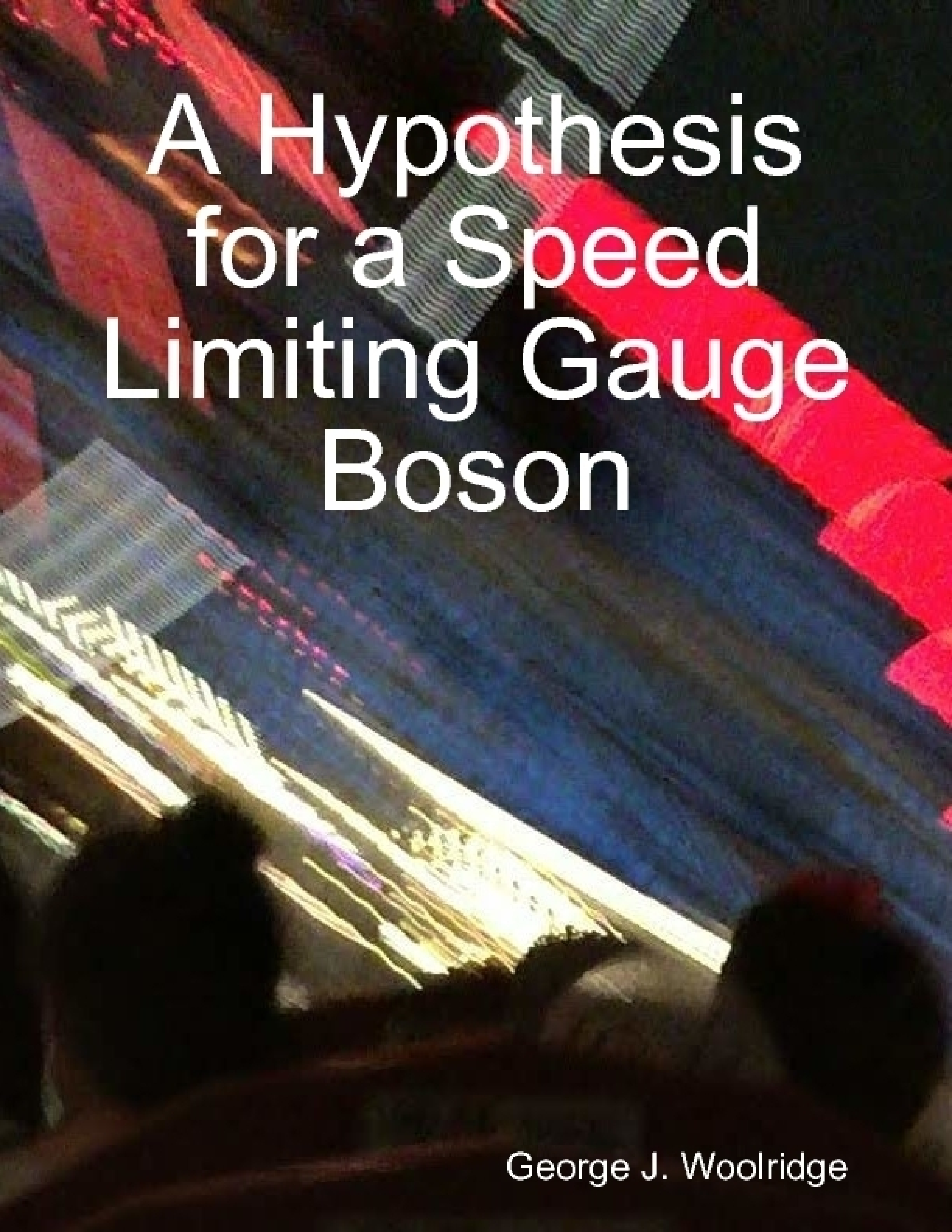
A Hypothesis for a Speed Limiting Gauge Boson



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Abstract

By interpreting time dilation (the source of gravitational phenomenon and relativistic effects) by way of a gauge boson with a “c” velocity, general and special relativity effects can be consolidated into a common quantum compatible model. This approach considers existing lab verifiable theory and observations. Additionally, a gauge boson relativity model allows for the existence of observed ultra-relativistic and hyper luminous phenomenon that is incompatible with a strict adherence to the Minkowski spacetime manifold model of space.

Introduction

The most universally experienced and observable of all forces is gravity. Yet it is very elusive to define. Although Newton and Einstein (among others) have provided the mathematical models in practical use today, there is a vast difference in theories regarding what in fact causes this phenomenon.

Only recently has there been sufficient observational evidence to adequately characterize the behavior of gravity. The following is a summary of the most notable properties which I will explore further:

- Gravity does not appear to self-interfere or show signs of impedance from other forces or matter.
- It measurably impacts all observable matter and known elementary particles in the universe.
- The source of gravity appears to be the same particles that gravity affects.
- Gravitational effect has a propagation speed of approximately “c”.

In a strict interpretation of spacetime, gravity has no force carrier and is instead a phenomenon caused by a warped manifold of spacetime. However, several difficult to resolve exceptions to this model have been observed in recent decades. To best address those concerns, we should first consider the history of modern relativity.

A Brief Look At Relativity And The Significance Of “c”

Astronomers in the mid 1800’s using only Newtonian mathematics determined that there were perturbations in the observed orbit of Uranus compared to the Newtonian modeled one. This deviation from the predicted result was used to determine the presence and location of a yet unobserved object in our solar system. Neptune then became the first planet to be discovered strictly through mathematics as it was too faint to be seen using the telescopes of the time.

Decades later when a similar analysis was made of the orbit of the planet Mercury, it also didn’t match predictions. This fueled the search for another unobserved object including the briefly popular theory of planet Vulcan which would have been hidden out of our view at the far side of the sun. This theory along with all others relying on Newtonian physics would ultimately fail to characterize Mercury’s anomalous orbit.

About 1915, Albert Einstein would demonstrate that his new general relativity equations accurately described the Mercurian orbit without the need of any additional unobserved mass. In doing so, he was able to confirm a property of motion that had not been adequately described to that point: Time Dilation.

In brief, Einstein demonstrated that the rate of movement of a particle or object is proportionally limited by the strength of the gravitational field nearby. Since there is no range to a gravitational field, all particles and objects in the universe are impacted by time dilation, but the intensity of this effect diminishes logarithmically with distance. Even now, variations in data due to time dilation are small enough to be insignificant in most cases and below measurement precision. Considering our measurement precision of 100 years ago, only a significant deviation in prediction could not be disregarded as measurement error. Mercury's was the first observed case where time dilation causes observably large orbital precession in a brief period of time.

Einstein's work on relativity significantly improved our understanding of the motion of objects from particles to the cosmos as a whole. But if one were to reduce the whole of relativity to a single idea, it primarily describes the conditions that alter the rate of "c" relative to another point in space or time.

Going Nowhere Fast

Relativity (and in particular Time Dilation) are typically described from the observer's point of view in which they always will measure the speed of light at "c", but relative to another observer at a different gravitational level or velocity there is a skew in measurements. This does not only happen in the visible world, but also at the subatomic level.

All matter is composed of pointal particles (bosons) that are bound together in structures. For example, 3 quarks and a gluon form a proton within an atom. The volume of a proton is defined by the movement of these quarks within the area that their gluon bond allows them to move. For example, if the speed of the quarks and gluons were to somehow slow down or speed up, the proton would shrink or grow ultimately driving the volume of the mass it makes up.

Therefore, every observable particle and all mass in the universe is moving at "c".

So is a rock on the ground moving at the speed of light? Indubitably! This apparently stationary rock is made up of molecules composed of atoms that are collections of bosons such as quarks, electrons, and gluons. All of these particles are in constant motion, and each with a velocity as close to the speed of light as its mass allows.

Therefore an otherwise motionless object is already a flurry of activity at the atomic level. What relativity shows is that when you apply a linear velocity to that same object, the rate of movement of its subatomic particles is slower proportionally. There is an equivalent throttling of boson behavior depending on the linear speed of the mass itself.

We know this is the case due to high precision isotope clocks which are essentially radioactive "rocks" with Geiger counters measuring clicks to mark time. If one of these "rocks" is in motion, it produces less "clicks" relative to an identical unit sitting still. This is a result of the subatomic particles in the isotope "rocks" moving slower relative to the stationary clock affecting its rate of decay. An identical effect is observed if two “rocks” are at different distances from a large mass, which is why GPS satellite clocks run roughly 18 seconds faster per day than those on the earth’s surface.

