Quantum Fluidic Space & Gravity
by
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The true nature of space has never been understood. Before Einstein, many thought that the concept of aether filling space helped explain many of its characteristics. But Einstein abolished that idea with his theory of Relativity. However, later in his life he stated that "space without aether is unthinkable", a complete reversal. In order for light to propagate in space, he thought, then space must be filled with something. My paper asserts that space itself is indeed something, not just filled with something; it is a quantisized energy web resulting from the big bang.

And gravity is simply the result of this quantisized web being able to flow. Thus, both space and gravity would be quantisized. Einstein's mysterious warping of spacetime becomes simply space flowing into mass, the rate of flow being dependent on the amount of mass. This idea is deceptively simple, for it produces some basic accepted equations of Relativity, explains the concept of inertia, the equivalence of inertial and gravitational mass, length shortening, mass increase and more.

The concept is that space is superfluidic in nature and able to flow into and through matter, a kind of partial space sink. After it flows through a sink, space (energy) would re-enter the timeless, dimensionless void from which it came and in which it is embedded. Space itself , as mentioned above, would be the energy web which formed in the void at the big bang, and which is still expanding under the pressure remaining from that bang. From this energy web all things formed, so essentially everything is just modified space (energy).

This fluidic space concept easily explains why objects fall at the same rate in a gravitational field: Were you to throw a pop can, a junk of wood, a bit of Styrofoam unto a river, all these items would acquire the same velocity – that of the river. There is no mysterious voodoo- like force at work here which reaches out somehow and grabs the objects and even more mysteriously adjusts itself to the different mass so that they all fall at the same pace, and there is no equally abstract and mysterious warping of space and time. And space must somehow have an equivalent density, for without it no force could be experienced by an object moving against the flow. This density must be very small and exercised through elastic tension of the perimeter of its elements, but without it there would be no "gravity". Also, equivalent density implies that objects will eventually come to rest – no perfect inertia here. Also, this density limits the speed of objects and energy through space, by requiring a finite, though small, amount of time for the elements of the spatial web to be pushed aside. This limiting speed of course is C, the speed of light.

All this requires the idea of space actually being a real substance which normally, with no mass present, would be immobile except for the universal expansion caused by the big bang. However, with mass present, a local flow begins and produces what we know as gravity, so that actually space and gravity are aspects of one and the same thing.

And obviously, since the equations of Relativity have been proven beyond a doubt, they will still hold in this new concept. But, just as Newton's gravitational equation works in spite of being based on a limited concept, so our modern view of gravity and space must be re-examined and revamped, in spite of Relativity's equations working well.

Some postulates and implications of the fluidic concept:

1. Space is a quantisized energy web whose quanta are of Planck dimensions. Postulate
2. Space has the properties of a superfluid, and exists in the void where time and distance does not exist, and is permitted to pass back into the void by means of "matter" acting as a partial gateway or sink. Postulate
3. Mass is simply confined space, perhaps vortices of space of many different characteristics that were set in motion during the initial big bang, and due to the vanishing viscosity of space, will continue for a long time. Postulate
4. Mass, when not in motion, will pass a constant amount of spatial flux through itself. However, when in motion it will cause a spatial flow around its perimeter because it cannot absorb more flux. Postulate
5. The velocity of the flow into mass is the same as what we call escape velocity. This is a key postulate, and will be used to calculate light bending around the sun. Postulate
6. Length shortening is really space shortening, and mass increase is an illusion; it's not the mass that increases, but its cross sectional area perpendicular to the direction of motion. The Einsteinian expression for length shortening can be arrived at by assuming a moving object creates a bow shock wave and by using simple trigonometric math. Then by using this expression one can derive the Einsteinian "mass" increase equation. Postulate
7. The combined effect of length shortening and area increase produces an oblate spheroid in the case of a spherical mass. Implication
8. "gravitational" and inertial mass are exactly equal
9. Einstein's equivalence principle is fully and simply supported by space flow
10. Length shortening and mass" increase occurs only during acceleration, and once acceleration has ceased the deformed "mass" maintains its form unless it comes to a rest. implication
11. Everything comes to a rest eventually, though this will take an exceedingly long time. implication
12. The mysterious space warping of relativity is really just space flow which warps the path of an object, but the end effect is the same and can be described by the same mathematical concepts. Implication

