The Schwarzchild Radius from Newton's Laws

(by analogy with Coulomb's and Ampere's laws)

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We assume that the concept of "velocity" refers to momentum and energy (as in Newton's laws), rather than motion in space and time (as in Galilean coordinates). We assume that q = CT, where C refers to the "charge/mass creation rate" and T = a scaling factor so that q = CT. We assume that both the mass and charge creation rates are constant.

$$q = m = CT = \int_0^T C dT$$

The "charge" and "current" is created by integrating the charges and currents through + and – radii and current loops, respectively, and the laws define relationships true for all values of "distances" and "circumferences", independently of r.

(This means that the space (+r,-r) domain is independent of the energy (E,K), since the relations below hold for all values of specific values of –r to +r passing through a field point at r = 0, where r is homogenous and isotropic. That is, "signal/event" at a field point are "simultaneous")

Coulomb's Law (equal charges)

$F_q = \frac{1}{4\pi\varepsilon_0}\frac{q^2}{r^2}$ = $m_q a_q = m_q(dv_q/dr)$, assumed true for all values of r.

Integrating from -r to + r through a field point at the origin (r = 0), and assuming isotropy and homogeneity):

$$m_q v_q(r) = \frac{q^2}{4\pi\varepsilon_0}\int_{-r}^{r}\frac{dr}{r^2} = \frac{q^2}{4\pi\varepsilon_0}\frac{2}{r}$$

Setting $v_q(r) = C_q$ which is constant for this specific value of r = CT, we have:

$$m_q C_q = \frac{q^2}{4\pi\varepsilon_0}\frac{2}{r}$$

Ampere's Law (equal current loops defined by charge)

$F_i = \frac{\mu_0}{4\pi}\frac{\left(\frac{dq}{dT}\right)^2}{r^2}$ = $m_l a_l = m_l(dv_l/d\theta)$, where v_l is the equal "velocity" around the current loop at a specific value of r in both directions.

Again Integrating from –r to +r through a field point at the origin (r = 0), and assuming isotropy and homogeneity):

$$m_l v_l(r) = \frac{\mu_0}{4\pi}\frac{\left(\frac{dq}{dT}\right)^2}{r}$$

Setting $v_l(r) = C_l$ which is constant for this specific value of 2πr = CT around the current loop in both directions, we have:

$$m_l C_l = \mu_0 \frac{\left(\frac{dq}{dT}\right)^2}{4\pi}\frac{2}{r}$$

The "charge" of light

Equating the two Momenta for a specific value of r, we get:

$$\frac{q^2}{\varepsilon_0} = \mu_0\left(\frac{dq}{dT}\right)^2$$

$$\frac{1}{\mu_0\varepsilon_0} = \frac{1}{q^2}\left(\frac{dq}{dT}\right)^2$$

If we define $\frac{dq}{dT} = C$ as the rate of charge creation per unit charge (q = 1), then

$C^2 = \frac{1}{\mu_0\varepsilon_0}$, and $C = \frac{1}{\sqrt{\mu_0\varepsilon_0}}$

In the above relation, ε_0 is a measured quantity, and μ_0 is adjusted to conform to experimental values.. Note that c is homogeneous and isotropic and is only defined for a single "field" point (the "origin"), which can be "anywhere, any-when" in space-time.

If we equate mass and charge (absolute values), we then have:

$$mC^2 = qC^2 = \frac{m}{\mu_0 \varepsilon_0} = \frac{q}{\mu_0 \varepsilon_0},$$

and the charge-to-mass ratio, $\frac{q}{m} = 1$ for arbitrary values of C; C is interpreted as the rate of charge or mass creation, since they are equivalent descriptions for the same physical parameter.

Sense (positive/negative charge, matter, antimatter)

The Schwarzchild radius implies a Schwarzchild circumference, area and volume as well….

To conform to the idea of an atom, consider the circumference (taken to be the unit circle); one can designate a field with p = r for r < 1 and p = 1/r for r > 1 with the characterization of positive charge/matter on the inside and negative on the outside. Of course, "sense" is neutral around the circumference, which represents the total mass. However, structure is characterized by VT'/CT where $(CT')^2 >= (VT')^2 + (CT)^2$ so the object can be represented by VT' on the ring separately from the "field" representation of CT inside and outside the ring…

Finally, VT'/CT is the charge to mass ratio of the Lorentz force which relates mass to electromagnetism via the E and B fields: F = (q/m)(E + v X B) where E is in the direction of motion, and B is at right angles via the right hand rule….