Therefore, everything we can measure or directly observe (whether in linear motion or not) is already moving at an aggregate rate of “c”. There is simply a tradeoff between atomic motion, linear motion, and gravitational dilation implying there is a common cause for relativistic speed throttling in all cases.

The “Celerity” Speed Limiting Gauge Boson Hypothesis

Since the rate of “c” is the common factor of all relativistic phenomena, a common force must be involved in all relativistic scenarios. This hypothesis postulates that observable gravitational and relativistic effects are a result of a massless gauge boson which I will refer to henceforth as the “celerity boson” or “c” boson.

Most simply, the celerity boson acts as a speed limiter to the motion of any particle intersecting its sphere of influence. All observable particles emit this massless boson which results in a strict “c” speed limit. This is because a particle cannot exceed the speed of its own “c” boson “bow wave”

The movement of this boson may be considered virtual, and interacting with almost every particle that intersects its spherical front as it is indeterminate. Its motion and behavior cannot be interfered with, even by other “C” bosons, and any number of them can occupy or influence the same point in space. The effect of multiple celerity bosons on a particle is a further reduction of its aggregate rate of motion. As there is no range limit to a “c” boson and no known way to “block” gravity, all particles in the universe are subject to the influence of multiple “c” bosons at any given point.

Minimalist model of matter, space, time, and gravitational phenomenon.

“More things should not be used than are necessary.” -William of Ockham

This hypothesis suggests that a boson is the direct cause of relativistic and gravitational phenomenon. Therefore, only a simple model of physical reality is required to describe the “c” boson function

It's a quantum world after all

With the relatively recent discovery and characterization of the quantum scale universe there still seems to be a tendency to pigeonhole it into a separate scientific universe of its own.

However, as all matter is comprised of elementary particles, we must consider quantum mechanics to be relevant in the behavior of even massive objects.

Consider the following.

All known/measured elementary particles (photons for example):
- Move at the speed of light or as close to it as possible due to their mass.
- Move linearly on their own
- Move with wavelike indeterminacy
- Have no measurable volume
- Speed (in a vacuum) is impacted by relativity.
- Do not have inertia such that their speed is always at the maximum rate of motion and will even increase velocity or energy level if transitioning to a less time dilated area of spacel.

Hadrons (Composite particles like protons for example)
- Are comprised of elementary particles that are "glued" to each other
- The spherical volume of a composite particle is determined by the extents allowed by the gluon bond force for that hadron.
- Although this space is firmly defined by the rate of "c", it is also largely empty and can be penetrated by some elementary particles.
- The shape of compound composite particles (like atomic nuclei) are also spherical as the multiple composite particles interact and orbit one another. Again, firmly defined but mostly empty.
- When in motion, hadrons still move with wavelike indeterminacy. Although this indeterminacy range narrows as the quantity of bonded particles increases.
- Properties including volume and radioactive decay are only impacted by relativity. Interaction is only impacted by relativity.
- Smallest structure to carry properties of inertia

Atoms
- Are "the smallest constituent unit of ordinary matter that has the properties of a chemical element"[1]
- No chemical reactions exist below this scale.
- It is only above this point that energy can be added/subtracted to change the interaction rates between other atomic matter. However, this does not impact radioactive decay which is strictly a quantum probability rate directly relative to the rate of "c".
- Radioactive isotope decay rates are unaffected by energy level (temperature) implying that decay rate is strictly a probability of critical imbalance over time based on the balance between an atom's nucleons.
- When in motion, they still move with wavelike indeterminacy, although with narrowing probabilities as mass increases.

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[1] Wikipedia, the free encyclopedia. 2018. Atom. [ONLINE] Available at: https://en.wikipedia.org/wiki/Atom. [Accessed 13 September 2018].

- Carry properties of inertia

Elementary particles all appear to move with wave/particle duality making them on the whole very “indeterminate”. These known bosons have a common tendency to move linearly at the speed of light (adjusted for relativity and medium). However, when “glued” together (like quarks in a proton), even if that matter does not appear to be in motion, the particles contained therein are “moving” and interacting with one another at the speed of light. This is supported by the fact that temperature and other environmental factors appear to show no impact to isotope decay rates.

> The elementary particles that make up atomic masses are still in motion at the speed of light throttled only by relativity. A solid mass at rest is in reality a system of glued and bonded particles moving at “c”.

The double-slit experiment has been used to show that even masses in excess of 100 atoms show a measurable degree of wave/particle indeterminacy. Although it becomes more prohibitive to detect indeterminacy in larger masses,

> ...this research implies that all movement is indeterminate and wavelike.

What makes masses “appear” to be determinate is what I describe as a consolidation of probabilities. Particles in motion, although indeterminate, have a range of probability. The range of probability is reduced in a mass comprised of glued particles and bonded hadrons because of their shared probabilities. Therefore, the larger the mass, the more narrow the range of probability and higher degree of determinacy.

> This does not mean that larger masses do not move in a wavelike fashion, but indeterminacy reaches a point of being immeasurably small.

Therefore, all physics of motion is in reality an arithmetic reduction of probabilities approaching certainty. Although this sounds like something Douglas Adams would have written,

> ...nothing in the universe is 100% determinate, but the probability of observable mass is typically so high that it’s indeterminacy is not mathematically significant.

Since the consolidation of probabilities between individual particles and matter is statistically drastic, this gives the impression of a divide between the quantum and the atomic realms. However, molecular-scale double-slit experiments, radionuclides, and particle decay are subtle reminders that probability and indeterminacy is part of all matter in the universe regardless of scale.

Infinite speed matter

An interesting property of elementary particles is that they are always moving at their highest possible speed. Even if their speed is slowed due to relativity, they will return to a higher rate of movement once free of such restrictions. Quantum rate of motion, therefore, appears to be a subtractive value with maximum possible rate of motion being the nominal state.

> This may seem counterintuitive when considering atomic masses as their nominal state appears to be at rest. However, the quantum particles that are glued and bonded together making up atoms are in a balanced motion which gives the impression of motionless mass.
>
> Radionuclides and particle decay give us evidence of the quantum composition of matter. Even when bonded into a mass, bosons and elementary particles are always moving at their relativistically maximum rate.

I theorize that all elementary particles can move at infinite speed (or at least no slower than 10,000 times the speed of light). However, the rate of all *observable* particles is limited primarily by it own self-emitted time dilation field which enforces a speed of light limitation. If not for this field, there might be no speed limit to any matter in the universe.

There is evidence of speed unlimited interactions in the universe. Examples include quantum entanglement, quantum leap, and virtual electrons in photosynthesis. These common relativity violators necessitate a faster-than-light universe which is understandably difficult to directly observe.

3-dimensional non-zero volume Euclidean space

Only an equilateral view of 3-dimensional Euclidean space is necessary in this theory. Warpage or expansion of space, additional physical or temporal dimensions, or other theoretical manifolds are not required. I propose that the hypothesized “c boson” (or some similarly speed limiting effect) in flat 3D space is adequate to explain all relativistic phenomena including gravity.

The commonly described spacetime manifold is a useful tool to illustrate the range of solutions to relativity (in particular, time dilation). However there are many phenomena that have been discovered in the century since that invalidate a literal interpretation of spacetime. For example, particle entanglement, neutrino ultrarelativism, and black holes are just a few spacetime manifold violating examples Einstein either couldn’t rationalize in life or were only considered after his death.

Additionally, “c” boson propagation is not impacted by time dilation as it is not self-interfering. 4-dimensional space-time is not a useful mathematical model since $T_1=T_2$ in all cases when dealing with only the propagation of gravity.

Gravity as an effect

In agreement with Einstein, there is not a force, energy, or particle of “gravity”. Gravity is itself a “fictional force” caused by a slope in relativistic potential or time dilation.

For example, any arbitrary object near a large mass (like a planet) will experience a measurable degree of time dilation compared to an object further from earth. Additionally, the slope of time dilation increases logarithmically as the distance between the object and mass is reduced. An increase in time dilation results in a reduced relative velocity in all particle movement closer to the mass compared to that further from the mass.

Since the slope of the time dilation is believed to have no granularity, a time dilation differential near any mass is present at any scale. So even at the scale of a hadron, at any given instant the quarks in motion further from the mass are moving faster relative to the quarks closer to the mass. The slope in time dilation causes a differential in the velicity of quarks in each hadron. Because the “slower” quarks take more time to complete the part of the orbit closest to the mass, this causes an imbalance in the gluon force binding each quark.

