A New Value for the Universal Mass within the Lorentz limits and based on Schwartzchild and Natural Radii equivalence

The mass of the universe has often been cited to be approximately 10^{53} kg, [1-3] a finite number. Current values are derived from either critical density estimations, the average number of stars including interstellar and intergalactic matter, or Hoyle based steady-state estimates, and all imply a finite universe.

Characteristics of the universe

If the universe is somehow (as thought) accelerating, then a force is somehow (as Max Planck insisted) being applied, yet what force, and how? We know that as a whole, the universe seeks equilibrium. Specific, temporary, or local trajectories and/or accelerations may achieve partial equilibriums, and lead to further “adjustments” in differing magnitudes. Where, again the seeking of equilibrium continues. In the end, the universe as a whole can be seen as being in a multiple state (or in multiple phases) of continuously seeking both partial and complete equilibriums. This conclusion is remarkable; it implies that some partial equilibrium is already achieved, for it “continuously” seeks equilibriums, yet it also implies that the universe is actively seeking some quotient of further equilibrium. It is this partial, already achieved, yet integral equilibrium which this paper describes.

The meaning of G and the natural radius defined

Suppose we take Ernst Mach seriously, and determine that the universal constant (G) is actually the acceleration result expected from a sum total of all the available, and equally distributed mass in the universe, this at some specified radius. Let us also accept that at this incredibly large radius (almost a perfectly straight line, quite flat), that very slight curvature, namely the acceleration of universal gravity (G) can hold the passing of light in its feather grasp.
Essentially, universal gravitation G, is proportional to the universal mass M_u.

$$G \propto M_U$$

At some radius, this relation would be true, (where g would be equal to G),

$$g = \frac{GM}{r^2}$$

$$r = \sqrt{\frac{GM}{(6.674e^{-11})}} = \sqrt{M}$$

This would be a naturally appearing radius for any mass whatsoever. Except that the constant G is universal, so then what amount of mass (M_U) would be sufficient to produce a force (F_{Sch}) required to contain electromagnetic energy at its natural, (acceleration g = G) radius?
This radius, at which the acceleration g is equal to G *(g = G)* will also be the Schwartzchild radius for that same mass, and generate the same acceleration G, and is a unique solution. This equivalence radius is $6.733e^{26}$m, and its mass is $4.534e^{53}$kg. The solution is unique.

In this model, the universal radius is simply the square root of the universal mass, (in meters); it is a singular finite solution, resolves to its own Schwartzchild radius, and is unique to this total mass value alone.

$$r_u = \sqrt{M_U} = \frac{c^2}{2G} = \frac{2GM_U}{c^2}$$

The universal mass is given as

$$M_U = r_u^2 = \frac{c^4}{4G^2} = \frac{r_u\, c^2}{2\, G}$$

Expansion, acceleration and force

Current observations (WMAP, Planck) confirm an observed expansion rate of the universe that is accelerating. The further away, the greater the acceleration. Whereas this is quite plausible, it is also true that *wherever* you are in the interior of a black hole, your universe would also appear to be expanding and accelerating in exactly the same way. Because of space-time curvature, the relative view of any acceleration at an apex* would not be discernible from the view at an event horizon.
* An “apex” (Lorentz space) is here postulated to be that limit beyond which accelerations produce velocities approaching the velocity of light, and at which point masses “transform” into the larger perimeter electromagnetic containment well. This limit exists for all matter and at any location within the universal event horizon. The nature of space curvature implies multiple apex’s permissible in the greater “normal” space. Or, as now stands the case, black holes within black holes.

The Lorentz space

As an example we consider a single particle being accelerated towards the speed of light.

Where,

$$m_v = \frac{m_O}{\sqrt{1-\frac{v^2}{c^2}}},$$

the limit being the Planck mass for approaching the speed of light. Mass increases, until approaching the Planck mass, (the reason for this limit is that it (whatever mass it contains) is engulfed in its own black hole, rendering it impossible to add further attractive force). Rather, the envelope expands in (accordance with Berkenstein’s’ law), held by the Schwartzchild force (F_{Sc}).
This leads us to consider the ultimate nature of the ultimate black hole, the mother of all black holes, the universe.

