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Need Graviton? ..... See the Moon.

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Abstract: *To date, there is no way to explain the process that describes how particles how particles Graviton-Photon interacts and also any method to detect gravitational waves. According to the results of our article/research we can definitely say that there is an area what we have given the name "Effective Gravitational Field Area" (EGFA), created surrounding the moon (upto 111449.275 km from its surface) as a result of interaction of Sun-Earth & Earth-Moon system of Gravitational Potential, which offers Graviton-Photon interaction and also posses Graviton rich area (comparatively) where Gravitational waves could be detected. And also effects/cause the phenomenon of Auroras on Earth & van Allen radiation belt.*
Keywords *- Graviton, Gravitational Potential, Field InteractionTheory, Photon, Standard Model.*

I. Introduction

Specific reason for selecting this topic, that there is an area created what we have mathematically found by using the concept of gravitational potential and Field interaction theory for Earth-Moon-Sun system. And giving it name as Effective Gravitational Field Area (EGFA) created surrounding the moon unto 111449.275 km from its centre.

We want a request with this research paper, although we know gravitational waves could not be detected by using Newtonian Mechanics because of its infinite range of force also having no bound system of gravitational field. We clearly want to say that by using Newtonians Mechanics (Gravitational Potential Concept) &with the help of Field Interaction Theory (for Earth- Moon-Sun system), we succeed to bound the gravitational field (theoretically mathematically) which result formation of E.G.F.A., which is totally bounded. So it's surely show Quantum behavior i.e., Quantization of Energy is possible in the bound system& determinedly help in detection of Graviton or Gravitational waves.

In our project, we have a comment on sure existence of this E.G.F.A. surrounding the Moon (bound system) &logically proved that –If this area is not created, there is violation of Sun-Earth-Moon System.

Since this EGFA is a result of interaction of Earth-Moon-Sun System, so theory of relativity should be applied to analyze data & probabiliy different data may be observed for different relative position of observer from inside & outside the system.

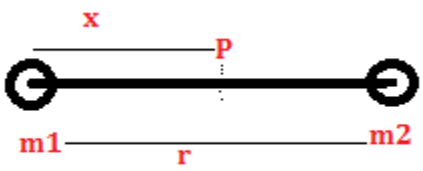
II. Creation Of Effective Gravitational Field Area or EGFA

First of all let's see how the area EGFA created?–

As we know concept of gravitational potential between two objects, there is a point at which they balance each other hence we can say Sun,Earth&Moon creates a region surrounding themselves(separately)under whole range their gravitational force of attraction is effective.

By using concept of gravitational potential &using formula-

$G*m1/x^2 = G*m2/(r-x)^2$



Data used:-

Distance between Sun&Earth-149600000km.

Distance between Earth & Moon-384500km.

Mass of Sun=333000(mass of earth)

Mass of Earth=6(mass of moon)
From calculation (see figure A+calculation),the point A(balance point of Sun- Earth system) is found at distance of 259245.139 km for Earth & point B (balance point for Earth –Moon system) is found at the distance of 111449.275kmfrom moon.
So we sketch a boundary for Sun-Earth & Earth-moon system having balance point A&B respectively.
Now when the moon come in region of sun, its surrounding area of gravitational field (w.r.t.Earth) intermix with gravitational field of sun (w.r.t.Earth) and making it denser in comparison of other area created under sun-Earth and Earth-moon system.

And in this way we find an area of denser medium called Effective Gravitational field area (EGFA).

Now fig.b shows different position of Moon in Gravitational Field of Sun which clearly tells- When Moon surrounded by its own gravitational field enters in the gravitational field area of Sun; overlapping are mixing of these separate gravitational field area (of moon &sun)occurs which result in the formation of EGFA surrounding the moon as in the fig.b(from1 to 5)its formation starts when Moon enters in the boundary of Gravitational field of Sun(point 1).Its existence keeps on continue till Moon left the boundary. Since Sun spread electromagnetic waves all over in the solar system. Now area covered by electromagnetic waves also intermixed with EGFA, resulting EGFA more &denser.
NOTE-so here. there may be probability for graviton-photon interaction (conclusion)

2.2 Comment on sure existence of E.G.F.A surrounding the moon Does this E.G.F. area created surely?

This area found at a distance of 111449.275 km surrounding the moon (on calculation based).