The velocity imbalance results in a deflection of momentum towards the source of the impedance. Since the quarks further from the mass react faster to gluon force to maintain hadron shape, this results in the momentum of the fastest quarks being redirected “down” at a faster rate than the slowest quarks can be pulled “up”.

Therefore, gravitational phenomenon is the steering of particle momentum in the direction of the largest local source of time dilation. The earth doesn’t pull us down to it. We are pushing ourselves into the earth.

This hypothesis proposes that a boson particle field causes this efeas opposed to a warped time-space manifold. In either case, this description of gravitational phenomenon agrees with relativity and Einstein’s own comments on the cause for gravitational force.

Support for a particle model of relativity

“I am now convinced that theoretical physics is actually philosophy.” -Max Born

Although it has been roughly 100 years since quantum physics became a field of study, the greatest advances have been largely in the last 50 years or so. In that time we have realized the quantum scale of the universe seems very different than the macroscopic scale universe we are accustomed to experiencing.

But even though the quantum scale universe's indeterminism seems counterintuitive, as discussed earlier atoms merely represent the behavior of a plurality of conjoined particles which results in a less indeterminate object. Just like how Newtonian physics agrees with Einstein's relativity except in cases beyond the scope of Newton, quantum physics adds behavioral granularity beyond the scope of Einstein.

This quantum-to-composite analog appears logical enough, but there seems to be reluctance to resolve quantum and macroscopic scale physics. In particular, gravity is often described differently in quantum and composite scenarios. I speculate that this is due to a conflict between particle-centric solutions in quantum mechanics and the commonly held belief in a warped timespace manifold to describe macroscopic scenarios.

Using a c boson particle model, quantum and macroscopic relativity (including gravitational phenomenon) share the same cause. Exceptions to Einstein relativity can also be resolved in simplified terms.

The speed of gravity

"Every string theory that's been written down says the speed of light is universal. But other ideas about quantum gravity predict the speed of light has actually increased." - Lee Smolin

The propagation speed of gravity, has been difficult to measure historically as we do not currently possess the ability to turn on and off mass (the source of gravity) or ability to willfully initiate a measurable gravity perturbation. As it is a quantitatively weak force, a substantially large apparatus or incredibly fine measurement would be required to make meaningfully conclusive measurements.

Only recently have there been apparatus capable of measuring extreme astrological events as evidence that gravity, regardless the theoretical mechanism used to carry the force (particles, strings, spacetime waves, etc.), propagates outwardly and infinitely from its source. In particular "more recent analyses of Ligo's findings have placed gravitational wave speeds closer to the speed of light, albeit with superluminal upper bounds."[2]

It is interesting to note that after the 100 second LIGO/Virgo detection event GW170817[3] (the last publicly announced detection as of this writing) that coincident Gamma rays were detected roughly 1.7 seconds after the gravity wave event ended. Although there have already been many speculations why there is a differential between the two, the fact the interferometers

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[2] Abbott, B. P.; et al. (2017). "Gravitational Waves and Gamma-Rays from a Binary Neutron Star Merger: GW170817 and GRB 170817A"

[3] Abbott, B. P.; et al. (LIGO, Virgo and other collaborations) (October 2017). "Multi-messenger Observations of a Binary Neutron Star Merger"

acquired their measurements ahead of the gamma ray event provides adequate evidence that whatever carries gravity moves at the speed of light.

Considering the following:

- The source of gravity is all known and observable matter and particles, including photons and other bosons.
- Gravity propagates at a speed comparable to light.
- The presence of gravity lowers relativistic potential which directly affects the rate of time or maximum speed of a mass or particle.

Considering that no known known particle or mass can escape from the influence of gravity, including its own, I conclude that the primary function of gravity (or more specifically its force carrier) is in providing a speed limit to particles.

Computational similarities between gravity and known particle behavior

"*Bohr was inconsistent, unclear, willfully obscure and right. Einstein was consistent, clear, down-to-earth and wrong.*" - John Stewart Bell

My primary argument for a particle model in a simple Euclidean space is based on the similarity between the behavior of what we consider "gravity" and other known bosons. Recently measured "gravity waves" are evidence that gravity propagates through space and continues to exist despite the state of or distance from the originating mass.

Also, consider that photons do not interfere with one another much like it appears gravity does not interfere with itself.

> NOTE: Although photons do not self-interfere, they do produce a small amount of their own "gravity" which can lead to interference between photons.

Further, gravitational potential is computed in the same way as any field intensity from a radiating body. Although this is a common calculation of radiating sources, a spacetime model for gravity most pointedly describes the phenomenon of gravity is entirely caused by the warpage of spacetime. However, if gravity does not exist, and gravitational phenomenon is caused by a non-particle mechanism, it is a surprising coincidence that computationally the warpage of spacetime uses essentially the same equation as particles radiating from a body.

$$P = \int \mathbf{I} \cdot \mathrm{d}\mathbf{A}$$

$$\Delta U = -\int_C \mathbf{g} \cdot d\mathbf{r}$$

“Intensity” of a point source wave (applicable to photons) and “Gravitational Potential” equations

Due to the mathematical similarities in computation and movement behavior compared to other boson waves, it is my opinion that the phenomenon of gravity is also carried by a boson.

Steering of subatomic momentum “aka” Gravity

“[T]he general theory of relativity...describes gravity not as a force, but as a consequence of the curvature of spacetime caused by the uneven distribution of mass.”
https://en.m.wikipedia.org/wiki/Gravity

This description of gravity states that gravity is not some sort of pulling or pushing force, but simply a slope in the intensity of time dilation. The stronger the slope, the more drastic the differential across a mass.

Therefore, gravity does not pull a particle or object towards it. In fact, it is a deflection of the particle’s own velocity which causes it to “steer” towards the higher density field. We do not get pulled to the earth. We push ourselves into it.

In complete agreement with this interpretation of relativity, I only propose that the mechanism is a particle field density as opposed to a curvature of spacetime. Why I promote a Celerity boson particle field interpretation is that it consolidated quantum gravity considerations as well as allows for observed ultrarelativistic phenomenon without requiring exceptions to well established physical science.

Skew Between Narrow Band Measurements of Wide Band Events

Measurements of phenomena in deep space has a particular challenge to overcome a tremendous amount of noise and distortions. To make meaningful observations, most telescopes operate within a specific frequency band or are designed exclusively for a specific method of observation.

In short, there are currently four “messenger” signal types: Electromagnetic, Cosmic Rays, Gravitational Waves, and Neutrinos. Within Electromagnetic there is radio, infrared, visible, X-ray, Gamma. Typically, one device (or array of devices) is observing a single “messenger” and often only a narrow range of that band. Therefore, most cosmic observations are not made using broadband frequency sweeps and large apertures. Modern deep space astronomy is performed almost entirely with pinhole precision in narrow frequency bands.

For example, “A typical Hubble image is made from a combination of black-and-white images representing different colors of light.[4]” Very few of the deep space images we are familiar with are actually real color visible light photographs. This is especially the case with nebulas which are largely dark and featureless to the naked eye. But in the infrared, ultraviolet, and even X-ray spectrum there are many interesting shapes and features. Several of these narrow-band “messenger” images are combined, exaggerated, and colorized to better exhibit their shape and composition. This is meant to illuminate the various invisible features of the area being observed, but there is often a degree of aesthetic consideration.

Since it is prohibitive to measure from LFO-to-gamma within a single device, it is only logical to use specialized instruments capable of measuring with extreme precision in specific bands of interest. However, this results in a disassociation between messengers observing the same

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[4] http://hubble.stsci.edu/gallery/behind_the_pictures/meaning_of_color/

object, and the assumption is made that all of the messengers have a comparable rate of travel. This typically is not an issue as we are often measuring an object in a relatively steady or repeating state.

Much more rare are observations of momentary events deep in the cosmos, and even more so if multiple messengers can be recorded. GW170817 is unique being the first (and to date the only publicly released) multi-messenger observation including gravity waves.

Case of GW170817 in NGC 4993

The interferometer event GW170817 detected 17 August 2017. 12:41:04.4 collision time.
GRB 170817A detected 1.74±0.05 s after the merger time and lasting for about 2 seconds.
SSS17a was detected 10 hours and 52 minutes after the GW event optical spectrum.
ultraviolet (but not in the X-rays) 15.3 hours after the event by the Swift Gamma-Ray Burst Mission.
detected in the X-rays 9 days later
16 days later in the radio
9 December 2017, astronomers reported a brightening of X-ray emissions from GW170817/GRB 170817A/SSS17a.