A Mathematical Creation Myth

The Problem

It’s not that there was nothing in the beginning; it’s just that given what we know now, we wouldn’t recognize it for a beginning. Most physicists want a good mathematical (and physical) basis for what they believe, it would be better of course, if it were correct, but at the minimum, right or wrong, it has got to be based on some good solid mathematics, and some good physics as well. But how can one believe anything (as exact certainty) about an event that occurred some billions of years ago? And, why do we have to keep adjusting the Big Bang story around to somehow make sense in the face of ever changing discoveries about the nature of the cosmos?

"Before we had anything at all, there must have been nothing, but what type of nothing, and did that nothing still have to obey something" And what is the real difference between something and nothing anyway? Are not "density" and "tensors" intimately related? Why is it that the arguments always tend to go around in circles? Is there any place else to go, but in circles? Is this part of the nature of finiteness… the not knowing… the circular reasoning?

So, now to the myth! Can we derive a universe from the known constants, without reference to anything else, but a few simple laws of nature? Can we show that the constants are in fact, in equilibrium… some finite, and of course, circular equilibrium?

Our mathematical creation myth begins with some constants

Like gravity, acceleration if you like, **G**, the "Big G", 6.67384e^{-11} m^3/kgs^2 (by the most recent estimates). Another important constant is **c**, "the velocity", 299,792,458 m/s the velocity of any and all electromagnetic radiation, which is the fastest (strictly speaking) velocity that we know of, and which of course is wavelike. So my first question, just to get the thing rolling… is "How long would it take to get to the speed of light, accelerating at the awfully slow acceleration of Universal Gravity?"

Well that's easy enough, let's see…

$$t = \frac{v_f - v_0}{a}$$

So, starting at zero, and ending at "c", with "G" as our acceleration, we have…

$$t = \frac{c - 0}{G} = \frac{c}{G}$$

Doing the math for us, the answer is…4,49205e^{18}s. This is a very… very long time. In fact, it is so long, that it is much longer than the agreed age of the universe, (roughly 10.4 times). That's alright though… let's call this moment the beginning of the "observable universe", when things, or something came into being, that moment when light speed (and primary equilibrium) was attained!

Ok, now let's figure out the distance or space, which all of this long acceleration process took (to get up to speed), and for the sake of our circular argument, let's call it our radius.

Well that's easy enough! We know that distance or space "S" is given by the formula…

$$s = \frac{1}{2}at^2$$

So using "G" for our acceleration and t = 4,49205e^{18} s for our time, we get as our space (radius)…

$$r_U = \frac{1}{2}Gt^2$$

This would be then our simple universal radius "r_U" which equals 6.733e^{26} m. Sound familiar?

This radius, (if we believe Lorentz), we must conclude is the limit of our universe. But what is exactly the function of such a limit…an appropriate function? Well, since we are creating a universe where all the

constants are in equilibrium, we must give this radius the function of somehow containing all mass and energy, which clearly means electromagnetic energy. We know that black holes can do this. So let's dig up the formula for black holes and see what this radius implies.
Here is the formula…

$$r_U = \frac{2GM}{c^2}$$

Well, we have a radius so we can solve for the Mass…

$$M = \frac{r_U\, c^2}{2\, G}$$

Our universal mass would be equal to 4.5339e^{53} kg. For everything! Our universe now contains all electromagnetic energy, and it is a black hole! Sound familiar? This *is* circular reasoning. It may be in the nature of things to show such a character.
What would Ernst Mach have to say about this? One might never know exactly, even if you did upon meeting him, understand German well enough to get his drift. However, one can be sure that he would insist that G is somehow dependent on the sum total of the fixed stars in terms of their total mass. Yet, this reasoning itself is also somewhat circular.
Can we transcend all this mathematical circular reasoning? This, just maybe is not possible. Supposing we looked at this universe in a special mirror… a mirror that might help to define the other constants?
Let's take the radius of our universe, and call it the de Broglie radius of an *imaginary* mirror particle, and find out its natural radius ($\sqrt{m}$) where its mass can generate acceleration equal to G, for at this limit, it might indicate certain symmetry.
Let's try that…. To solve for the mass of this imaginary particle is simple. We know that to determine the mass of a particle at c the formula is…