13. Space has an equivalent pseudodensity, probably exerted through elastic tension in its elements to be able to exert force on "mass" implication
14. E = MC^2 actually reveals the amount of inherent energy available in a volume of space. This can be calculated as in the order of $10^{35}\ joules/m^3$ implication
15. Space has a pressure that is everywhere the same throughout the universe, but this pressure was greater in the past, and continues to decrease, implying that the G of Newton's equation has not been constant over time implication

Basis of the Concept:

Please note that in the following discussion, I will ignore the quark composition of neutrons and protons Had Newton known about nuclear structure, and that neutrons and protons are for the most part the instruments of gravity, and had he believed, as many did, that space was essentially fluidic in nature (for the reasons given above), he would have reasoned out an equation for the gravitational force this way: What determines the strength of the force of attraction between two bodies? Well, the force should be directly proportional to the volume of body1 and directly proportional to the volume of body2, since space flows into the bodies, inversely proportional to the square of the distance between them, and directly proportional to some unknown constant. He would have written $F=k_1\frac{V_1V_2}{S^2}$. He would then have reasoned that it was not really the volume which would determine the amount of flux entering a body, but rather the spherical surface area of the neutrons and protons, so he would write:

$F=c\frac{A_1kxA_2k}{s^2}$, where k is the fraction of each area available for space to flow into the holes in the neutrons ,if you like, that form the sinks for flow. k will lie somewhere in $0<k\leq 1$

Newton would quickly realize that the units of c were those of pressure, so he would write $F=P\frac{A_1A_2k^2}{s^2}$ Eq(1). The $A_1 A_2$ are of necessity the total nuclear surface area of each body.

Since $\frac{Gm_1m_2}{s^2}$ = $\frac{PA_1A_2k^2}{s^2}$ where k is the fraction of the area available for space flow, then $P=\frac{Gm_1m_2}{A_1A_2k^2}$ Eq(2) Newtons/ meter squared.

Another way to derive $F=\frac{PA_1A_2k^2}{S^2}$: If you were caught in the spatial flow of a large mass, not aware of that mass , you might reason that the force you were experiencing was directly proportional to your area exposed to the flow , directly proportional to the flow velocity, directly proportional to the equivalent density of the flow. So you would write $F=VA_1(1-k)n$ where n is the equivalent density Eq(3) .The (1-k) factor arises because if k is the proportion of the area thats permits thru flow, then (1-k) has to represent the fraction of the area that is available for space to push against.

An expression for V, which I postulate is really the same as escape velocity (which idea I will elaborate later), might be derived this way: if you were aware of A_2, the larger mass, you would deduce that V must be directly proportional to its area, directly proportional to P because the greater P might be, the faster the flow becomes, inversely proportional to S^2, inversely proportional to the viscosity (the thicker the fluid, the slower the flow). So you would write $V = \frac{PA_2 k}{S^2 n}$ Eq(4), which seems reasonable.

Substituting the V of Eq(4) into $F = VA_1(1-k)n$ yields $F = \frac{(PA_1(1-k)A_2 k)}{S^2}$ Eq(5). In order for this equation to produce Eq(1) and maintain the derivation, then the (1-k) factor in this equation must =k and must be 1/2, implying that the same amount of area is used for a sink as for pressure This means that ½ the total nucleic area acts as sink and ½ as area exposed to pressure(when caught in spatial flow caused either by another mass or by motion of the discussed mass itself through the spatial web. This is exactly equivalent to equating "gravitational" mass to inertial mass, since the area that resists flow is equal to the area that permits flow.

Now, P may be calculated from EQ(2). A_1 and A_2 The total nuclear surface area =

total mass, eg m_1 divided by the mass of 1 neutron to give the total number of neutron, then multiplied by the area of 1 neutron, ie $A_1 = \frac{m_1}{m_n} \times A_n$. Now $\frac{A_n}{m_n} \approx 2.3x10^{-3} \frac{m^2}{kg}$ (assuming mass of $1.67x10^{-27} kg - radius of 1.1x10^{-15} m$). Thus $A_1 = 2.3x10^{-3} m_1 \frac{m^2}{kg}$. Similarly for A_2 Putting these values into Eq(2) yields $P = G \frac{(m_1 m_2)}{(2.3x10^{-3} m_1 \frac{m^2}{kg} 2.3x10^{-3} m_2 \frac{m^2}{kg})}$ =

$$G \frac{kg^2}{5.3x10^{-6} m^4} = 1.26x10^{-5} Newtons per m^2$$

A physical interpretation of P:

P would be the present remnant pressure of free space caused initially by the big bang, which is still in the process of happening. This P would have been exceedingly great at the start, then getting less as the volume of space expanded, and this P would also have to be less in the future; since the amount of energy injected into space by the big bang remains constant, then the energy intensity is becoming less as volume increases. P would be practically, at a given time, the same everywhere like the pressure inside a slowly expanding balloon.