Noether's Theorem

My understanding of Noether's theorem is that it claims that there is a conserved "current" for every conserved "charge". This is only necessary if a "mass creation rate" C is defined for a specific "mass creation time" T, so that M = CT for a single particle (or physical system); one can simply create M instantaneously as for Newton's laws and Galilean coordinates, defining velocity in terms of motion, rather than mass creation.

In addition, once the mass has been created, if there is no further process, space-time velocity is 0.

If there is only one "observer", there is only one field point; if there are two "observers", degeneracy is removed since now a center point (origin) can be defined between the observers where a degeneracy in sense has been lifted (if the two observers are at the same field point, then sense is degenerate). In the case of two "observers", the midpoint can always be assigned so the senses are again degenerate, in the characterization of the system as a whole.

GTR seems to be attempting to define the total mass of the system in terms of local properties on the extrema of a conserved (radius, circumference, spherical surface) where the circumference can be inhomogeous, but the properties within are undefined unless all closed loops (wiggly or not) are integrated from the origin to the periphery. This process ignores possible charge imbalances (interactions) between different loops, or individual elements on each periphery, where such interactions may have to be defined throughout the area (energy) of the physical system…

This is possible only in the case of lengths, circles, or spheres….. that is, all such "wiggly" circumference AND their interactions – both global and local - must be able to mapped onto noninteracting circles as well as representations of the interactions…..

That is, structures must be resolved so the circle is again homogenous and isotropic for a global value of C.

So each "observer" is a degree of freedom – starting with M, then CT, then particle count for identical particles, then sense, then additional spatial dimensions, etc. A GUT is possible only if the physical characteristics of the cosmos can be scaled from the physical properties of that which we can observe at our local level of c, which is certainly different when describing electrons vs. galaxies….)

(I'll probably regret writing this last section in the morning…..:)

Gravity (equal masses)

A similar analysis can be applied in the case of gravity, where Newton's force law is defined by

$$F_m = \frac{Gm^2}{r^2}$$

By analogy with Coulomb's law, $F_m = \frac{1}{4\pi\varepsilon_g}\frac{m^2}{r^2}$, where ε_g is the gravitational "permittivity" of free space. From Ampere's Law, we have

$$F_i = \frac{\mu_g}{4\pi}\frac{\left(\frac{dm}{dT}\right)^2}{r^2}$$

Again, setting the forces equal for a given value of r, we have:

$$\frac{1}{\mu_g\varepsilon_g} = \frac{1}{m^2}\left(\frac{dm}{dT}\right)^2$$

If we let m = 1 = unit mass, we can define dm/dT = C_g as the rate mass creation /unit mass:

$$\frac{1}{\mu_g\varepsilon_g} = C_g{}^2, \text{ and } c_g = \frac{1}{\sqrt{\mu_g\varepsilon_g}}$$

In the above relation, ε_g is a measured quantity, and μ_g is adjusted to conform to experimental values.. Note that c_m is homogeneous and isotropic and is only defined for a single "field" point (the "origin"), which can be "anywhere, any-when" in space-time

Finally, we can set $G = \frac{1}{\varepsilon_g}$ and $\mu_g = 1$ so that $c_g = \frac{1}{\sqrt{G}}$ *and* $c_g{}^2 = \frac{1}{G}$

Note that setting $C_q = C_g$ equates electromagnetic mass with gravitational mass:

$$\mu_g\varepsilon_g = \mu_0\varepsilon_0 = C_q{}^2 = C_g{}^2$$

If the two masses are not equal, the coupling constant G (i.e., the “energy” of light”) can always be modified by a multiplier k so that $G'*m_1m_1 = m_1*km_2 = k*G*m_1m_1$. A physical system in which C (G) is constant is said to be “gauge invariant” (independent of coordinates).

Schwarzchild Radius

$$r_s = \frac{2Gm}{C_m{}^2}$$

$$r_s = 2m_g = 2(\rho C_m T) = 2C_m T, \ \ \rho = 1$$

(the factor of 2 includes both positive and negative gravitational masses (degenerate when total energy is calculated for the metric by integrating in both directions through a field point), and $\rho = 1$ implies one and only one system is under analysis.

The Schwarzchild "Radius" defines the total mass of the system….