Distance to NGC 4993 is 44.1Mpc (144 Mly) with a Redshift of 0.009727.
Hubble constant (67.66±0.42 (km/s)/Mpc in 2018)
Speed of light 299,792,458 m/s

Over 44.1 Mpc, the sum redshift speed impact should be 2,983 km/s.

- If gravity waves propagate @ c, then one might expect the merger (end of chirps) and GRB (highest frequency/energy photons emitted) to arrive simultaneously.
- If gravity moves @ c without redshift interference, GRB would experience only a 0.000,01 second delay? Or should have 728 second delay?

Other cases

GRB 130603B. The galaxy, cataloged as SDS J112848.22+170418.5, resides almost 4 billion light-years away. A probe of the galaxy with Hubble's Wide Field Camera 3 on June 13, 2013, revealed a glow in near-infrared light at the source of the gamma-ray burst, shown in the image at top, right. When Hubble observed the same location on July 3, the source had faded, shown in the image at below, right.

SN 1987A
Distance 51.4 kpc (168,000 ly)[3]
Neutrino emissions in a burst lasting less than 13 seconds.
Approximately two to three hours before the visible light from SN 1987A reached Earth

IceCube-170922A
September 22, 2017: extremely-high-energy[14] (about 290 TeV) neutrino event
September 28: gamma rays above 100 MeV
October 4: gamma rays between 100 GeV and 400 GeV
https://science.sciencemag.org/content/361/6398/eaat1378

The “c” boson

As stated in my hypothesis, I propose there exists a boson that directly influences the aggregate rate of motion for all relativistically affected matter which also includes the phenomenon of gravitational force. Logically this seems to be the case as gravity adheres to speed of light propagation although it does not appear to be affected by time dilation caused by additional gravity.

For example, if gravity was subject to relativity, it would not be able to escape from a black hole making them gravitationally disproportionate compared to the mass contained therein. Although there are several approaches to try and justify this paradox, it is done by combining several dissimilar theories to justify their conclusions.

Despite gravity waves and frame dragging being evidence of conformance to a speed of light information transfer limit, gravity cannot itself be impacted by special relativity as it is the force carrier upon which those computations depend. It would be like the light intensity from a flashlight being dimmed because you pointed another flashlight at it.

> I believe it is more likely that there is a force carrier that causes the rate limit of “c”, and is the cause of relativistic effect and consequentially gravitational phenomenon.

In recent years it has become apparent that gravity, even if radiated from mass, cannot be directly dependent to the current state of its origin or relativistic speed infinite propagation gravity waves would not be possible. Aberration of light is further evidence of this disconnect between gravitational phenomenon and the current location/state of the source mass.

“Universal speed limits”, all relativistic distortions, and the phenomenon of gravity can be explained with this mechanism:

- When any conventional mass or boson intersects with a c boson, it causes a “drag” to the aggregate rate of motion at that point.
- The more dense the c boson field, the larger the impact to the aggregate rate of motion.
- An slope to this field of c bosons will cause a particle or mass to deflect its momentum towards the higher field density (or lower gravitational potential).
- As all known particles and mass radiate c bosons, there is an unavoidable minimum influence coincident to its direction of motion, whether linear or rotational. This causes all conventional matter and energy to be speed self-limiting to the movement rate of c bosons.

In the simplest terms, as the field density of c bosons increases, aggregate rate of motion is reduced. And in the movement path of any particle, there will be a self-generated bow wave of c bosons enforcing a maximum limit to velocity.

C boson effect on the speed of light limit and its exceptions

All elementary particles appear to exist at their relativistic maximum rate. Whether it is a photon's linear movement, an electron's orbit, or the internal movements of atoms, all particles appear to strive for their highest permissible rate of movement at all times.

> To clarify, this is not to be confused with the energy level of atomic matter. Although changing the energy level/temperature of an atom affects aspects of its movement and behavior, this does not impact particle/subatomic rates of motion.
>
> For example, the decay rate of isotope is constant regardless of its energy level proving that quantum scale movement rates are not influenced by energy. Only relativity causes a measurable differential to the rate of quantum processes.

All conventional matter and bosons (including photons) "contribute to the stress–energy tensor".[5] In other words, they produce "gravity". So if elementary particles, such as photons and electrons, contribute to and are relativistically impacted by gravity, then their velocities are self-limited.

For example, a particle (like a photon) in linear motion will be radiating c bosons while in motion. In the particle's direction of movement, there will be a "bow wave" of c bosons that will prevent the particle from exceeding the c boson speed. Even if there is uncertainty to the location of or even the physical state of a photon, it will always be radiating a positionally coincident c boson at its leading edge contributing to the particle's relativistic speed limit.

This explains why a variety of dissimilar particles and bosons, like neutrinos and photons, appear to share the same relativistically adjusted speed regardless of their energy, mass, or degree of interaction with other matter. Additionally, using a boson-centric model allows for ultrarelativistic and superluminal movement without requiring exceptions to physical laws.

To elaborate, neutrinos are categorized as "ultrarelativistic" due to being near or at the speed of light yet having a non-zero mass. This would be a violation of strict relativity. However, if neutrino mass approaches a c boson radiation quantum threshold then the self-generated c bosons might be comparable to a photon.

Also, neutrinos pass unimpeded through most matter that is opaque to other particles, which implies that their state in movement has a very limited area of influence. This may be evidence of a granularity at the quantum scale to relativity where even a non-zero mass particle can

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[5] E. g. sections 9.1 (gravitational contribution of photons) and 10.5 (influence of gravity on light) in Stephani, H.; Stewart, J. (1990). General Relativity: An Introduction to the Theory of Gravitational Field

exceed relativistic limits by minimal interaction with non-coincident c boson fields. If a particle can travel between c boson waves to some degree, then it can achieve speeds that exceed predicted limits based on the characteristics of more massive matter.

The big bang theory of cosmic inflation absolutely requires a yet undiscovered mechanism allowing for superluminal speeds. Although relativity has a firm speed of light limitation, much speculation and theoretical scenarios for allowing early cosmic energy to propagate to distances in excess of the observable universe.

However, evidence of such mechanisms are already apparent. The experimentally verifiable phenomenon of quantum leap and quantum entanglement show an instantaneous motion over a distance (no less than 10,000 times light speed in at least one study).[6] For any of these properties to exist there must be particles or bosons that do not "contribute to the stress–energy tensor" or emit c bosons.

The Higgs boson may be one such particle, as it violates standard model and Planck rules for the existence of a particle.[7] One possibility is that it lacks any gravitational influence in its original and undetectable state. However, it's decay products which includes photons do produce gravity.

Considering that the aforementioned examples are generally difficult to explain for standard models, a quantum scale granularity to relativity or a non-relativistic particle must exist. A speed limiting boson can support all observable relativistic effects without being in conflict with quantum mechanics or requiring exceptions for ultrarelativistic and superluminous rate events.

The phenomenon of gravitational attraction

"Intellect distinguishes between the possible and the impossible; reason distinguishes between the sensible and the senseless. Even the possible can be senseless." -Max Born

Not unlike photons from a light source or an EM field, the density of a c boson field follows the common "P = I.4πr2" as it spherically spreads from a mass source. The slope difference in the boson field causes a differential in the impact of the field on other particles and matter. Since the higher field density causes a larger reduction in particle velocities, this steers the momentum of the mass in the lower field density region towards it.

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[6] Salart, D.; Baas, A.; Branciard, C.; Gisin, N.; Zbinden, H. (2008). "Testing spooky action at a distance". Nature. 454 (7206): 861–864.

[7] Salvio, Alberto (2013-08-09). "Higgs Inflation at NNLO after the Boson Discovery". Phys. Lett. B. 727: 234–239. arXiv:1308.2244 . Bibcode:2013PhLB..727..234S

Cavendish “mass attraction” is therefore a result of uneven relativistic “drag” between two masses. At the facing sides of the mass, the combined c bosons cause a higher particle speed reduction causing the opposing sides to steer their momentum towards the neighboring object.

> In other words, the side of a particle further from a source of gravity (thus at a less distorted/time dilated state) "pushes" against the more affected side.