One implication of this idea is that C will decrease with time as the spatial web energy decreases until at some point space will perhaps disappear into hyperspace again and C will be nonexistent. Another implication would be that if space is expanding, then either its very elements are expanding or these elements are radiating out from a central position , leaving the nothingness of hyperspace behind, and heading spherically for the nothingness of hyperspace ahead. This latter implication would mean there must be a vast black area ahead and behind us. The former implication would require that the spatial elements be expanding radially and causing an overall radial acceleration.

Analyzing $F = \frac{PA_1 A_2 k^2}{s^2}$:

EQ(4): $P \frac{A_1 A_2 k^2}{s^2} = \sqrt{\frac{PA_1^2 k}{s^2}} \times \sqrt{\frac{PA_2^2 k}{s^2}} = \sqrt{F_1 F_2}$, where F1 and F2 can be taken to be the total independent force exerted on the A1 and A2 respectively, equivalent to if they were totally alone in space. One can further calculate the forces (and consequently the acceleration of space through these areas) from these equations:(EQ5): $P = \frac{F_1}{kA_1 s^2}$ and EQ(6): $P = \frac{F_2}{kA_2 s^2}$

Thus to calculate the Newtonian acceleration at the earth's surface, for example, one would start with the equation $g = \frac{F_2}{M_2} = \frac{(PA_2^2 k)}{(M_2 s^2)}$ EQ(7):

Escape velocity:(take g from Eq.7 above) $V_e = \sqrt{2gs} = \sqrt{\frac{(PA_2^2 k)}{(M_2 s)}}$ EQ(8). Note that this expression for V must be equal to the V of EQ(4) if it to be assumed that escape velocity and space flow velocity are one and the same – a key postulate of this paper.

Note that P (and thereby the resultant "G" value of the present age) is logically temporary, and must decrease as space expands. Also note that the transmission of P's changes must be practically instantaneous throughout the universe (there is no limit to how fast space can communicate with other parts of itself, even though there is a speed limit C for exterior things passing through it).

Acceleration of free space based on P:

The acceleration of free space towards the perimeter of the universe, caused by P, assuming P is constant throughout space, can be calculated this way: accel=force/mass; a=F/M =PA/M (where A is the cross sectional area of the mass M. So,

$$a = P\frac{A}{M} = 1.26x10^{-5} x2.3x10^{-3} kg/m^2$$

$$a = 2.9x10^{-8} m/sec^2$$

Note that the acceleration is directly proportional to the pressure (a constant) and the ratio of neutron cross sectional area to neutron mass (a constant), and is therefore, as with any gravitational acceleration, independent of the mass being accelerated.

Age and radius of the observable universe based on a:

Assuming that at the edge of the observable universe the velocity of recession is C, then

$$c = at \quad \text{where t=age of universe in seconds}$$

$$\text{so} \quad t = \frac{c}{a} = \frac{(3x10^{8})}{(3x10^{-8})} secs = 3x10^{9} \, years$$

The radius would be simply

$$r = ct = 3x10^{8} m/sx3x10^{9} yrsx3.2x10^{7} sec/yr$$

$$r = 3x10^{25} meters$$

New units of force:

ideally required, but I will not use them because of the conceptual difficulties already called for; I will continue to use mass to keep the equations easier to grasp. However, conversion to the proposed new units is easy to accomplish.

Since Force now= area x acceleration, rather than mass x acceleration, the units of F are $\frac{m^3}{sec^2}$. Let the new unit of F be called $1pebru = \frac{1\text{m}^3}{sec^2}$. Since 1m^2 is the nuclear area of 10 kg, then 1 pebru is equivalent to 10 Newton.

Energy: $E = Fxd = \frac{m^4}{sec^2}$. Call the unit of energy a penergy equivalent to $\frac{1\text{m}^4}{sec^2}$ .This is 1 Pebru meter= 10 joules.

