Gravitation based on Scalar Potentials and Black Holes

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Abstract

This paper puts forward the concept that the universe possesses two scalar potentials similar to those proposed by E.T. Whittaker in which waveforms travel longitudinally. It is proposed that these scalar potentials form through black holes, creating both normal transverse EM radiation as well as gravity. This conception of nature opens up new avenues for understanding the universe and black holes while applying parsimonious explanations to dark matter and MOND theories. These conclusions are arrived at on the basis of an original cosmology as well as mathematical representations. A new universal speed limit is determined and the critical MOND acceleration is derived.

Keywords: Gravity, Black Holes, Dark Matter, Rydberg Constant, MOND, Whittaker

Introduction

This paper will claim that the universe possesses two black hole-generated scalar potentials similar to those proposed by E.T. Whittaker in which waveforms travel longitudinally and which create transverse EM radiation. This allows for a new understanding of ordinary space and dark matter effects. An original cosmology is envisioned centered on black holes creating scalar potentials that carry all waveforms. This conceptually accounts for gravity and dark matter and implies that mass and space are intertwined through a mutually-opposed, moving hyperspace that is equivalent with charge. The maximum speed of the opposed scalar potentials is proposed to be 1.126×10^{13} m/s based on the Rydberg wavelength and the energy of an electron. The critical MOND acceleration of 1.2×10^{-10} m/s^2 is derived using the Rydberg constant, the Boltzmann constant, the fine structure constant and the Planck mass.

Mathematics of Scalar Waves

An electromagnetic wave has both electric and magnetic fields and power is represented by the Poynting vector.

$$S = ExB$$

(1)

$$E = -\nabla\alpha - \frac{1}{C}\frac{\partial A}{\partial t}$$

$$B = \nabla x \mathrm{A}$$

(2)

Where A is the vector (magnetic) potential, alpha is the scalar (electric) potential. According to Maxwell:

$$\nabla^2\alpha - \frac{1}{C^2}\frac{\partial^2\alpha}{\partial t^2} = 0$$

$$\nabla^2\mathrm{A} - \frac{1}{C^2}\frac{\partial^2\mathrm{A}}{\partial t^2} = 0$$

(3)

For the case of E=0 and B=0,

$$\mathrm{A} = \nabla S$$

$$\alpha = \frac{-1}{C}\frac{\partial S}{\partial t}$$

(4)

$$\nabla^2 S - \frac{1}{C^2}\frac{\partial^2 S}{\partial t^2} = 0$$

(5)

This suggests propagation of a wave even though E=B=0. [1]

It is proposed that energy for the propagation of scalar wave S without Poynting vector power comes from black holes collectively and is localized around each supermassive black hole. They have properties of soliton waves as displayed in Figure 2.

"Dark Matter" as the Result of a Black Hole Generated Scalar Potential amidst Large Galactic Masses

The forthcoming gravitational mechanism in nature would be akin to a Weyl fermion with accompanying fermi arcs, whose temperature is already known to behave like spacetime gravity. It would also be similar to the idea of a scalar potential proposed by E.T. Whittaker in 1904. Whittaker claimed waveform perturbations travelling through scalar standing waves longitudinally do so proportionally to local mass-density; there is a local electrostatic scalar potential. Longitudinal propagation allows linear wavefronts to superpose. Two scalar potential functions intersecting at long distances allow for ordinary transverse EM fields to appear.

Following from this, from the point of view of an observer with the energy and speed of a radio wave, a galaxy would appear as three horizontal sheets. The top and bottom of these sheets would represent "dark matter" while the middle sheet would contain stars and an extremely prominent black hole due to the black hole's significant entropic contribution.

Dark matter
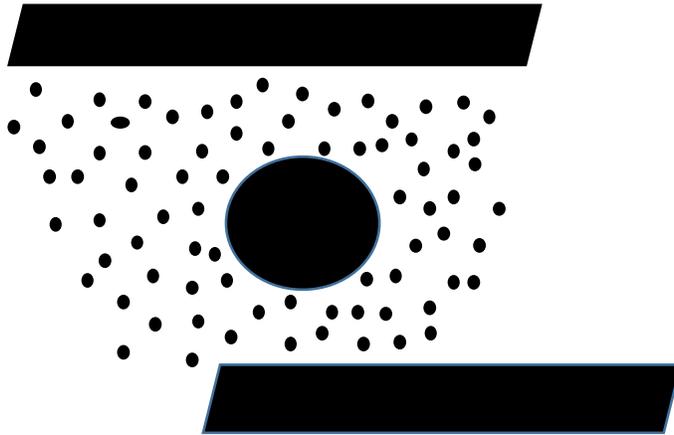
At $3.0*10^8$

Figure 1: "Dark Matter" at the Speed of Light. Wave Undergoing Gravitational Lensing.