In short, the earth does not pull us to it, so much that we push ourselves towards it.

Impact of the c boson on interpretation of relativity

As described previously, the primary function of the c boson is to limit the velocity of particles. Since all conventional particles emit c bosons, this persistent coincidence prevents anything from exceeding the boson’s speed.

The most notable secondary effect of this boson is the phenomenon of gravity, which is caused by a slope in the density of a c boson field.

Although those are the major aspects of this theory, this section is to discuss other relativistic phenomenon using a c boson interpretation.

Time Dilation

“*Put your hand on a hot stove for a minute, and it seems like an hour. Sit with a pretty girl for an hour, and it seems like a minute. That's relativity.*” — Albert Einstein

To reiterate, my view is that the universe is persistently in a state of “now”. Although we attempt to quantify causality, it does not mean causality is quantifiable or that we can travel causality as its own dimension. Even Einstein speculated that “now” contains all time, challenging the the idea that time is a traveseable dimension.

For example, an iridium clock on the earth's surface and one in geosynchronous orbit are literally at the same "point in time" as one another. This is logically necessary because "now" is the only point of “time” that exists. However their radioactive decay rates differ measurably. This isn’t caused by a difference in the "rate of time", but due to a differential in their quantum rate of motion.

More pointedly, at different speeds or different distances from a large mass there is a difference in the c boson field density. Where a particle’s own c bosons limit its velocity to c, the field caused by particles and matter in close proximity compounds the velocity limiting effect.

For clocks at different c boson densities (or relativistic potentials) there is a skew in the rate of isotope decay between the two units. For example, an atomic clock in geosynchronous orbit adds "*a net difference of about 38 microseconds relative to the surface per day*"[8]. By having a lower c boson field density and no substantial difference in linear velocity, the "aggregate movement rate" of the isotope in orbit is less impeded. As a result, the rate of radioactive decay of the Iridium isotope in the satellite (the rate the isotope "ages" at an atomic level) is faster.

Note that temperature and other environmental factors appear to show no impact to decay rates.[9] This is because quantum level movement is only throttled by relativity and is not altered by energy level. Isotope decay is a strictly probabilistic phenomenon at the quantum scale. As this is representative of the rate of physical processes at the most fundamental scale, measurements of any kind taken at different c boson field densities will yield a relative variation.

Relativistic Mass

When massive objects near the speed of light, there is a build-up of bow wave c bosons. Using conventional measurements, the object will have the gravitational appearance of a larger object. No additional solid mass or thermodynamic energy may have been added, but methods to measure the mass or volume of an object in motion will show skewed results in part due to the leading edge accumulation of c bosons.

Relativity of Simultaneity.

"Einstein's general theory of relativity allows for the possibility that we could warp space-time so much that you could go off in a rocket and return before you set out." -Stephen Hawking

I consider c bosons to be the direct cause for the speed of light limit. They may explain why all known particles follow the same speed rules as photons.

However, it is my believe there is an absolute "now". By adjusting observations based on known delays and relativistic distortions, one can calculate a non-distorted omniscient frame.

Simultaneity based on an observer's position in a given frame is a thought experiment based around relativistic information transfer cause-and-effect, but does not accurately express the reality of all events at that moment. Although order of observation can certainly be skewed, causality prior to and after "now" must be maintained regardless of the speed of information transfer.

Additionally, if a force or particle exists that has superluminal speeds, it would clearly violate relativity of simultaneity, but does not necessarily violate causality.

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[8] Rizos, Chris. University of New South Wales. GPS Satellite Signals. 1999.

[9] arxiv.org/abs/0910.4338: Half-life of the Electron-Capture decay of Ru-97: Precision Measurement Shows No Temperature Dependence

As quantum entanglement has been proven to provide superluminal information, and even electron quantum leap necessitates instantaneous or ultrarelativistic movement, only causality in a non-distorted omniscient frame is experimentally and logically relevant.

Conformance with General Relativity

> *"I do believe the universe is consistent, and therefore I do believe that general relativity and quantum mechanics should be put together in a manner that makes sense."* -Brian Greene

This is primarily discussed earlier on in The phenomenon of gravitational attraction.

In further comment, although simplified models and equations maintain manageability of the mathematics, it is important to realize that they only summarize the total effect at the scale being considered and do not necessarily represent the smallest relevant parts. Between composite masses gravity can generally be measured as the average effect, but at much smaller scales and measurements it is worthwhile to recognize general relativity is in reality a particle-scale event.

For instance, the sum total gravity of the earth is not in simply a down arrow towards the planetary core. It is the average direction of differential field density from all c boson emitting particles.

To elaborate, wave particle duality and quantum-scale gravity are not often considered when calculating values for larger scale scenarios. However, logically the results of those quantum values add up to what we observe at the composite scale. As we discover more about quantum behavior, we need to realize that there aren't exceptions to physical rules at this scale. These are the physical rules upon which all others are dependent.

Just as Einstein's relativity conforms to the designed scope of Newton's laws, a quantum description of relativity, like this c boson theory, conforms to the Einstein within the scale and scope of what was observable in 1900. Only at the quantum scale, speeds at or above the speed of light, and scenarios above relativity limits (beyond the event horizon) does a new theory seek to revise scientific interpretation and resolve exceptions to relativity. Any good theory will have negligible impact on conventional gravitational or relativistic computation.

Other theories impacted by a c boson relativity boson

Spacetime 'vs' c boson

When Hermann Minkowski created representation of spacetime in 1908, it was considered useful for visualizing Einstein's relativity at the time. Celerity boson hypothesis is entirely compatible with Minkowski Space. However, a literal interpretation of the spacetime manifold model does not allow for several observable phenomenon to exist, whereas a boson field model provides a justification for relativity-violating phenomenon.

Consider the gravitational influence of a black hole. If no “information” can pass the event horizon and gravitational attraction is restricted by the speed of relativity, then the gravitational force of matter within a black hole would be muted.

The answers to that proposed paradox tend to be a combination of spacetime manifold, gravity radiation, and extravagant explanations of how the force of gravity remains on the event horizon despite the originating mass being past that threshold. This selective use of incompatible approaches suggests that the hard mathematical limits suggested in spacetime manifold models do not directly represent reality.

Therefore, whatever causes gravity must be in some way extra-relativistic or it would not be able to escape from itself. Hawking radiation theory suggests that black holes are not an absolute limit of existence and “evaporate” over time.[10]

Quantum entanglement and Neutrino behavior was discovered and proven well after Einstein had passed. These superluminal and ultrarelativistic exceptions to spacetime are further evidence of physical properties in practical use that cannot exist if that manifold is factually absolute. Even Einstein was known for having issues with quantum entanglement as it violates speed of light limits and simultaneity.

That being said, Einstein’s field equations are based on his belief that there is no gravitational force carrier at all. The phenomenon of gravitational attraction is directly due to the warpage of space by matter and energy causing matter to “fall” into the curve. However, this seems to be at odds with theories and measurements on gravitational waves which show a propagation independent from the originating mass.

Considering the many exceptions and complications in a literal interpretation of a warped space manifold, considering a different approach using flat space and a particle force carrier seems more elegant while providing the same mathematical results for experiments and observations. The benefit to this approach is that at a quantum scale (where many spacetime exceptions come from) the behavior of relativity also is computed as a quanta. This provides the possibility of other bosons or particles having a reduced probability of interaction with relativity allowing for ultrarelativistic properties and superluminal speeds. Also, if the c boson is entirely non-interfering with itself and unimpeded by other particles, then it simplifies the description of black hole gravitational force.

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[10] de Witt, Bryce (1980). "Quantum gravity: the new synthesis". In Hawking, S.; Israel, W. General Relativity: An Einstein Centenary. p. 696. ISBN 0-521-29928-4.

Big Bang

From what we understand about the universe at this point from deep space observation and advances in physics in the recent century, it is clear that the universe is an ever evolving system. As we can see evidence of change over time, the universe as we understand it must have had a beginning, and will eventually end in entropy or perhaps reach another physical state.

The popular big bang model of the origin of the universe states that all matter in the universe came from one point in space which rapidly spread to a size greater than that of the observable universe. However, the brief time predicted for this inflationary period to take place is only possible if superluminal movement exists. Although a generally accepted theory, rationalizing drastic exceptions to relativity are problematic.[11]

However, if the state of matter or energy in the early universe was such that relativity was not a factor, then the speed of particles might be nearly infinite. In this theory, some particles or states of energy can exist that do not produce c bosons. If this was the case in all of the early universe, then there might have been nothing to prevent massive expansion of a primordial probabilistic energy to an inconceivably large volume.