"Schwarzchild Singularity"

There is no Schwarzchild singularity.

Consider that all squiggly "world lines" for each degree of freedom (x,y,z,t,spin,etc) have been integrated so that each one represent the components of a vector. Then one can perform a transformation so that the vector can be represented by a unity vector multiplied by constant coefficients of that vector.

Then the total energy of the system is represented by the new vector transformed to a unity basis, where $M_0 = pCT=1$. Now think of M_0 as a circle with circumference = $2\pi R = 2\pi M_0 = 1$

Now consider multiplying M_0 by a real number, thus changing C or T (since a tensor is a multilinear function F, this can be performed on any component of the tensor, with renormalizing back to 1 for a new $M_0' = F(M_0)$.

Now consider the regions R > 1 and R < 1.

For R > 0, the density at the circumference (a representative particle) will vary as 1/R, but the integrated mass of the radius will increase as R if the particle is represented as a mass point at the end of the radius. Note that the density drops of to 0 at infinity.

This means that the total mass of the system will be a function of $M_{total} = M_0*R*(p/R) = M_0$. For R = ct = CT.

Now consider the region R < 1. In this case, the density at the circumference increases as R decreases, but the total system is now represented by $M_{total} = M_0*1/R*(pR) = M_0$ At the point R = ct = CT = 0, the mass is 0; that is, there is "nothing there".

Subjectivity and Relativity

Newton's laws

Newton's laws relate conserved masses to observed velocities (where the speed of light in observation is negligible), so the observation is esentially experiential. (If you observe a freight train coming toward you, you can't tell if it has mass or not until it hits you (and the relative velocity is 0). So velocity is a figment of your "observer" imagination until it hits you and your world line ends.....

Newton's Laws are thought-to-mass ratios. P = Mv, K.E. = 1/2 Mv^2
M = mass, v = rate of thought

Special Theory of Relativity

Einstein's v/c is a (rate of thought)-to-(rate of thought) ratio, and QFT's V/C is a (mass creation rate)-to-(mass creation rate) ratio, so ct'/ct is the ratio of Final Thought to Initial Thought described by an intermediate Thought Process vt'.

Similarly, CT'/CT is the ratio of Final Mass to Initial Mass with an intermediate Mass Process VT'

Both ratios are istotropic and homogeneous, so only one "dimension" of Thought or Mass is needed (e.g.)... r = ct, or R= CT.

since the total Thought (total Mass) is described by the Waviness of the All....

$$1 = \sin^2\theta + \cos^2\theta$$

(Observer Theory)

$\theta = 2\pi(t/t')$ for pure thought for a given thought process ratio v/c, with areas of thought circles defined by $(vt'/ct')^2$ for initial thought ct and final thought ct', with thought creation process v/c defined by a ratio of thought creation rates given by $(v/c)^2 = (vt'/ct')^2$

and where t and t' are related by $t' = t\sqrt{1-\frac{v^2}{c^2}}$, so that if the thought creation rate increases as v, then the amount of thought involved increases (compared to the original thought) until an additional full thought is reached, at which point v = c implies that v = 0, since the process starts over again.

(the source of the thought and its creator is undefined; some think it is a membrane, some think it is Fermi surface, some think it is an atom, and some think it is god and Santa Claus....)

(Particle Theory)

$\theta = 2\pi(T/T')$ for pure mass creation process ratio V/C with masses defined in terms of the ratio of creation rates given by $(VT'/CT')^2 = (V/C)^2$ for an initial state CT and a final state CT'. T and T' are related by $T' = T\sqrt{1-\frac{V^2}{C^2}}$, so that if the mass creation rate increases as V, then the amount of mass increases (compared to the original "rest" , mass) until an additional "rest" mass is created, at which point V = C = 0 implies that the mass creation process starts over again for a given "template" $M_0 = CT$

(the source of the mass and its creator is undefined; some think it is a membrane, some think it is Fermi surface, some think it is an atom, and some think it is god and Santa Claus....)

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These processes can be related, but there has to be at least one common parameter relating thought to mass. (either x_c ,X_C or t_c, T_C)

(I describe this in "Creation of the Universe" on my web site):

http://www.flamencochuck.com/files/Misc/The Creation of the Universe Part I.pdf

If GTR changes the one common parameter (god and Santa Claus are at work)... otherwise, there are only points, lines, loops, and spheres (described by EITHER the differential or integral versions of Maxwell's equations)..... (since everything can be stretched or collapsed to these "strings" in the imagination, or if all masses are converted to a common value of C (so there is no structure)....

by Noether's theorem and the conservation of total energy....