$$m = \frac{\hbar}{\lambdabar c}$$

Using the radius value ($\lambdabar$) of our universe 6.7334e^{26} meters we get 5.2242e-70 kg as a universally balanced particle within a boundary, where its mass might generate acceleration equal to G, at its natural radius $\sqrt{m}$ equal to 2.28565e^{-35} m, remarkably, $\sqrt{2}$ times the Planck length (l_P) at 1.6162e^{-35} it is also 0.707 times the Schwartzchild radius for the Planck mass. It sits right flat in the middle of the most famous quantum mass interaction known, the Planck Interaction.
Since our imaginary particle is a sort of mirror image of our equilibrium universe. "What is creating what here?"

What about the constant alpha (α)? At these very,… very small lengths (at the Planck limit), α starts popping up all over the place. It turns out that the universal constant **α** is a simple force derivation. In particular, it defines a force relationship between gravitational and electrostatic/magnetic radii). Let's look at a (color coded) (see .pdf) table that shows some of these relationships.

Item	Mass (kg)	Gravitational Equilibrium radius	Schwartzchild radius (m)	de Broglie Radius ƛ (m)	Columb force at Gravitational Equilibrium radius	Columb force at Sch radius	Columb force at dB radius	Schwartzchild Force (FSc)	Planck Force (Fpl)	1/2 Planck Force (Fpl)	→	Results
1/2 Planck	1.088E-08	1.043E-04	1.616E-35	3.232E-35	2.120E-20	8.832E+41	2.208E+41	3.026E+43	1.210E+44	→	→	7.297E-03
Planck	2.177E-08	1.475E-04	3.232E-35	1.616E-35	1.060E-20	2.208E+41	8.832E+41	3.026E+43	1.210E+44	→	→	7.297E-03
.707 Planck	1.539E-08	1.241E-04	2.286E-35	2.286E-35	1.499E-20	4.416E+41	4.416E+41	3.026E+43	1.210E+44	6.052E+43	→	7.297E-03
Mirror Particle	5.224E-70	2.286E-35	7.759E-97	6.733E+26	4.416E+41	3.833E+164	5.089E-82	3.026E+43	1.210E+44	6.052E+43	→	α/2
Equilibrium Universe	4.534E+53	6.733E+26	6.733E+26	7.759E-97	5.089E-82	5.089E-82	3.833E+164	3.026E+43	1.210E+44	6.052E+43		-

What can be clearly seen by this table is that the constant α is a simple result of force relations at the Planck scale. We also see a huge confirmation of the Lorentz Field conception. There in red… the universe, it could never have a de Broglie radius, and the so called *mirror* particle could certainly never have a Schwartzchild radius. The Columbic forces would be way out of the Planck force limit. (It's even worse for gravitational forces at the de Broglie radius for the universe).

In fact, none of the current models for any universe account for this awful reality. The assumption that something as massive as the universe could ever reach its de Broglie radius; or that any black hole can reach an infinite mass, and have an infinitely small radius is unlikely. There must be some physical limit to the contractibility of a finite universe. This is the function of the Lorentz limit.

A resolution for this seeming impasse is that all black holes share the same internal gravitational force value at 1/4th of the Planck force (as to be found at their perimeters), it is the acceleration that varies. On the universal scale, the equilibrium model (outlined above) shows this same Schwartzchild force to be the universal natural equilibrium force and so, *active force equilibrium is achieved between every particle well and the universal particle well.* From the Planck convergence point, all things obey the simple relation for any mass whatsoever, a general equilibrium from the de Broglie radius, and the Schwarzschild radius.

$$l_P^2 = ƛ_P^2 = \frac{R'_{Sw} ƛ'}{2}$$

Where $l_P^2 = ƛ_P^2$ equals the Planck length^2; R'_{Sw} equals the Schwarzschild radius; and $ƛ'$ equals the de Broglie radius of the particle.

This equilibrium is not achieved in either the WMAP or Planck Telescope critical density models, since they both break the Planck force limit for their natural gravitational equilibrium force values, as such; they do not imply the Planck mass.

How is it, that what we call normal mass exists?

