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Ghosal's Space-Time Hypotheses

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Abstract—[This document explores Ghosal's axioms and laws regarding the two-dimensional representation of spacetime, emphasizing its utility in understanding complex gravitational interactions as described by general relativity. By conceptualizing spacetime as a two-dimensional sheet, the text illustrates how massive objects create curvatures that influence the motion of other objects, facilitating a clearer comprehension of phenomena such as light bending, black hole formation, and gravitational wave propagation. The foundational principles established herein serve as a framework for further investigations into the nature of gravity, spacetime, and the universe.]

Index Terms—[Ghosal's Hypotheses, Space-Time, Gravitation, Physics, Feasible Gravity Equation]

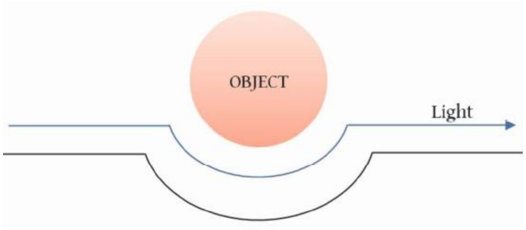
Ghosal's Axioms and Laws of 2-D Spacetime Representation

When we consider the fabric of spacetime as a two-dimensional sheet, we establish certain axioms that are essential for the discussions that follow. These foundational principles help us visualize and understand the complex interactions within spacetime, particularly in the context of general relativity and the curvature caused by mass and energy.

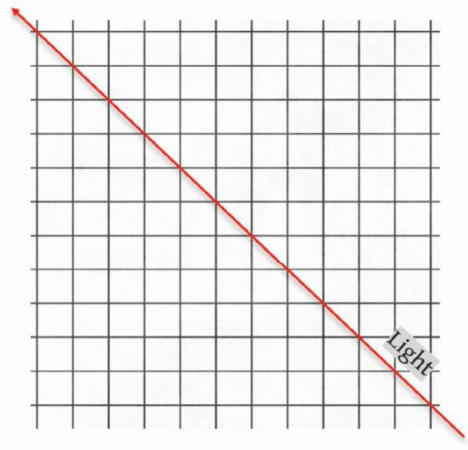
By imagining spacetime as a two-dimensional sheet, we can more easily grasp how massive objects like stars and planets create indentations or curvatures in this fabric. These curvatures represent the gravitational effects that dictate the motion of objects within spacetime. This simplified model allows us to explore various phenomena, such as the bending of light, the formation of black holes, and the propagation of gravitational waves, in a more intuitive manner.

These axioms serve as the groundwork for deeper explorations into the nature of gravity, spacetime, and the universe, providing a clear framework for the complex discussions and analyses that will be presented later.

1) When considering spacetime as a fabric or cloth sheet beneath a celestial object, light will consistently travel parallel to that sheet. From a top-down perspective, its trajectory will be diagonal across the grid.

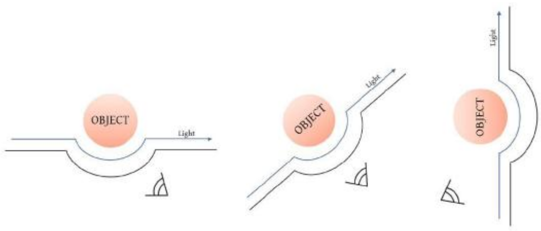


11.1



11.2

2) The nature of spacetime fabric is such that it does not adhere to any specific plane or axis of reference. As a result, it holds true for any plane and is entirely dependent on perspective, which is inherently variable.



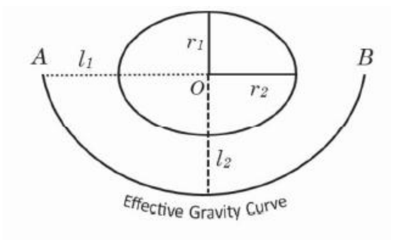
11.3

3)The trajectory of light remains constant, and may bend due to curvature in space-time. It continues in its original direction unless it changes material medium or undergoes physical change. Light travels parallel to the space-time fabric and space-time warps to allow the shortest path for light to move in situations of hindrance.

Ghosal's 2-D Cartesian Representation of Space-Time and Equations

INTRODUCTION

Suppose a planet or any spatially oriented object of symmetry around the polar axis and a near-uniform surface. Now you can visualise it as a 2-D shape. So the effective gravity curve can be represented by a curve line, whose endpoints coincide with the equatorial axis of the main object.