A possible explanation for Length shortening:
If space is fluidic, then a neutron moving through it will experience bow shock wave, similar to a jet plane traveling through the atmosphere. This would occur as a spreading of space in front of the neutron and so the neutron, which must conform to the shape of space, shortens in the direction of travel and its mass spreads out at an angle to the direction of travel. This would be true whether the mass were stationary and caught in the space flow of another mass, or simply moving alone through free space. If

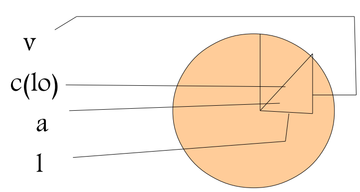
the space flow velocity past the mass is the same in both cases, then of course the effect upon the mass must be the same.

The effect of gravitation upon ideal “clocks” and “measuring rods” at rest at a given point in a gravitational field is identically the same as that caused by a motion of the clock and rod through free space with a velocity equal to that which they would have acquired had they fallen, under the action of gravitation, from infinity to that point. (Einstein's principle of equivalence)

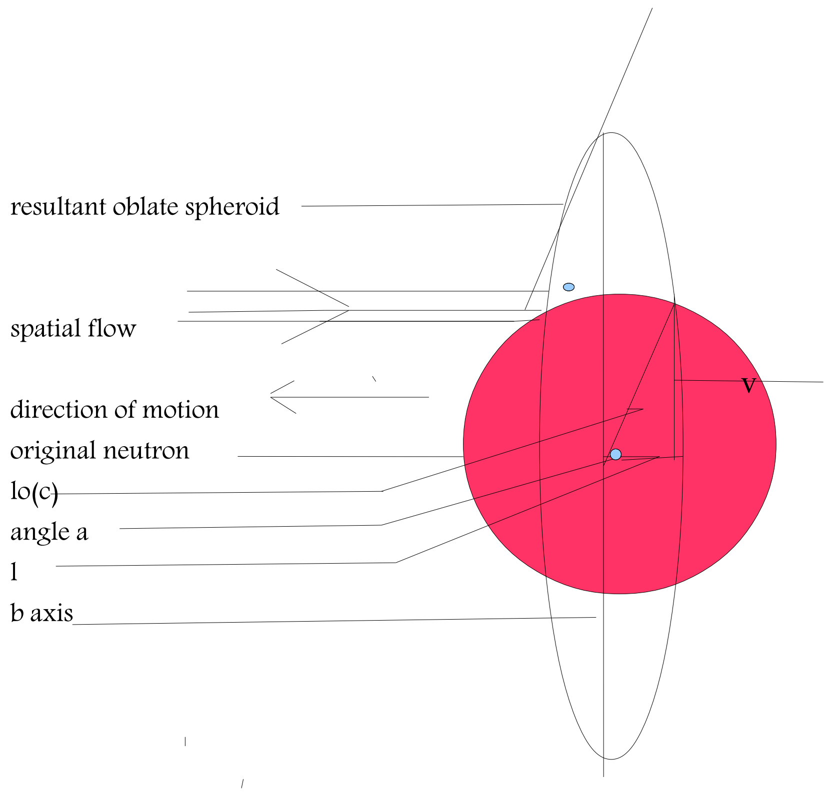
(my note) -Note that the velocity mentioned is exactly the escape velocity at a given point. Space flowing at that velocity (Einstein's gravitational field) against a mass will produce the same effects as the mass moving through free space at that velocity (the escape velocity)! This is exactly what this theory requires, as will be is made clear in the preceding discussions and below.

Let a be the angle between the horizontal and the vector representing the direction of the flow of space around a moving neutron. Might not sin(a) be represented by V/C and cos(a) by l/lo?

The Einsteinian expression for the shortening of length (Eq 10) $\left(l = lo\sqrt{(1 - V^2/C^2)}\right)$ can be rearranged as $\frac{V^2}{C^2} + \frac{l^2}{lo^2} = 1$, which appears trigonometric, so perhaps one could approach the situation this way: Draw two trigonometric circles, one with radius C, the other with radius lo. The radius vectors C and lo sweep simultaneously as V_v approaches C and l approaches zero . Since $\sin^2(a) + \cos^2(a) = 1$, then $\frac{V^2}{C^2} + \frac{l^2}{lo^2} = 1,$ from which the Einsteinian equation $l = l_0\sqrt{1 - v^2/c^2}$ is easily derived.