To elaborate, the Higgs boson which is theorized to be such a primordial particle is calculated to be physically smaller than the permitted constraints of a Planck or Standard Model particle. Although it seems to violate theoretical limits to mass, the reality of such a particle seems to be without doubt. As it is a physical rule violating particle, perhaps it is also a non-relativistic form of matter that does not emit c bosons.

Prior to the Photon Epoch, the Higgs boson or other “unconventional particle” would have needed to move extraordinarily fast. Considering the “observable” universe is estimated to be 93 billion light years wide, and beyond that the entire universe is expected to be exponentially larger[12] or even infinite, it is generally agreed upon that this unconventional energy or matter moved exceptionally fast from the point of the big bang.

In this c boson-centric theory, no exceptions to relativity or special manifold of space are necessary to justify superluminal propagation. Particles that do not emit or interact with c bosons are entirely possible and likely considering known superluminous exceptions to relativity. Such relativity evading matter may still be common in the universe and undetectable as all of

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[11] Earman, John; Mosterín, Jesús (March 1999). "A Critical Look at Inflationary Cosmology". *Philosophy of Science*. **66**: 1–49. doi:10.2307/188736 (inactive 2017-03-27). JSTOR 188736

[12] Alan H. Guth (17 March 1998). The inflationary universe: the quest for a new theory of cosmic origins. Basic Books. pp. 186–. ISBN 978-0-201-32840-0. Retrieved 1 May 2011.

our current means of observation are dependent upon relativity conforming evidence. Even the Higgs boson can only be observed by its conventional products.

Interpretation of the Hubble constant

Recent observations using the Hubble Telescope have shown that we can currently observe galaxies in excess of 13 billion light years away.[13] Loosely stated, that implies these galaxies not only existed over 13 billion years ago, but were at a distance no closer than 13 billion light years away when the light we are observing was emitted.

As mentioned previously, estimates of the size of the complete universe are exponentially larger than the observed universe. Only a finite unbounded universe or other unconventional manifold would provide an exception to this. Excepting that possibility, one can assume that conventional particles formed in the universe at a distance much greater than the 13 billion light years we are currently observing.

Additionally, consider that LIGO and other interferometer experiments have essentially proven that gravity "waves" exist and move at the speed of light. We can also presume that all matter in the universe will continue to contribute to gravity by radiating c bosons indefinitely.

This would mean that, along with the photons we observe from distant objects, the gravity from these same objects is also reaching us. That would mean the gravity from all matter within roughly 13.7 billion light years of earth would have reached us by now. However, 1 billion years ago only the gravity from a 12.7 billion light year distance would have reached our point in the universe.

> I'm suggesting that, before the electroweak epoch of the early universe, there was no force carrier of gravity. After the epoch, particles that contributed to gravity first existed. As this weak force propagates at light speed, there is an increase over time in the density of the background c boson field of any given point in the universe.

For photons emitted from an ancient source billions of light years away, by the time it reaches earth there will have been an increase in the background level of gravity. This would extend the photon wavelength from what one would expect to observe by increasing the relativistic potential of the observer from the time when the photon was emitted. Since redshift calculation is a ratio, changing the relativistic potential of the observer after the photon was emitted changes the observed frequency.

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[13] Most Distant Object in the Universe Spotted By Hubble Space Telescope, Shattering Record For the Farthest Known Galaxy
Andrew Griffin -
https://www.independent.co.uk/news/science/most-distant-object-in-the-universe-spotted-by-hubble-space-telescope-shattering-record-for-the-a6911096.html

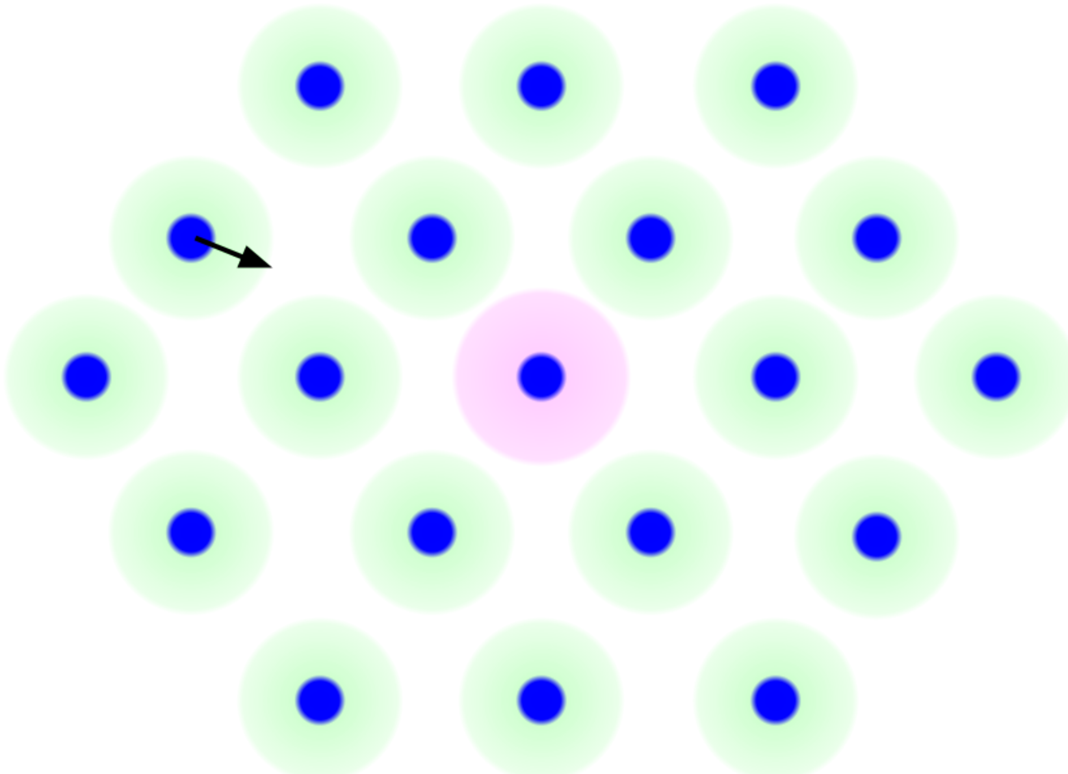
$$z = \frac{\lambda_o - \lambda_e}{\lambda_e}$$

Although this might seem like a subtle difference, the Hubble constant is all but unuseable providing distance estimates for objects closer than 10 parsecs, and is a somewhat gross tool with a 3.5% variation precision (as of 2012)[14]. Considering that there are measurable variances in the Cosmic Background Radiation of similarly small values, it is likely that the gravitational background level would have similar variations which would impact the Hubble Constant accuracy to some degree.