Creation of this E.G.F. type area is possible when gravitational field area surrounding the moon enters in the gravitational field area of sun & overlap with it.

Now a question arises:-Why does this area overlap?
For this there may be two conditions as –see fig-c

1-If gravitational field area of moon doesn't overlap under the gravitational field area of sun. This means that – Moon (with its surrounding field area) would not have to present in the gravitational field area of sun. But this happens if moon wouldn't revolve .And we know very well this doesn't happen.
Since, revolution happens sun's gravitational field allowed the moon to enter in it. And overlapping surely occurs and result comes in the formation of creation of E.G.F.area.

2-Take another condition – if overlapping not occurs & moon present in gravitational field area of sun. (fig. c).
Due to its presence, gravitational field area of moon displaces gravitational field area of sun in amount equal to its volume/density (in any direction) (fig. c).
Since the nature of gravitational force is attractive then displaced area would shift in a particular direction where intensity of attraction will more.
Now from fig.c' -
The intensity of attraction power is more toward the direction of position of earth and moon.
So, both earth and moon will attract continuously at every instant when moon comes in the gravitational field area of sun. And due to this reason earth & moon have been stroked to the sun in early past time and there was not of any possibility for existence of solar system but this didn't happened (fig c').
So overlapping occurs surely due to which no displacement of any part of gravitational field area of sun occurs towards earth or moon &no chance occurs by virtue of which earth &moon have to strike the sun.
And in this way system of revolution of earth &moon goes on continuous.
So there is surely an E.G.F. area created surrounding the moon in which electromagnetic field (produced by electromagnetic waves) also intermixed with it & cause the area more denser (complex).
Note:- There may be evidence to detect a particle named graviton in this E.G.F area because of fundamental particle of field interaction.

III. Effect of EGFA-

3.1- Auroras & Van Allen radiation belt on Earth-

Now particles reached the E.G.F. area. And when these particles left the area, some of them get deflected at 90 degree and other at an angle without 90 degree.
Now both types of deflected particles enter in the magnetic field of earth.
The particles deflected at 90 degree enter in the magnetic field perpendicularly and shifted in the Van Allen Radiation Belt.

The particles deflected an angle without 90 degree, enters in the magnetic field at some angle but not perpendicularly. Then they starts helical motion & shifting towards the pole.(Fig.d)
Due to this reason there is a type of belt created at the poles. Now, a large no. of particles of this belts comes in the contact of atmosphere, causing the ionization of gases molecules , which results in the formation of emission of light & the combined form of these light has been seen in the form of Aurora on the both poles time to time.
The rays of Aurora seen from east to west by the reason that the particles enter in the magnetic field of earth from east to west.

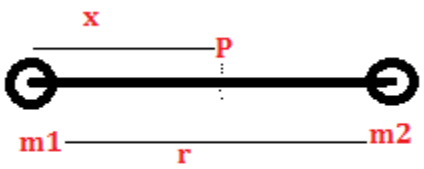
3.2-Quantum behavior of EGFA

This area may follow the quantum rules or it becomes in quantum dimension as it is bound system. As we know for a bound system, energy level shifts in particular direction i.e., quantized. And gravitational waves may find between these energy levels. This area has no regular shape & size & it varies continuously because of change in position of Earth & Moon w.r.t. Sun at every moment. So we have to sketch a 3-D picture by using data on movement & position of Earth, Moon. So quantization of gravitational field could be done which is not achieved yet. So I am in favor of/ suggest setting up gravitational wave detectors in this area to find gravitational waves. It helps to prove the existence of this area & also by studying this area it becomes helpful to improve the Gravitational wave detectors to more sensitive. Gravitational forces are so weak that there fundamental particle 'Graviton' cannot be easily detected yet (mass having large value in GeV/c^2 range). But in EGFA because of increase in its density, gravitons become so near and near, there may a probability to observe them by detectors.

