

Gravitational Lensing

***Clock* \equiv Time period \equiv Photon frequency $^{-1}$**

Francis Viren Fernandes
137 Bethany B, Kodaikanal, Tamil Nadu, INDIA 624101
e-mail: aither137@gmail.com

The prediction of GRT is correct with respect to slowing of time period when photon mass in detectors or emitters are in higher orbits above the earth. The modified gravitational lensing equation proves that earth's gravitational field alters frequency of the photon in the emitter on earth and detector in space. Photons have mass. The photon mass pulsates at a frequency. The frequency change to a lower frequency at higher orbits is called time dilation. This is red shift. 186-ether transmits light of this source photon across space. Photons do not travel. At higher orbits the ether wave is red shifted. At lower orbits the ether wave is blue shifted. The true meaning of gravitational lensing is empirically proved with and only with **photon mass** in instruments and 186-ether waves.

A grade 12 Physics text book query:

Consider an emitted frequency of $1.1 \times 10^8 \text{ Hz}$ from earth.

A detector in a satellite $2.0 \times 10^5 \text{ m}$ above the earth detects a frequency shift of $2.4 \times 10^{-3} \text{ Hz}$. The frequency bounces back to earth and is detected at $1.1 \times 10^8 \text{ Hz}$. Explain this phenomenon.

$$E = h \cdot f = 6.6260693 \times 10^{-34} \times 1.1 \times 10^8 \text{ J}$$

$$E = 7.28867623 \times 10^{-26} \text{ J}$$

$$E = m \cdot c^2$$

$$m = \frac{E}{c^2} = \frac{7.28867623 \times 10^{-26}}{c^2} \text{ kg}$$

$$m = 8.10974602 \times 10^{-43} \text{ kg}$$

This photon mass, $m = 8.10974602 \times 10^{-43} \text{ kg}$, experiences $g = 9.804 \text{ m/s}^2$ which I have taken as a uniform accelerating field, as I do not wish to calculate g at a height of $2.0 \times 10^5 \text{ m}$. The idea is sufficient.

By convention photons do not have mass. However, I have calculated a photon mass from frequency. **Photons have mass.**

Now, consider the gravitation potential experienced by this photon mass.

$$E = m \cdot g \cdot h$$

$$E = 8.10974602 \times 10^{-43} \times 9.804 \times 2.0 \times 10^5 \text{ J}$$

$$E = 1.590159 \times 10^{-36} \text{ J}$$

$$E = 1.590159 \times 10^{-36} \text{ J} = h \cdot f$$

$$f = \frac{E}{h} = \frac{1.590159 \times 10^{-36}}{6.6260693 \times 10^{-34}} \text{ Hz}$$

$$f = 2.4 \times 10^{-3} \text{ Hz}$$

This shift in the frequency of photon mass, m is **gravitational lensing** under the influence of earth's acceleration, g due to gravity. This is the meaning of the moving clock runs slow. Photon pulsate frequency is slowed. Here lensing is orchestration of frequency change. Conventional bending of light is not being discussed here - for now.

With sophisticated detectors this red shift [**slowing clock as orbit height increases**] can be measured.

$$\Delta f = 1.1 \times 10^8 - 2.4 \times 10^{-3} \text{ Hz}$$

$$\Delta f = 109999999.998 \text{ Hz}$$

$$\Delta f \equiv 1.1 \times 10^8 \text{ Hz}$$

[no apparent shift in frequency for poor detectors]

The Planck satellite has changed the CMBR frequency value and so - 'Has the source, position, age of the supposed BB changed???

The rebound frequency will be blue shifted by the same factor of $f = 2.4 \times 10^{-3} \text{ Hz}$ and so the receiver on earth will detect the same frequency as that which was emitted, $f = 1.1 \times 10^8 \text{ Hz}$.

By GRT convention,

$$\frac{\Delta f}{f} = \frac{g \Delta h}{c^2}$$

And now modified,

$$\frac{\Delta f}{f} = \frac{m \cdot g \Delta h}{m \cdot c^2}$$

Consideration of photon mass is the **reason** for the **tick** from a **photon pulse** measured as **frequency**. The **input photon mass, m is the reason for frequency and energy.**

Ether Radiation

Note that voltage is acceleration and $e \text{ Ve}$ energy

$$e \text{ Ve} = eae = e^2 \times 2.839408838 \times 10^{19} = 7.28867626 \times 10^{-19} \text{ J}$$

$$a = \frac{F}{\phi} = \frac{5.27909396 \times 10^{10}}{1.859222909 \times 10^{-9}} = 2.839408838 \times 10^{19}$$

$$E = 1.438756867 \times 10^{11} = F \times \lambda = F \times \frac{c}{1.1 \times 10^8}$$

I thus end up with the Planck black body constant corrected and discovered by me to be the energy of 186-ether.

$$1.438756867 \times 10^{11} \text{ J} = 2\pi \cdot \phi \cdot c^2 \cdot 137.036 \text{ J}$$

The wavelength is that of photon mass, m . Photon clusters comprise atomic mass. Radiation is via 186-ether. The detector/emitter is the photon m . The photon does not travel. Pulsation of the photon mass, at a particular frequency and the motion of 186-ether wave fronts is the phenomenon of radiation. This mechanism of radiation is described in another paper on the WSD titled *Radiation of Light by 186-Ether*.