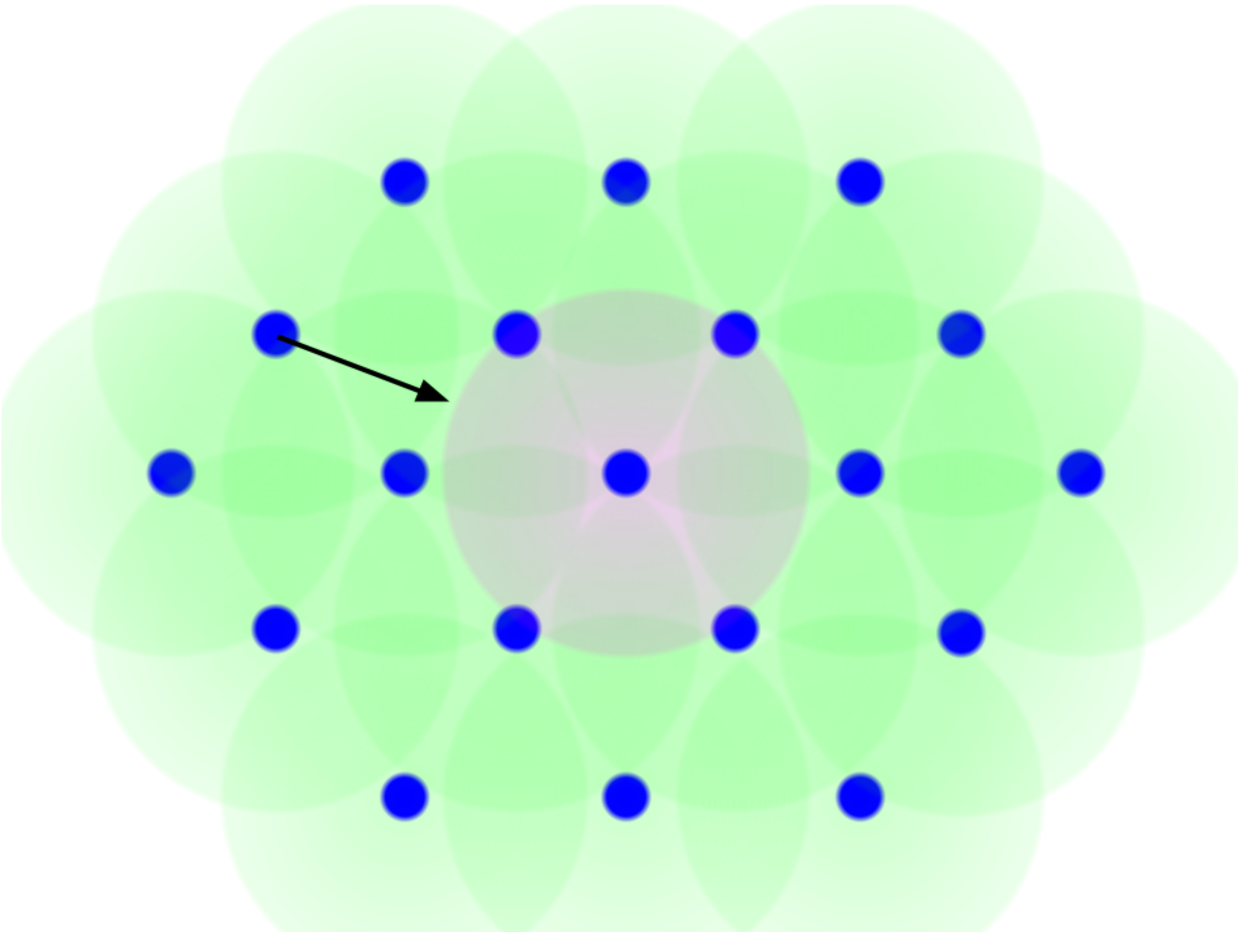
> Considering that emissive and infinitely moving gravity is an established fact, accumulating gravitational background in a non-expanding space is a more elegant explanation for red shift.

To illustrate, Imagine the following diagram represents the universe not long after gravity-contributing particles formed (likely at the photon epoch). As the gravity waves emitting from these masses move at the speed of light, there is only the source's influence on the information moving between each point.

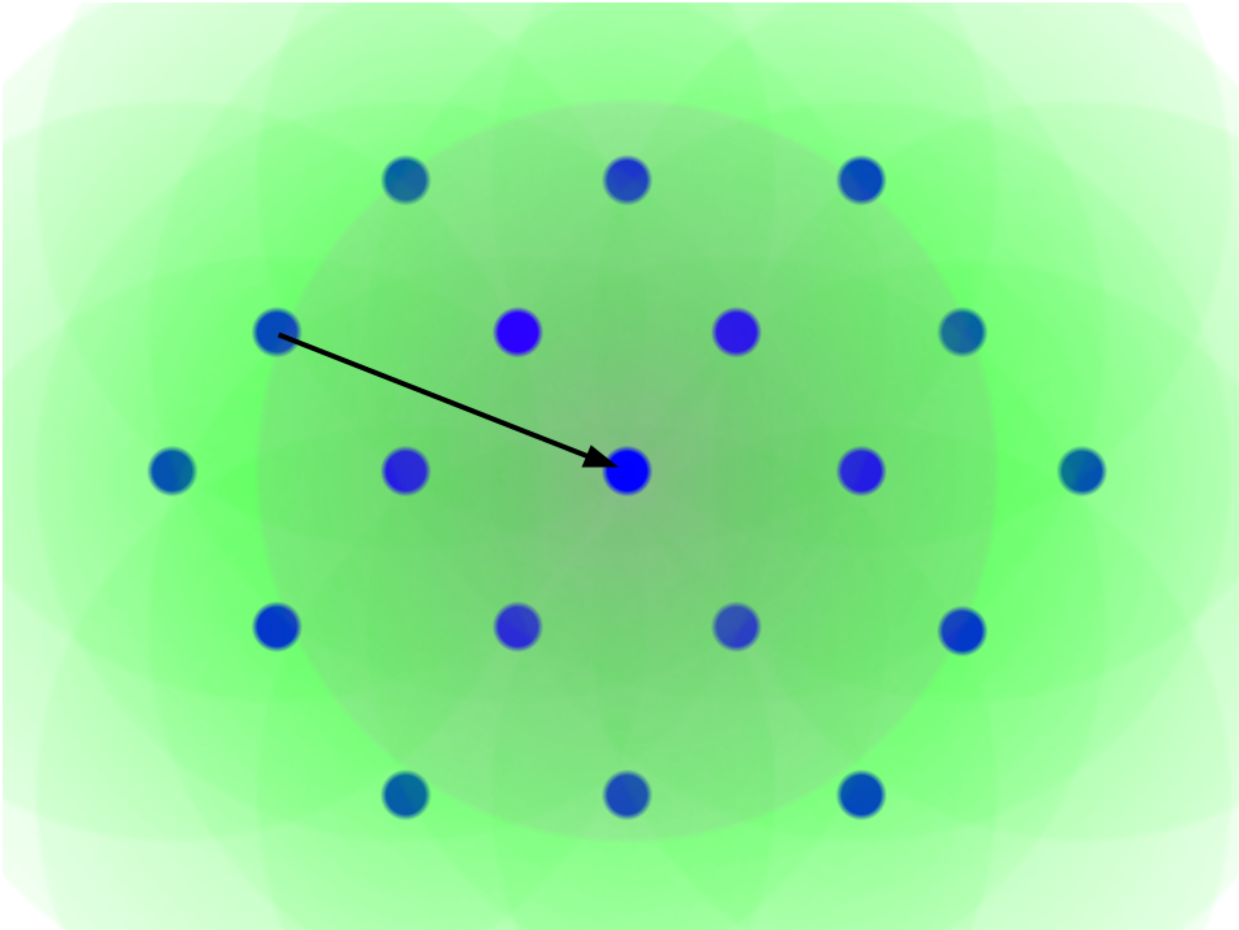
[14] A. G. Riess et al., Astrophys. J. 730, 119 (2011). https://doi.org/10.1088/0004-637X/730/2/119



As the waves continue to propagate, they intersect with other gravity waves emitting from nearby sources. As the information that left one source is approaching its destination, the Gravitational potential is decreasing by the introduction of new gravity.



When the information reaches another point in space, the Gravitational Potential will have continued to drop at a steady rate due to the continuing introduction of gravity from ever further distances.



Once measured, the information will have experienced a relativistic shift in frequency due to the decreased GPE compared to when it was emitted.

$$GPE = -(G \times M(kg)) \,/\, x(m)$$

By using a Bravice Lattice to model the gravitational influence at a specific point in space solved to different points in time, <u>the decrease in GPE potential has the same linear slope as the Hubble constant</u>. As the size of the universe is expected to be many times larger than we can currently observe, GPE will continue to drop at the same rate for all incoming information maintaining the Hubble Constant indefinitely.

> This shows that by computing the gravity propagation speed after the photon epoch proves that the Hubble Constant does not require continuing expansion of space to explain Hubble's Law.

Assuming that the volume of space is unchanging which this theory shows to be the case, Redshift from the Hubble Constant would directly represent the rate of changing GPE. This can be used as another method to calculate the average mass density of the observable universe.

As the GPE continues to increase, I expect that there will be no long term change in the universe (like a Big Crunch or a Big Rip) as the level increase is almost perfectly flat in a given region. However, slight variations in this level and the increase over time may contribute to effects attributed to dark matter/energy.

I hypothesize that by analyzing the differential in arrival times of gravity waves and corresponding EM events (like gamma bursts) at varying distances, we might be able to determine a “relativity effect floor”. As I theorize that the absolute speed of c bosons are not impacted by relativity, this differential should be amplified the more distant the measured event.

Quantum Entanglement

“The Universe is under no obligation to make sense to you.” -Neil deGrasse Tyson

One of the most empirically proven exceptions to relativity is the “spooky action at a distance” evidenced in quantum entanglement. The variety of experiments on the matter show time and again that there is an information transfer between entangled particles in excess of the speed of light (no less than 10,000 times light speed in at least one study).