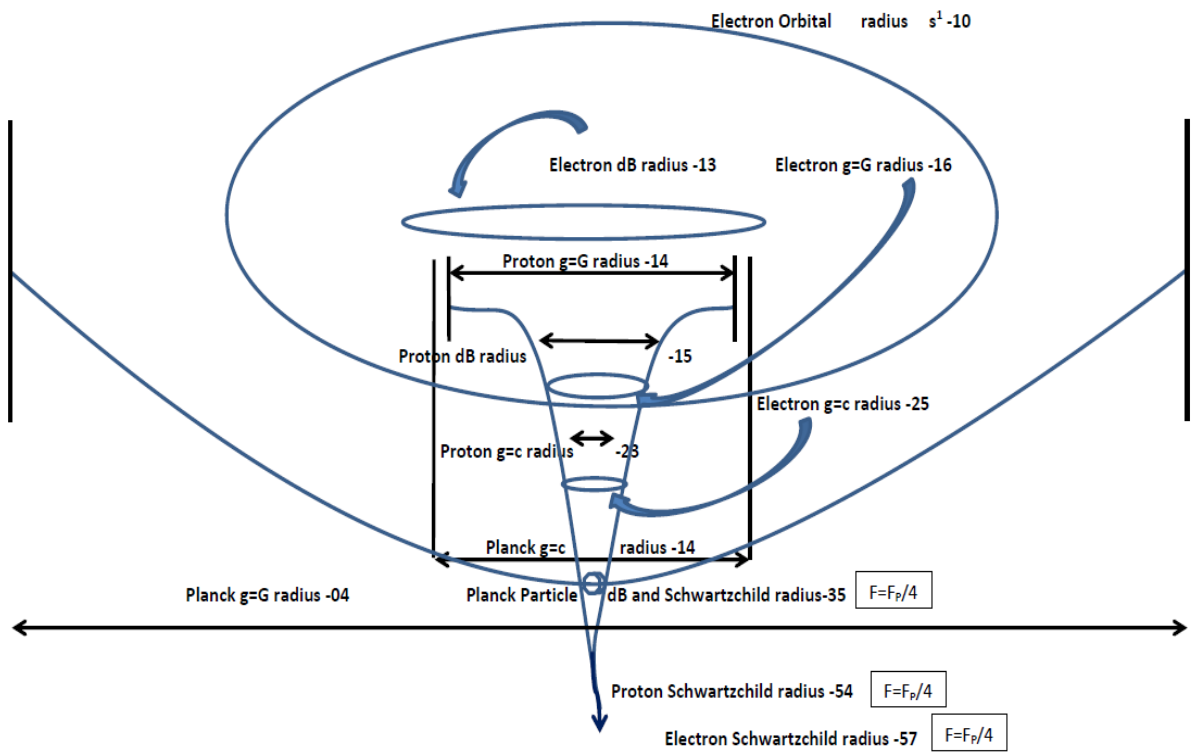
Since we are assuming that at the start of the observable universe, light velocities were first achieved for all things in the universe, at the stated radius. We are obliged to consider this Lorentz contraction, where,