As EGFA's area changes continuously, position of Energy levels also changes accordingly which offers Graviton to accelerate and lead to origin of gravitational waves, and many possibilities. This provide a step to unify the gravitational force and electromagnetic force because EGFA is rich with gravitons through which photons (in the form of EM waves of the Sun) passes. So, better chance to understand the possibility of interaction between graviton-photon & lead to support the unified field theory in near future which is not achieved yet.

IV. Calculation-

Formula used: **G*m1/x^2 = G*m2/(r-x)^2**



Data used:-

1) Distance between Sun&Earth-149600000km.
2) Distance between Earth & Moon-384500km.
3)Mass of Sun=333000(mass of earth)
4)Mass of Earth=6(mass of moon)

A-For Sun –Earth System

1/x^2 = 333000/(149600000-x)^2
{(149600000-x)/x}^2 =333000
(149600000-x)/x = (333000)^1/2
= 577.06
578.06x =149600000
X = 149600000/577.06
=259245.139 km

B- For Earth-Moon System

(1/6)/x^2 = 1/(384500-x)^2
(384500-x)/x = (6)^1/2 = 2.449 = 2.45
384500-x = 2.45x
3.45x = 384500
X = 384500/3.45
X = 111449.275 km

V. Figure-

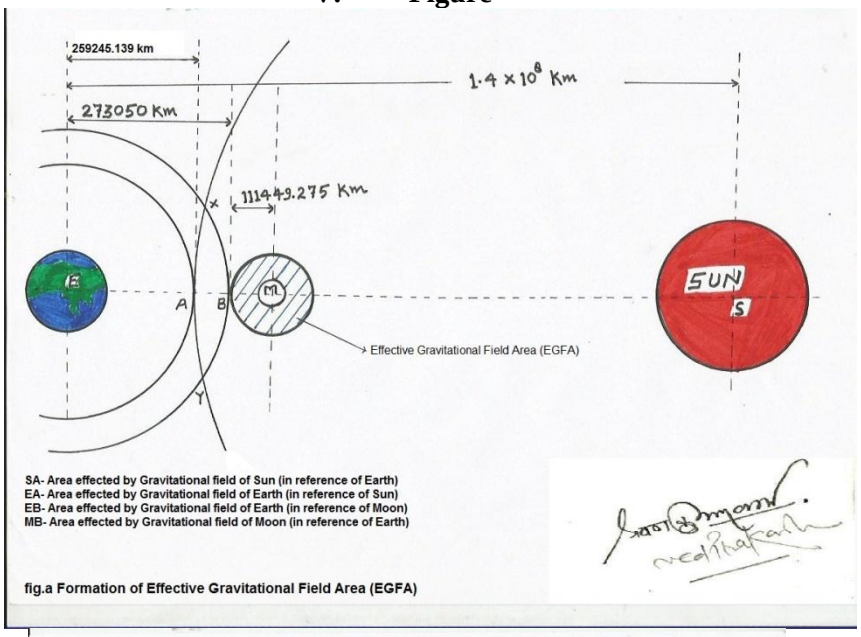


fig.a Formation of Effective Gravitational Field Area (EGFA)

