Recursing Newton: A Recursive Model of Gravitation and Radiation

Michael Vera

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Abstract

Newton's Universal Law of Gravitation provides an accurate approximation of gravitational interactions between two distinct masses. However, it fails to address the recursive nature of mass-energy interactions within a single Radiation Source, where mass accumulates from its center outward. In this article, we present a recursive gravitation model that functions both in classical two-body scenarios and in single-body systems, describing energy states from the center of a Radiation Source ($m_1 = 0$) to its Surface (m_2), where stored Gravitation equals extended Radiation. Using Earth as an example, we show how this model describes the balance at Earth's Surface ($r = 6363$ km) and extends to higher Degrees of Surface Interaction (D=0 to D=2).

1 Introduction

Newton's Universal Law of Gravitation is expressed as:

$$F = G\frac{m_1 m_2}{r^2},$$

where F is the gravitational force, G is the gravitational constant, and m_1, m_2 are two distinct masses separated by distance r.

While accurate for separate masses, this equation does not account for the internal distribution of mass within a single Radiation Source. Here, we present a recursive model wherein m_1 is zero at the center of a Radiation Source and increases to m_2 at its Surface. Gravitation (G) and Radiation (R) are balanced at the Surface:

$$E = G \cdot R, \quad \text{with} \quad R = \frac{M}{r^2}.$$

2 Degrees of Surface Interaction

Energy transitions through six Degrees of Surface Interaction (D=0 to D=5). This article focuses on the first three:

2.1 D=0: Energy Storage (Center to Surface Orbit)

At $D = 0$, Radiation is absorbed and stored as Gravitation. Energy orbits internally:

$$D = 0 \quad \Rightarrow \quad 2\pi \quad \text{(Radian orbit)}.$$

Mass accumulates from the center, where $m_1 = 0$ and Gravitation is maximal. At Earth's center, Radiation is fully stored.

2.2 D=1: Particulate Motion (Surface Reabsorption)

When energy surpasses the Surface threshold, a particle is emitted but reabsorbed:

$$\frac{d}{dr}(2\pi) = 0, \quad \frac{d^2}{dr^2}(2\pi) < 0.$$

This corresponds to the first derivative of the 2π function being flat, while the second derivative creates a parabolic trajectory. Particles break loose but curve back to the Surface.

2.3 D=2: Radiation Emission (Escape and Capture)

If sufficient energy is provided, particles break free from the original Radiation Source:

$$\frac{d^2}{dr^2}(2\pi) \quad \rightarrow \quad \text{particle escapes and is captured by another Radiation Source.}$$

Graphically, this corresponds to a concave curve extending from the Surface before being drawn toward another gravitational body.

3 Earth as a Recursive Model

Consider Earth:

$$r_{\text{surface}} = 6363 \text{ km}, \quad g_{\text{surface}} \approx 9.81 \text{ m/s}^2.$$

At the center ($m_1 = 0$), Gravitation is 100%. As r increases, stored Gravitation converts to extended Radiation. At the Surface:

$$G = R \quad \Rightarrow \quad E = G \cdot R.$$

Here, Radiation equals Gravitation, resulting in the known acceleration due to gravity.

4 Classical and Recursive Agreement

For two separate Radiation Sources (e.g., Earth and Moon), the model reduces to classical Newtonian gravitation. The recursive model preserves this classical relationship while providing internal mass distribution analysis.

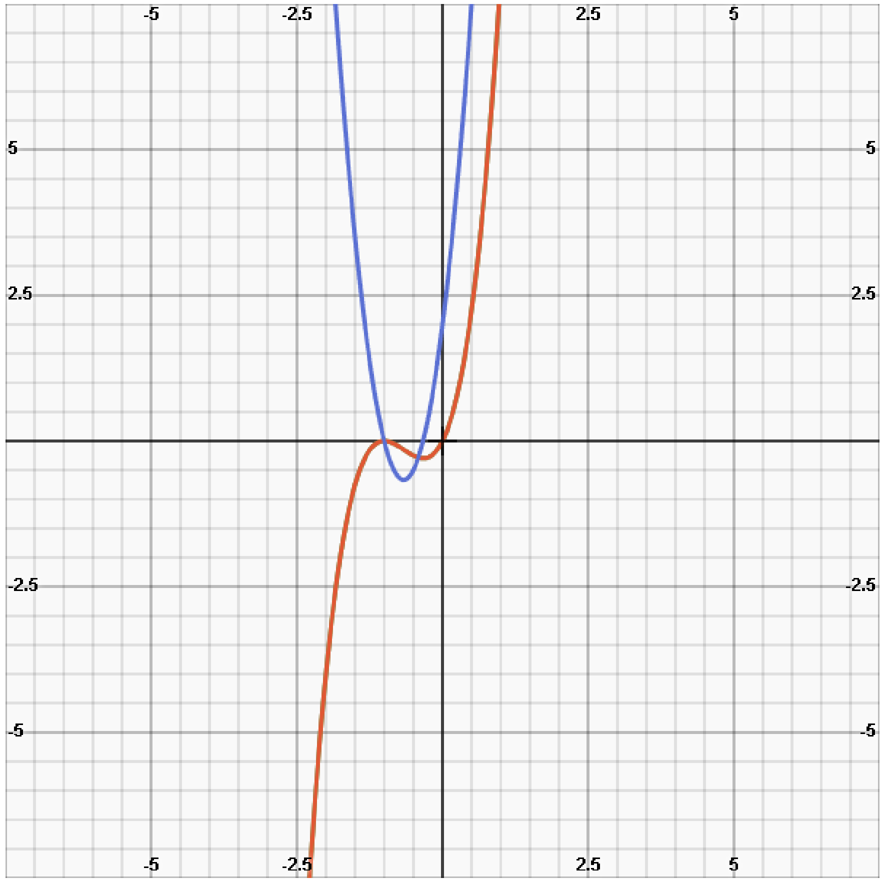

Figure 1: Degrees of Surface Interaction: D=0 (point at 2π) represents stable orbit within the Radiation Source; D=1 (blue parabola) shows a particle breaking free but reabsorbed by the originating Radiation Source (positive region); D=2 (red escape trajectory) depicts a particle escaping toward a neighboring Radiation Source (negative region). The x-axis at $x = 0$ marks the boundary between the two Radiation Sources, with the positive y-values representing the originating Radiation Source and the negative y-values the neighboring one.

5 Conclusion

The recursive gravitation model maintains Newtonian accuracy between distinct bodies while extending its applicability to single-body systems. By addressing Degrees of Surface Interaction, it offers new perspectives on mass-energy interactions, radiation emission, and gravitational equilibrium.