The possible physical condition which might lead to the trigonometric relationship between l and lo:
I believe space flows around a mass similar to how bow waves flow around a circular object. (Recall that the “mass” is already passing as much space through itself as it is capable of, so any motion will cause a spatial flow around the perimeter.)
The bonding between spatial elements is practically zero, so no resistance is offered to a moving mass of constant velocity; space is dislodged effortlessly in front of the movement and falls in behind the movement immediately with identical pressures existing on both sides, the net effect on the “mass”of the dislodging being zero. The mass will therefore keep moving practically forever.



Assume that the space flow spreads out at an angle a to the horizontal such that sin(a) =v/c. L =lo cos(a) would become the minor radius (the thickness) of the ellipsoid formed by the flattening of the original neutron sphere. The major radius b would be of a size to permit the volume of the ellipsoid to be equal to the original neutron volume (see below).

Einsteinian mass expansion (Fluidic area expansion):

As mass increases in velocity, it flattens perpendicular to the direction of travel, increasing its surface area and thereby requiring a greater force to maintain its velocity against the increasing area of spatial resistance, and thereby also giving the illusion that the total mass is increasing. Simultaneously it shortens in length. This distortion must occur, since space flows around a moving mass, and the mass must conform to the shape of space .I assume that the resultant shape (using the simplest case – that of a neutron or proton) is that of an ellipsoid, more specifically an oblate spheroid, whose volume is calculated by the equation $V = 4/3\pi abt,$ where a,b,t are the 3 axis of the ellipsoid, and where in this case a =b (the 2 major axis are equal) and where t is the axis that shortens in the direction of travel (ie $t = r_0\sqrt{(1-v^2/C^2)}$ where r0 is the original diameter of the neutron. Thus V = $4/3\pi a^2 t$ = $4/3\pi a^2 r_0\sqrt{(1-v^2/C^2)}$.

This V must necessarily be equal to the original V of the neutron = $4/3\pi r_0^3$. Setting these 2 V's equal to each other yields

$$4/3\pi r_0^3 = 4/3\pi a^2 r_0\sqrt{1-v^2/C^2}$$ or , (Eq11)

$$a^2 = \frac{r_0^2}{\sqrt{1-v^2/C^2}} \quad \text{or} \quad \pi a^2 = \frac{\pi r_0^2}{\sqrt{1-v^2/C^2}}$$

which is the same as saying that the cross sectional area while moving is equal to the original cross sectional area divided by the expression $\sqrt{(1-v^2/C^2)}$, and since the cross sectional area is the factor that gives rise to our (mis)conception of mass, then the relativistic mass equation follows by substituting πa^2 with m and πr^2 with m_0 .

Limit of area expansion:
Although the surface area perpendicular to the direction of travel expands according to the Einsteinian expression, it cannot expand to infinity, but can only expand until its thickness t in the above equations is reduced to the minimum spatial amount, ie perhaps the planck length, and then the original "mass" will have completely merged with the fabric of space, ie become one with the original energy web of space from which it came in the first place.

It seems reasonable that the dimensions of the quanta of the energy web would be of the order of the planck length. Eq10 would then have to be amended as follows in order to calculate at what velocity "mass" returns to the fabric of space: $\rho = r_0\sqrt{1-V^2/C^2}$, where ρ is the planck length, and r_0 would have to be the radius of the basic mass particle, the neutron or proton. Solving for V:

(Eq12) $V = C\sqrt{1-\frac{\rho^2}{r_0^2}}$. Plugging in the known values leads to

$$V = C\sqrt{(1-10^{-40})} .$$

Thus, an object never quite reaches C to have its length reduced to the minimum possible (the planck length?).

While r_0 is being reduced to ρ , a is increasing from r_0 to some maximum. For a neutron, this maximum a may be calculated as follows: Substituting V from Eq12 into Eq11 yields $a = \sqrt{\frac{r_0^3}{\rho}}$.

Plugging in known values yields a = 10^{-5} meters. This is the original neutron radius multiplied by a factor of 10^{10} .

What is true for 1 neutron would be true for a mass composed of n neutrons and protons when it reaches the velocity where it returns to the spatial energy web. What is the radius of the disk of thickness ρ that is formed from the n neutrons/protons?

Since all the neutrons/protons in the mass change into disks of thickness ρ , then each neutron/proton must add to the total area of the forming disk. Ie, the total area is simply the the total expanded area of every neutron in the mass.