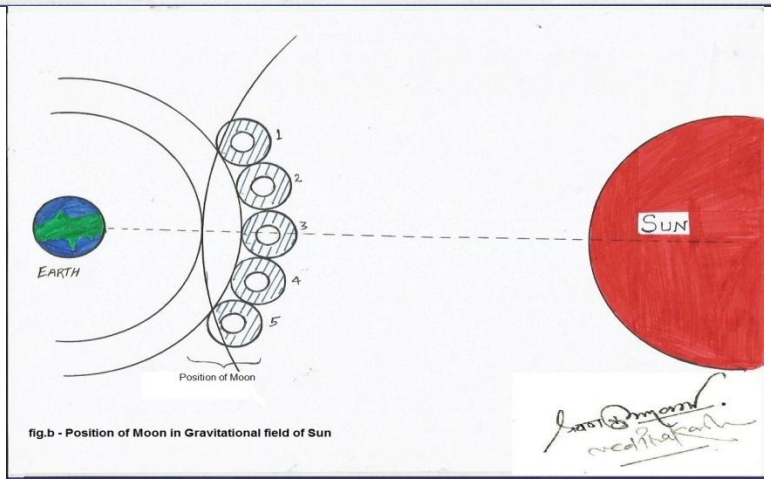


fig.b - Position of Moon in Gravitational field of Sun

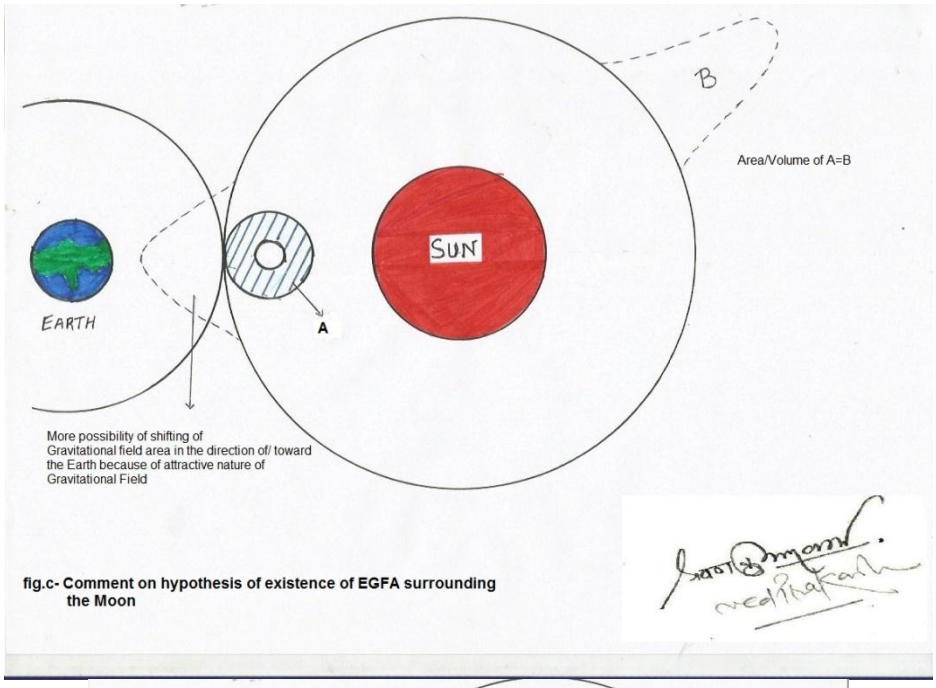


fig.c- Comment on hypothesis of existence of EGFA surrounding the Moon

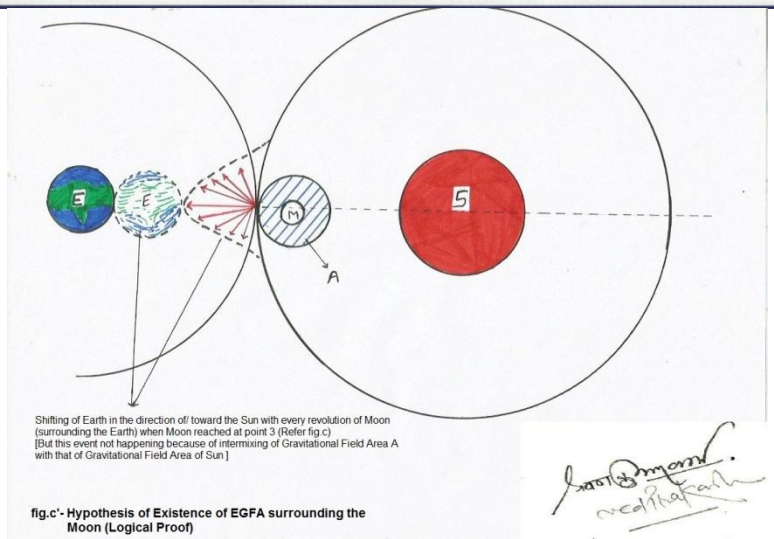


fig.c'- Hypothesis of Existence of EGFA surrounding the Moon (Logical Proof)