"Dark matter", seen in Figures 1 and 2 as two of three sheets at the speed of light and energy of a radio wave, accrues around galactic masses to prevent galactic spinoff as specified by Richmond [2]. Yet this occurs according to a different set of physical laws. It forms these two sheets when observed at a speed approaching that of light and becomes slower and more diffuse as the observer decelerates. This indicates that dark matter abides by principles within a different dimension: a

mass-energy dimension through time where dark matter is measured in terms proportionally related to the speed of the observer. This limited-range hyperspace through time that carries electromagnetic radiation can explain certain questions in physics such as those related to charge, strong cp symmetry, the arrow of time and wave-particle duality.

Matter within a black hole would be composed of many 2x3 grids of quarks alternating through time between their quark, antiquark and annihilation. Dark matter would occur after one quark alternates randomly and increasingly slowly between its quark and antiquark. At some point this "volume" would split in two, with the singularity acting as a type of beam splitter. Due to the infinitesimally small and fluid nature of dark matter, the two viewed sheets of dark matter represent all the dark matter in the universe acting together on the individual galaxy. The top layer contains all deleted universal entropy before that moment and the bottom layer contains all potential universal entropy. The top layer would be superimposed over a cosmic infrared background. The gravitational mechanism is displayed in Figure 2 as a bi-directional longitudinally-propagating energy flow with superluminal propagation, as put forward by E.T. Whittaker [3].

Longitudinal bidirectional energy flow proportional to transverse wave moving at c
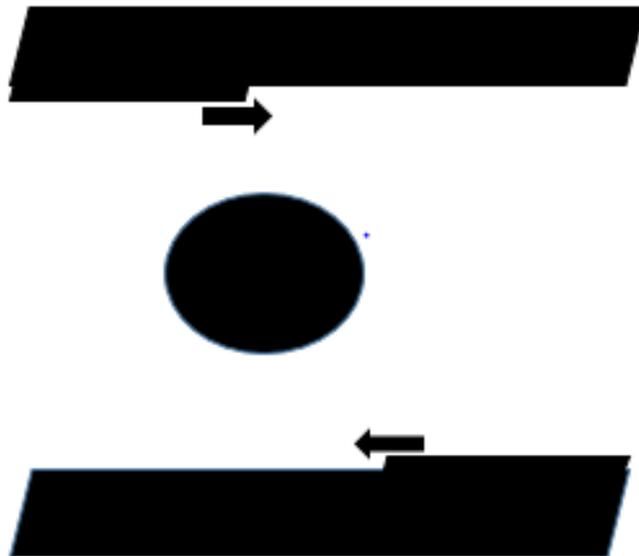
Figure 2: Gravitational Mechanism

Deriving a New Speed Limit and MOND Acceleration via Association of Scalar Potentials to Charge

Whittaker proved that the six components of the dielectric displacement and magnetic force in 3 space can be expressed in terms of the derivatives of two scalar potentials F and G, where the summation is taken over all electrons in the field.

$$F(x, y, z, t) = \sum \frac{e}{4\pi} sinh^{-1} \frac{z' - z}{\{(x' - x)^2 + (y' - y)^2\}^{1/2}}$$

$$G(x, y, z, t) = \sum \frac{e}{4\pi} tan^{-1} \frac{y' - y}{x' - x}$$

(6)

A proposed speed of the propagation of the scalar potentials is 1.126×10^{13} m/s, which is arrived at by associating electron energy to the Rydberg wavelength. The Rydberg constant is the wavenumber of the lowest energy photon capable of ionizing an atom at the limit of infinite nuclear mass. This theory implies that energy is imparted from photon to particle via a mechanical intermediate moving at a constant speed that is equivalent with charge. The energy of the electron charge carrier is therefore related to the wavelength required to impart energy into any form of matter via a much higher frequency.

$$c = \frac{E\lambda}{h}$$

$$v = \frac{m_e c^2}{h R_\infty} = 1.126 * 10^{13} m/s$$

(7)

The critical MOND acceleration [4] can be derived using the Rydberg constant as well. Considering that the charged and moving bidirectional medium imparts energy into matter at the Rydberg wavelength, it is also related to the variable background temperature in the universe (T), average kinetic energy (k), and ultimately a weak "minimum" acceleration at which the laws of gravity are modified to be stronger.

$$\frac{\alpha k R_\infty T}{m_p} \approx 1.2 * 10^{-10} m/s^2$$

(8)

Conclusion

Gravity and the effects of dark matter are the results of the existence of light initially, black holes, and a bidirectional momentum. Spacetime ultimately results from some of these interactions. The black hole-generated scalar potentials propagate longitudinally and bidirectionally, as proposed by Whittaker in 1904, with a maximum speed of 1.126×10^{13} m/s. The critical acceleration of MOND can be derived using the Rydberg constant and constants relating charge to mass and energy.

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