$A_t = n\pi r_e^2$ Where r = expanded radius of 1 neutron.

$$n = \frac{mass}{massof1neutron}$$

So, $A_t = \frac{mass}{mass1neu}\pi r_e^2$ Eq13

The radius of the total disk formed: $R = \sqrt{\frac{A_t}{\pi}}$ or $R = \sqrt{\frac{mass\pi r_e^2}{\pi mass1neu}}$ or $R = \sqrt{\frac{massr_e^2}{mass1neu}}$

1kg of mass would expand out to a radius of $\sqrt{\frac{1x(10^{-5})^2}{(1.67x10^{-27})}}$ =2.58 x 10^8 (eq 12a) meters.

This is about $2.08x10^{17}m^2$ in area or 100 Earth radiuses, but it is not infinite as relativity would have.

Energy density of the spatial web:

When matter, expanding in cross sectional area in conjunction with increasing velocity, returns to the web, it has kinetic energy. Since the original amount of mass remains constant (it's simply the cross sectional area that changes), then one might consider that the energy would be simply $Mv^2/2$, and at maximum velocity very close to C, $MC^2/2$. Perhaps one could theorize that this energy, absorbed into the web and being essentially web itself and not expelled by it, is of the web energy intensity itself. Since 1 kg of mass spreads out to an area of (by Eq12a) , $2.08x10^{17}m^2$, then the energy intensity would be $\frac{MC^2}{2.08x10^{17}}$ joules per sq meter =(15) $1/2\frac{j}{m^2}$ This square meter would be of ρ thickness. The amount of potential energy in a cubic meter would be (Eq 14)

$.5x\frac{1}{10^{-35}} = .5x10^{35} joules/m^3$. . This is equal to the relativistic energy of $approximately 10^{18} kg.$

Derivation of $E = MC^2$ from simple differential calculus:
(again, I will use mass units rather than area, to avoid confusion:the translation to the new unit may be made after the mass calculation)
This equation may be derived without complex math, without resorting to relativity except for using the mass increase formula (which is actually nucleic area increase in my fluidic theory, which has already has been demonstrated as derivable from the principle of fluidic space flow around a mass). I will use mass rather than nucleic area in this derivation, but it is simple to translate the units into my fluidic units, as explained earlier in this paper.

From Newtonian Mechanics, force = mass x acceleration, ie

$$F=ma = m\frac{dv}{dt}$$.

Since we know that mass is a variable once motion has begun, then

$$F=d\frac{(mv)}{dt}$$

And since energy $E=Fs$, where s = distance, then

$$dE=Fds=d\frac{(mv)}{dt}ds=vd(mv)=v[(vdm+mdv)]=v^2dm+mvdv \quad \text{(a)}$$

Now, according to the mass (or area) increase formula, $m=\frac{m_0}{\sqrt{(1-\frac{v^2}{c^2})}}$, or, rearranging,

$$m^2=m_0^2\frac{c}{(c^2-v^2)} \quad \text{or} \quad m^2c^2-m^2v^2=m_0^2c^2$$.

Taking derivatives of both sides, $2c^2 mdm-(2mdmv^2+2m^2vdv)=0$ ..

Dividing by 2m,

$$c^2dm-(v^2dm+mvdv)=0 \quad \text{or} \quad v^2dm=c^2dm-mvdv$$.

Putting this value for v^2dm into (a) above yeilds

$$dE=c^2dm$$, and $$\int dE=\int c^2dm$$ or

$$E=MC^2$$

Energy of the spatial elements of dimensions ρ :

Although what follows is a huge supposition, it is nonetheless intriquing, and at least warrants consideration, because even if it's only a little correct, the results would be of immense importance to science.

One could suppose that the basic structural elements might be 3 dimensional triangular or rectangular, of sides ρ the planck length 10^{-33} *meters* , if space is to completely filled by these elements, or of radius ρ if they are spherical, in which case an area between spheres would be non-space. At any rate the volume of an element would be of the order ρ^3 no matter what the configuration.

$\rho^3 = approximately 10^{-99} m^3$. Since the amount of energy in 1 cubic meter = 10^{35} *joules* .

then 1 spatial element would contain $10^{35} x 10^{-99}$ *joules* = 10^{-64} *joules* of potential energy. Perhaps this potential energy would be manifested as the bonding energy between an element and the elements around it and intermeshed with it. If so, this energy could then provide a value for the flowability or viscosity of space.

A wavelength of light of say $6x10^{-7} m$ has an energy of about 10^{-19} joules, which is about $\frac{10^{-19}}{6x10^{-7}} j/m = .167x10^{-12} j/m$ or $10^{-6} j/m^2$.