(Wheeler's "bits" are quantized "thoughts"; Susskind's "Holographic" imagination requires imaginary waves that extend to imaginary boundary conditions of an imaginary universe....)

The Planck Length (Physical Interpretation)

Reference: http://en.wikipedia.org/wiki/Planck_length

The Planck length is defined as $L_p = \sqrt{\frac{\hbar G}{c^3}}$.

If we consider the total energy of an isolated system (e.g., the Solar System, or the Universe) as described above, then we can set $G = (\frac{C^2}{c^2})c^2 = C^2$ where c is the local "mass creation rate" of light, and C represents the "mass creation rate" of the Universe , so that $(L_p)^2 = \frac{\hbar}{C} = \frac{h}{2\pi C}$ and $\pi(L_p)^2 = \frac{h}{2C}$. If L_p is now considered to be the "Schwarzchild radius", $R_S = CT$ where C is the creation rate of the Universe, and T is the creation time, then we have the Schwarzchild "area" $A_S = \pi R_s^{\,2} = \frac{1}{2}\frac{h}{C}$.

(The factor of ½ appears because the positive and negative radii are degenerate when the system is considered to be "centered" around matter and anti-matter). Then the quantity $\frac{h}{C}$ represents the creation rate per unit Universe, with h the "creation action" for each Universe "cycle".
For each iteration of h(T) = CT, a new universe is created.

The Schwarzchild "area" then represents the area of the total universe.

If we take $h = C = T \left(= R_s = CT\right) = 1$, then C = 1 is the total energy of the Universe at a single Time increment from 0.

This is consistent with Einstein's choice of C = 1 in GTR as a basis for the Minkowski metric for an unperturbed Universe of unit Schwarzchild radius.

Of course, all the constants can be fudged to their local measured values:

c = (c/C)*C, h = (h/H)*H, g = (g/G)*G, where c,h, and g are "local" constants, and C,H, and G are "global" constants

The role (or the lack of it) of the B field (torsion)

One of the approximations Einstein makes is to eliminate torsion (or rather contract components of the tensor representing the B field) around the geodesics, so that the q(v x B) forces are balanced in the Lorentz Force equation F = (q/m)(E + v x B). (If this equation is squared - so the force is balanced (no acceleration of the center of mass), with q = m, one recovers radiation energy in terms of Poynting's vector (after absorbing v into ct' as an altered circumference ($L_{circumference}$ = 2*pi*r = 2*pi*t')

If v is aligned with c, it only increase E in the spatial direction (v = (v/c)*c (Newton and Galileo apply). If v is independent (orthogonal) to c, then STR applies (e.g., the time dilation equation, with M0 = pCT = R), m' = m[SUB]0[/SUB]*gamma. so the V of STR (if +V <> - V) becomes the "curvature" force - this force would normally be a B field loop around the geodesic; if the force is balanced the geodesic is unaffected; if the force is imbalanced, the difference changes the direction of the geodesic in space-time (a "turning" acceleration, or a "rotation". If the B field is balanced, but the E field is not (in the direction of the geodesic, a linear change in velocity occurs (changing the endpoints of the tangents described by the boundary conditions modeled by the difference in mass "length" of the tangents.

This means that turning ("torque", "local curvature') is eliminated from the local description of the geodesic) - the "overlap" of the B fields in a two body problem would normally correspond to mutual gravitation) Since Newton's law has an imbalance in "mass current" (only one planet going in one circular direction), this means the B field due to "permeability" is not included in his derivation; e.g., in the Mercury precession problem the B field contributed by the sun's motion is ignored in the approximation - as a Schwarzchild radius - and the total overlap of the B fields is modeled by a perturbation in space-time - which is a phenomenological model instead of an analytic one involving the energy of a common value of c (as modeled by the Maxwell's equations from Ampere's and Coulombs' laws).

Conclusion

V < C represents “ponderable matter”, V in line with a geodesic represents structure aligned with E; if V is perpendicular to the geodesic, it indicates charge perpendicular to the geodesic (represented by a current loop around it by the right hand rule and a change in orientation of the geodesic if imbalanced – if balanced, it is factored into CT’ in STR). An imbalance (so that there is momentum in either charge or matter) changes the motion accordingly.