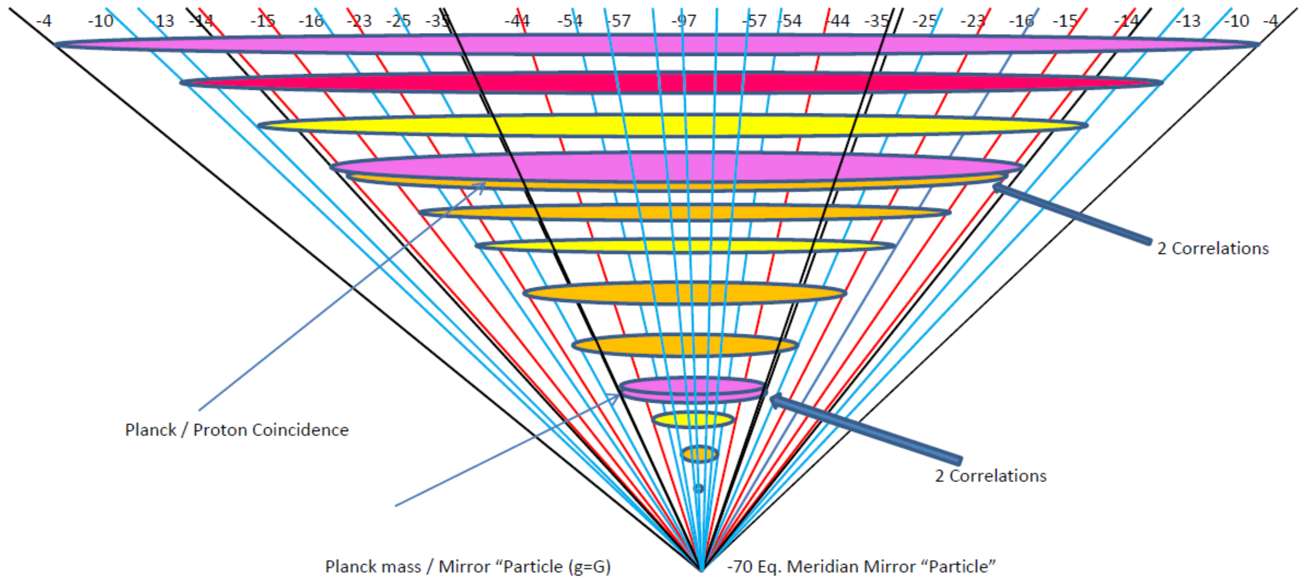
$$m_v = \frac{m_O}{\sqrt{1-\frac{v^2}{c^2}}}, \quad \text{and} \quad t_v = t_0\sqrt{1-\frac{v^2}{c^2}}, \quad \text{and} \quad l_v = l_0\sqrt{1-\frac{v^2}{c^2}}$$

As any mass or particle approaches the electromagnetic velocity or c, it quickly disappears into its own black hole. This was the beginning of the universe. Mass increases (is formed) but time slows down approaching the Planck/light speed limit), and its space gets accordingly smaller. The inverse relationship *(E=hf)* between energy, and (time and length), has led to the idea of the point particle, the singularity. But that may not be an acceptable *physical* approximation. Could it be that a time frozen equilibrium between forces occurs at this "moment" that gives rise to what we know as matter or inertia?
What we call protons, neutrons, and electrons etc. are "particulate" well equilibriums in the Lorentz tidal zone of the Planck interaction. The light velocities first achieved for all things in the universe, at the stated radius were obliged to obey the Lorentz contraction, the radius then at which the Planck mass would produce an acceleration approaching the speed of light ($6.960e^{-14}$ m), is very close to the natural (g=G) radii for both proton and neutron masses i.e., (being averaged) $4.09e^{-14}$ m.

At these radii, what is the interaction? Below are two figures that demonstrate the various Lorentz Space Tidal Force relations occurring at the interaction radii of a Proton, an Electron and the Planck mass.

Lorentz Space Tidal Forces on a Proton and an Electron





Conclusion

If we acknowledge that space and time are frame dependent (they have no intrinsic properties whatsoever), then in a black hole, expansion may really be equivalent to contraction. An understanding of inertia is finally within our grasp. A friend of mine commented that since all of this occurs within a Schwartzchild radius, it might well explain why, it is dark at night. These equilibriums permit a more precise determination of the universal mass, which can be derived from the essential equality of the Schwartzchild and “natural” (g=G) radii of the universe and its constants.

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References

1. ^ Paul Davies (2006). The Goldilocks Enigma. First Mariner Books. p. 43–. ISBN 978-0-618-59226-5. Retrieved 1 July 2013.
2. ^ Helge Kragh (1999-02-22). Cosmology and Controversy: The Historical Development of Two Theories of the Universe. Princeton University Press. p. 212, Chapter 5. ISBN 0-691-00546-X.
3. Wikipedia…The observable universe; “….*three independent calculations produced reasonably close results :1.46 x 1053 kg, 1.7 x 1053 kg , and 1.68 x 1053 kg. The average is 1.6 x 1053 kg. The key assumptions using the Extrapolation from Star Mass method were number of stars (10^{22}) and percent of ordinary matter in stars (5.9%). The key assumptions using Critical Density were radius of universe (46.6 billion light years) and percent of ordinary matter in all matter (4.8 %). Both Critical Density and the Hoyle Steady-state equation also used the Hubble constant (67.15 km/sec/Mpc).*”