My hypothesis states that c bosons may not impact all particles. There may be particles and bosons that are non relativistic which c bosons do not effect. Therefore, I expect gravity-free particles or matter states exist where relativity does not apply. What makes this challenging to study is that we are only able to directly observe or interact with relativistic particles. Even the Higgs boson cannot be directly observed, making it possibly the only non-conventional particle to date shown to exist which required the world's largest and most expensive test apparatus to study.

Whatever quantum property entangles particles, it likely employs some sort of non-relativistic particle transfer. Superluminous or even instantaneous (quantum leap-rate) movement or information transfer over a distance may be possible if we are able to leverage these “unconventional” particles.

Faster-than-light communication

Expanding upon quantum entanglement, It is observational fact that there can be a superluminous interaction between particles. Considering the necessity of a relativity-free state of matter to support Big Bang inflation cosmology, and a less “spooky” theory to support entanglement, my theory of a particle that does not produce or receive influence from gravity seems as likely as any. This is further supported by properties of the Higgs boson which seems to violate theoretical limits to mass and cannot be directly observed.

There are several experiments using quantum entanglement for superluminous communication, imaging, and data security verification. However, since we are leveraging the entanglement of "conventional" particles, it is largely indirect access to this phenomenon. If we could directly utilize these extra-relativistic properties, we could send superluminous rate information without requiring a pre-established conventional particle link.

Gravity "Waves" and the Relativity Boson

As mentioned previously, detecting waves of gravity is challenging as matter cannot be simply turned on and off. However, Einstein is credited with theorizing gravitational waves which may have been confirmed in recent years by LIGO and other interferometer experiments. At this time it requires a catastrophic cosmic event of immense gravitational potential, and relatively close, to create waves we can detect and hoping for coinciding electromagnetic event observations we can correlate.

Although the spacetime manifold is an elegant visual and mathematical model used to explain special relativity, it seems to conflict with gravity waves and related observable phenomenon.

First, if there is a spacetime manifold that is warped by the presence of matter, then gravity waves should not be able to exist as they cannot be present separate from matter.
Also, there seems to historically been disagreement whether gravity is an instantaneous effect over space or if it propagates, as a timespace manifold would suggest an instantaneous effect if time is treated as a dimension in and of itself.

Additionally, if gravity is "information" that propagates at the speed of light there are issues in explaining in a purely spacetime manifold how they can propagate from a black hole. A warped manifold with a limited information transfer speed would be absolute for all types of phenomenon.

Superluminous events like entanglement or cosmic inflation would also be unacceptable.

Interferometer experiments have not only shown compelling evidence of gravity waves, but that the waves are detected several seconds before corroborating electromagnetic waves from the detected event arrive. Unless detected gravity waves can be attributed to matter that can outpace photons in a vacuum, then it stands to reason that there is a boson of relativity (the source of gravitational phenomenon) which radiates from matter but moves independently from its source not unlike photons.

The existence of a "Relativity Boson" most simply explains and consolidates gravitational and relativistic phenomenon (special and general relativity). Theoretical polarization of gravity "waves" further implies a particle state, as do all the other characteristics that parallel boson behavior.

Black Holes

"Today we say that the law of relativity is supposed to be true at all energies, but someday somebody may come along and say how stupid we were." -Richard P. Feynman

In the simplest terms, a black hole is a gravitational source concentrated enough to prevent escape velocity for a photon.

In spacetime manifold theory, this is due to spacetime warpage. However, "information" regarding gravitational strength of the mass would not be able to escape the event horizon in that model. It is also counterintuitive that a black hole could grow, shrink, or even be created in this case as the existence of an event horizon implies a relativistic standstill. If time has been warped to its limit or no longer exists at a point, then that point cannot move or be moved. Even if a black hole is expanded, the new event horizon cannot pass on the information from the old horizon as that would require the information be at a lower relativistic state.

The only way a black hole can be in any way dynamic or even exist is a simplified model where gravity still "radiates" even though the relativistic slope is steep enough to prevent escape velocity for conventional particles. Hawking radiation is a widely accepted theory that all but states that black holes are not an absolute limit of existence and "evaporate" over time.[15] Contemporary theory appears to struggle with the limits imposed by spacetime and the reality that something crosses those limits.

Therefore, gravity must be carried by a boson that is not impeded by other gravity.

The basis of my hypothesis is that c bosons are the force carriers of relativity, and the density of the field reduces the motion of all particles and matter intersecting that field. A black hole is most simply where c boson density and slope is high enough to disrupt the function of particles making up conventional matter.

It is my theory that, as atoms are effectively made up of spinning and orbiting particles, if the relativistic state is lowered so much they are unable to orbit or spin at a rate sufficient to perform their function, atomic masses may degrade into their component particles.

This sudden drop in volume will cause a very high slope to the density of the c boson field, preventing any conventional matter or energy from escaping. This is the runaway point of conversion to a black hole, as a large enough mass of matter that has collapsed due to arrested quantum motion will cause the same to happen to anything which passes the event horizon.

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[15] de Witt, Bryce (1980). "Quantum gravity: the new synthesis". In Hawking, S.; Israel, W. General Relativity: An Einstein Centenary. p. 696. ISBN 0-521-29928-4.

However, as my model assumes that gravity is in fact the boson of relativity, it is not self-interacting and may escape the black hole along with any other unconventional matter or energy. This would be theorised Hawking radiation.

Dark Matter

> "*I cannot define the real problem; therefore, I suspect there's no real problem, but I'm not sure there's no real problem*." Richard P. Feynman

An oversimplified definition of Dark Matter is simply matter we cannot at this time seem to adequately measure. There are conflicting theories regarding dark matter, and even its existence is in doubt.[16]

Although this is often attributed to "unconventional" matter, consider that nearly all of the objects in the Kuiper belt were not known to exist until the 1990's. Beyond that is also the theoretical Oort cloud of our own solar system, and the hydrogen clouds (hypothetical and observed[17]) that fill the universe. As much of this matter has only recently been observed or theorized, I speculate it is not being adequately considered in cosmological measurements.

In particular to its contribution to "dark matter", a field of c bosons is always present and unavoidable throughout the universe. Based on my interpretation of the Hubble constant, the density of c bosons at any given point will include contributions from the begining of matter in the universe. Even if a complete vacuum of conventional matter is created and all special relativity of known mass is considered, excess c bosons from unknown mass (13 billion light years away, and in all directions) will permeate that space adding the effect of mass to it.

Using interferometer observations that show a differential between the arrival time of c bosons and photons might provide a way to calculate a "relativity effect floor" value. This theory combined with recently observed and theorized "conventional" matter may be a step towards accounting for the conventional "missing" matter and residual gravitational force which dark matter theories are designed to explain.

Conclusion

> "*And the continuity of our science has not been affected by all these turbulent happenings, as the older theories have always been included as limiting cases in the new ones.*" - Max Born

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[16] A Whirling Plane Of Satellite Galaxies Around Centaurus A Challenges Cold Dark Matter Cosmology
Oliver Müller-Marcel Pawlowski-Helmut Jerjen-Federico Lelli - Science - 2018

[17] HI4PI: a full-sky H i survey based on EBHIS and GASS, Astronomy & Astrophysics (2016). DOI: 10.1051/0004-6361/201629178 , arxiv.org/abs/1610.06175

This hypothesis proposes an approach to understanding gravitational phenomenon and relativity using a common force carrier that is consistent with existing science but is also compatible with relativity violating observations.

Mathematically, I expect the results of a soley c boson based theory to be identical to relativity equations in use today within observably accurate limits. I am also in agreement with Einstein that there is no gravitational force carrier. This model substitutes a speed limiting particle field for stretched space, both considering gravitational attraction a secondary phenomenon.

However, being an entirely particle based field, the function of the c boson has a quantum level granularity. This mechanism allows for superluminal and ultrarelativistic motion and theories regarding non-relativistic particles.

Einstein showed the limitation to Newton's gravitational mathematics to explain observable exceptions that were not known 200 years earlier. Similarly, in the 100 years since Einstein's papers on relativity we now have observable exceptions to his mathematics. This is largely in observations not possible a century ago. I expect a new relativistic model using what we've learned in that time will provide a point of view to resolve differences in conflicting observations while building on the progress made using the previous theory.