An element of space has an energy intensity of $½j\ /m^2$ according to 15 above, so it is clear the light wave will not come close to overcoming the inherent energy of space. I would conclude from these figures that the light certainly doesn't overcome the intrinsic bonding energy of a single space element, but easily overcomes the extremely weak bonding energy between elements. As an aside, a single wavelength of light would span about 10^{29} elements. What is the bonding energy between elements? Well, if 10^29 elements are dislodged by 10^{-19} *joules* and that energy is used up in the dislodging, then the maximum intrabonding energy of the elements would be 10^{-48} *joules* . However, we observe light coming from 10^{26} m away (14 billion light years) with just 10% or so loss of energy, supposedly all arising from redshift caused by the recessional speed of the galaxies. If just 1/10 th of that total loss of energy is caused by the viscosity of space then the loss per spatial element would be $\frac{10^{-17} joules}{10^{26} mx10^{33} elementspermeter} = 10^{-76} j/element$ .So, the intrabonding energy would lie according this discussion between $10^{-48} \wedge 10^{-76}$ joules per element.

How then could space exert a pressure on the crossectional area of a mass caught in its flow? I would theorize that the spatial elements of area ρ^2 , have the inherent, possibly elastic, energy postulated earlier of 10^{-70} j/element, and each element in motion exerts via that elasticity, a small pressure on another"mass" area.

But for now its seems the space elements have 3 properties:1.The near zero bonding between elements 2. large inner binding energy 3. a pseudodensity via the elastic energy of its volume or its perimeter .xx

Figuring pseudoflowdensity

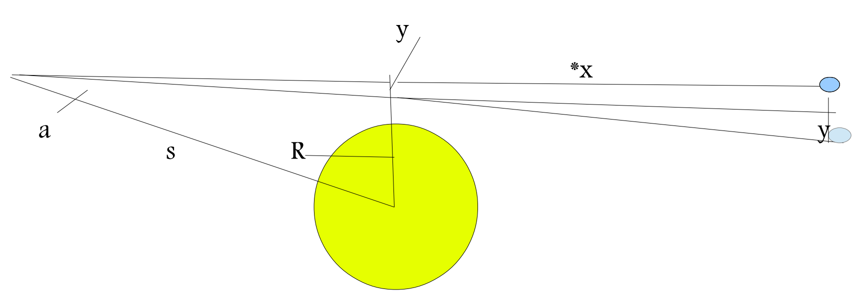
This would be the local equivalent flowdensity exhibited by space, and would be a factor contributing to the force exerted by space upon a nucleic area. Note that this concept simply replaces the elastic border energy of the spatial elements with equivalent mass concepts. The density is not a real mass density. Perhaps a way of figuring this would be like this: Imagine a smaller "mass" caught in the flow of a larger one. An observer on the smaller mass might conclude that the force exerted on his mass, A_1 , would be directly proportional to the size of his own area, directly proportional to the velocity of the spatial flow V, and directly proportional to the thickness or local flow density η of the spatial flow. There would seem to be no other factors to consider , so he would write $F = VA_1 k \eta$ (Eq 14). This force must of necessity be equal to $P\frac{A_1 A_2 k^2}{S^2}$. IE, $F=VA_1 k\eta = P\frac{A_1 A_2 k^2}{S^2}$, from which

$$\eta=\frac{PA_2 k}{VS^2}$$ (Eq15).

To figure the force on any area A at the surface of the earth or any other body, you could use the escape velocity of that body and Eq 14 after figuring the pseudoflowdensity from Eq 15. However, note that the area of the mass must be relativistically adjusted as discussed earlier, ie, $F=V\frac{A_{atrest}}{\sqrt{(1-V^2/C^2)}}n$

** Evidence of light bending caused by space flow.**

If one could calculate the actual amount of y-ward deflection at the sun's surface using escape velocity alone (recall that the velocity of the space flow caused by a mass at any point is none other than what we call escape velocity), then draw a right triangle with y=y-ward deflection and x= distance from the earth to the sun, the angle (a) should simply be y/x. So, lets calculate the y-ward deflection.



In the drawing, the 2 small circles to the right represent the earth at the light-deviated and undeviated positions. To the left, the right triangle is a close enough representation of the x and y co-ordinates of the beam as it moves to the right, because of the very small actual expected y-ward deflection. The angles are exaggerated for simplicity of illustration. The ray actually passes quite close to the sun's surface.