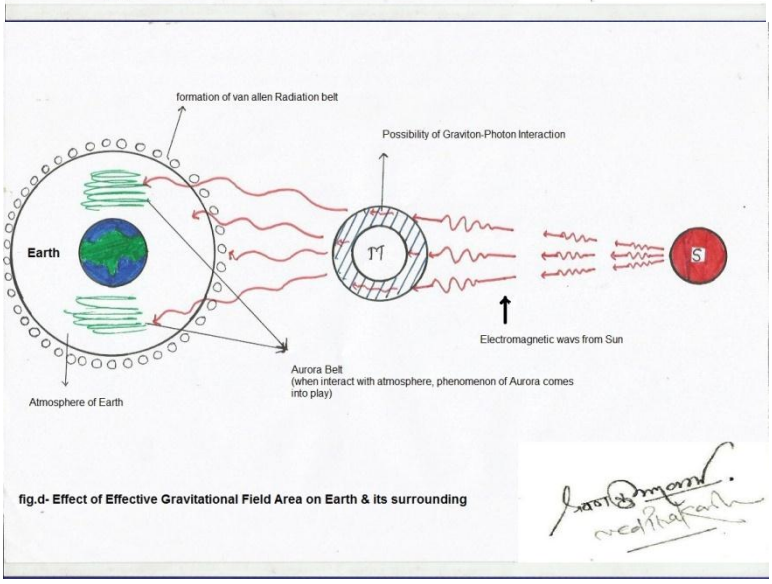


fig.d- Effect of Effective Gravitational Field Area on Earth & its surrounding

VI. Conclusion-

According to this article, we have generalized the formation of an area "Effective Gravitational Field Area" or EGFA created surrounding the moon, which would be a target to research & a mega science project should start on worldwide for the detection of Gravitational waves, to understand the process of Graviton-Photon interaction, to develop more sensitive Gravitational wave detectors by studying the behavior of this area. And also it helps to understand the phenomenon of auroras & van Allen radiation belt. The main advantage of the article is that it offers the quantization of Gravitational field (of EGFA) which is not achieved yet.

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[5]. On Topic- Graviton, Gravitational Waves, Photon, Field Interaction Theory, Standard Model, Gravitational Wave Observatories.

[6]. Data Collection- (a)Distance between Sun & Earth, Earth & Moon, (b)Mass of Sun, Earth & Moon.

Biography-

Ved Prakash is B.Sc (M) Passed-2012 Batch from Shivpati Postgraduate College, Shohratgarh (Affiliated to D.D.U. University, Gorakhpur, INDIA). Having enthusiastic interest in Celestial objects starts thinking on Effective gravitational field Area or EGFA, at the age of 15-16 year during the studying period of IX class, JNV Siddharth Nagar (U.P.) INDIA, with his maternal brother Mr. Shravan Kumar Verma who was a B.Sc(Bio) student at that time from LBSPG College had keen interested in Physics. And thinks about the quantum behavior of this area of EGFA during B.Sc (M)-III. At present he is a trainee of BTC from District Institute Of Education and Training (DIET), Siddharth Nagar (U.P.), INDIA.

Shravan Kumar Verma is BDS(Bachelor of Dental Surgeon) from Dental College, Azamgarh (U.P.) & B.Sc (Bio) from Lal Bahadur Shastri Postgraduate College, Anand Nagar (Affiliated to D.D.U. University, Gorakhpur, INDIA). Inspite of a Biology student, having keen interest in the Physics. So works with Mr. Ved Prakash on Effective Gravitational Field Area or EGFA at his studying period of B.Sc. at present he is continuing Internship programme of B.D.S.