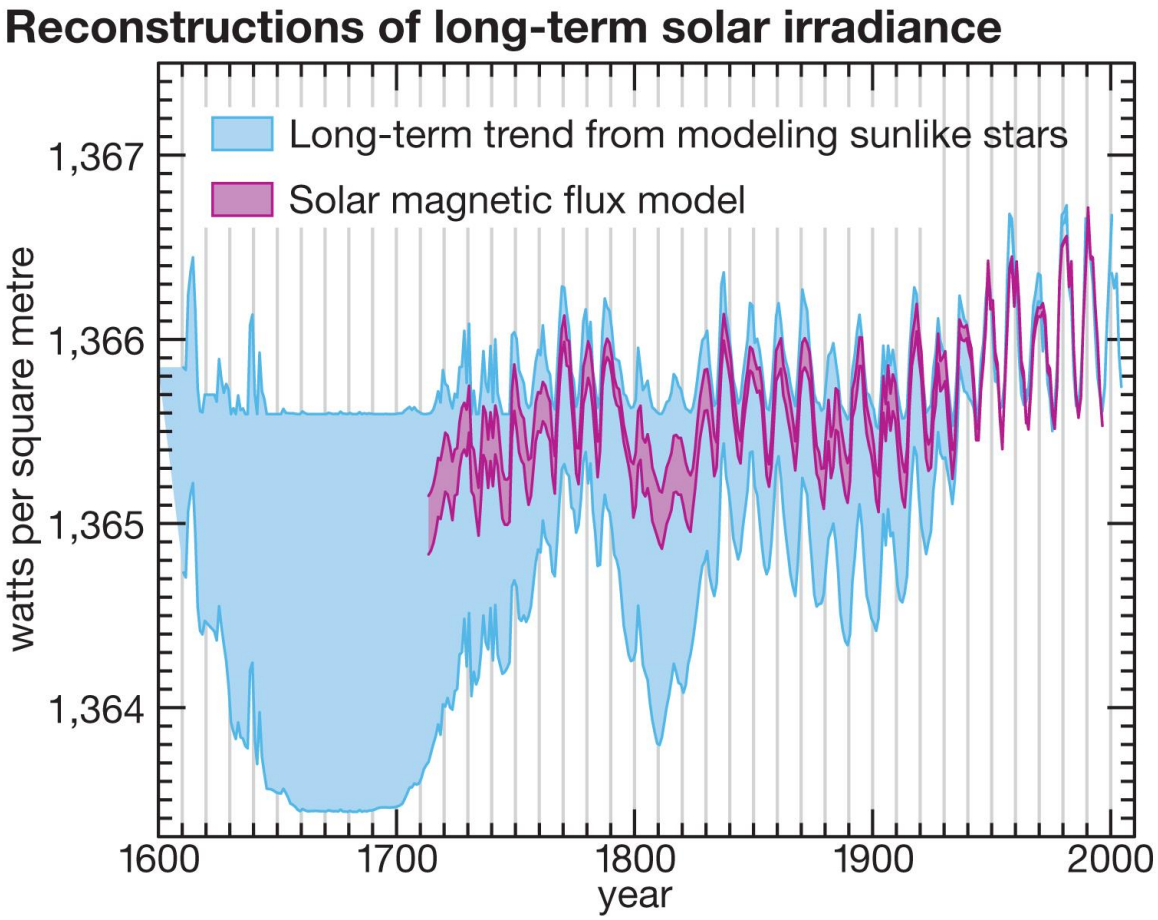
solar constant: changes in the solar constant from 1600 to 2000



Source: Climate Change 2007: The Physical Science Basis,
Summary for Policymakers, Intergovernmental Panel on Climate Change

Changes in the solar constant from 1600 to 2000. The blue region is from a model that is based on observations of stars such as the Sun, and the purple region is based on the effect of the solar magnetic flux on bright regions called faculae.