12.1

Here

$$\frac{l_2}{r_1} = \frac{l_1}{r_2}$$

Where l_2 is mathematically defined as:

$$l_2 = \frac{GM}{(r_{av})^2} \cdot r_1$$

here, G is the universal gravitational constant, M is the mass of the body and r_{av} is the average radius of that body.

Feasible Gravity: The actual attractive effect that a celestial body has on another body, that pulls the body towards its centre of mass is called Feasible Gravity.

It is defined as a function of **ñ**, which is also known as SG's "n" operator.

The depression at a point on the effective gravity curve at any distance x(Taking the centre of mass of the object as the origin),

the equation of the y-coordinate at that point will be:

$$y = -\tilde{n} \cdot \sqrt{[(l_2)^2 - x^2]}$$

$$where \ \ \tilde{n} = \frac{l_2}{l_1}$$

Here ñ is constant for the single celestial body throughout. And is also the ratio of *l* and *r* for that object.

Graphical Representation

The planet and the curve are represented by:

Planet:

$$\frac{x^2}{(r_2)^2} + \frac{y^2}{(r_1)^2} = 1$$

Curve:

$$y = -\tilde{n} \cdot \sqrt{[(l_2)^2 - x^2]}$$

$$where \ \ \tilde{n} = \frac{l_2}{l_1}$$

The Distance between two celestial bodies curvature points due to the effective gravity

This is given by R:

$$R = \sqrt{(d_{AB})^2 - \left(\frac{Al_2^2}{Al_1} + \frac{Bl_2^2}{Bl_1}\right)}$$

$$d_{AB} \rightarrow is\ the\ distance\ between\ the\ centres\ of\ masses$$

$$Al_2 \rightarrow The\ l_2\ of\ A;\ Al_1 \rightarrow The\ l_1\ of\ A$$

$$Bl_2 \rightarrow The\ l_2\ of\ B;\ Bl_1 \rightarrow The\ l_1\ of\ B$$

The Feasible Gravity Equation

The Feasible gravitational force of attraction between two celestial bodies is defined by using a modified version of newton's gravity equation.

$${}^{E}F_G = \frac{G\ X\ M_A \cdot M_B}{(d_{AB})^2 - \left(\frac{Al_2^2}{Al_1} + \frac{Bl_2^2}{Bl_1}\right)}$$

This holds account for minute calculations and decimals and is called Feasible Gravitational force of Attraction represented by ${}^{E}F_G$.

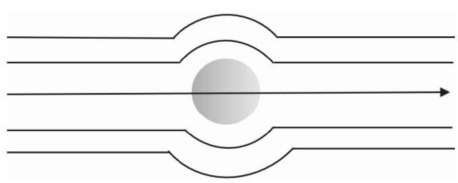
Question 1: Calculate the Feasible gravity between the Earth and the moon.

Ghosal's Gravitation Hypothesis

There are hypothetical lines that run parallel to the axis of space and the line passing through the centre of mass of an object in space.

When bundled up, they forma cylinder-like structure. These lines bend around a body due to various reasons, such as the bending of light around the body or the body's rigid and non-permeable structure.

The bending of these lines causes tension in them, which pulls any object approaching the centre.



13.1

Postulates

1) The curvature of these hypothetical lines depends on the fi for that object and it increases as we approach the surface of that object
2) At the surface, the curvature is maximum, and these lines do not run beyond the surface of that object.
3) The central line which passes through the centre of mass of that object, is called the axis of reference for that particular geometry. In the 3-D space, the x,y, and z axes lines intersect each other forming an interwoven net-like structure.
4) The curvature of these lines decreases as we move away from it, and at a particular distance away from that object, the curvature lines of these objects become zero.
5) As the lines near the surface become more congested due to the curvatures, it creates tension, which pulls objects toward the surface.
6) The lines seem to have some kind of repulsion between them, due to which two lines never intersect each other and run from infinity towards infinity in time. Due to this force, they tend to push the approaching object towards the more congested area.
7) However, as we now understand, these lines do not extend beyond the surface. When we dig a hole from one side of the object to the opposite side, through the center, and drop an object from the top, something strange happens. The axes of reference intersect at a point in the center, making it the most concentrated point below the surface. As a result, the object will move in an accelerated motion towards the center. Once it reaches the center, the repulsive forces between the axes will be so strong that they will push the object towards the downward surface, causing the object to repeat this motion indefinitely. This phenomenon maybe due to the Earth's magnetic field.
8) These axes of reference are not just the x, y, and z axes; they can be any axes of reference, depending on the perspective. If we take an infinite number of these axes and form an image by intersecting them, we can clearly observe concentrated zones where the "gravity" is strong.

Note: New ideas, mathematical equations and explanations are very welcome and will be added in future editions.