The y-ward velocity induced by the space flow is $v_y=\frac{v_e}{2}\sin(a)$ where v_e is the radial escape velocity at any point. $\frac{V_e \sin(a)}{2}$ Is the approximate average y-ward velocity, since over the vast distance from infinity to the sun, the graph of the escape velocity would be very close to linear. The total y deflection would be given by

$$y = \frac{1}{2}\int_{s=\infty}^{s=r} \sqrt{(\frac{2GM}{s})}\sin(a)\,dt$$ where r is the actual distance the ray passes from the sun's center.

dt can be reasonably replaced by ds/C and sin(a) by R/s, so

$$y = \frac{1}{2}\int_{s=\infty}^{s=r} (\sqrt{\frac{(2GM)}{s}})\frac{R}{s}\frac{ds}{C} \quad = \quad \frac{1}{2}R\frac{\sqrt{(2GM)}}{C}\int_{s=\infty}^{s=r} s^{-(\frac{3}{2})} \quad =$$

Eq A: $$\frac{1}{2}R\frac{\sqrt{(2GM)}}{C}(-2)s^{-(\frac{1}{2})}\int_{s=\infty}^{s=r} ¿ \quad = \quad -R\frac{\sqrt{(2GM)}}{C}(0-\frac{1}{\sqrt{(r)}})$$ so,

$$y = R(\frac{\sqrt{(2GM)}}{C})\frac{1}{\sqrt{r}}$$

When the values for a beam passing close by the sun's surface are put in this equation (ie, when r = R), y turns out to be about 1400000 meters. The distance from Earth to the sun is on average $1.5x10^{11}$ meters, so the angle should be about $\frac{(1.4x10^{6})}{(1.5x10^{11})} = .933x10^{-5}\,radians$ or about 1.87 arcseconds.

The deflection caused on the Earthside is necessarily of the same amount, producing twice the curreently accepted value.

Black Holes & Fluidic Space

When the density of a mass becomes large enough, such as when a star collapses, then the escape velocity at or somewhere above the surface will become C.

When the event horizon is at the very surface of the star, then space flowing in at C would produce the same effect on the now concentrated mass as if the mass were moving through space at C, ie the mass will be flattened perpendicular to the direction of flow to a radius of 10^{10} its original radius, and of 1 planck length thickness ρ , but as outlined earlier in this paper the total concentrated volume would be unchanged. All the neutrons and protons at the surface would now have a diameter of about 10^{-5} meters $(10^{-15}x10^{10})$, and thickness ρ but would still exist as vortices of space -ie, strange, tenuous mass.

If the event horizon were initially after collapse much above the center of the collapsed mass, then space would be flowing against the mass below at greater velocity than C, and one might assume that complete disassociation of the mass into space quanta would occur at the original surface, then diminishing quickly underneath it. In this case the black hole would really have no singularity at the center, and the dissolved mass would be forever lost, transformed into space quanta. This loss of gateway, however, produces a drop in the flow velocity, causing the event horizon and the dissolution area to move in closer to the center of the mass, which process will continue until the velocity at the surface is at C, at which time the shrinking process will stop. At the end of this process the distance from the event horizon to the center of the mass would be given by the usual formula

$$R_E = \frac{2GM_f}{C^2} \quad \text{(a)}$$

but the M is not the original mass; it is the reduced mass after partial dissolution,

The total reduction of mass to Planck thickness and expanded diameter would occur only when the surface is the event horizon because its only there that the flow velocity is at C; under this surface, the velocity begins to drop, until at the center there is no flow. As the center is approached the expanded neutrons should be more and more their original shape. There would be no singularity, just strange mass throughout the volume, becoming more regular mass as you get closer to the center.

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Any new matter entering the black hole would be simply temporarily distributed over the surface, since the "hole" is already saturated with mass. This means new matter would simply increase the surface area of the event horizon, ie new matter momentarily shifts the event horizon farther away from the center of the mass. However, the process of mass disintegration illustrated above immediately ensures that the event horizon returns to its original position, at the surface. This new mass energy (and the original lost mass energy) may be ejected as a ripple in space, which is the same as a "gravitational wave"), or more likely it may escape into the void via the usual nuclear gateways, since escape in the opposite direction may be precluded by the pressure of the normal inflowing space. In this case, the normal flow of space into the nuclear gateways would be suspended until the newly generated space has drained off, ie normal "gravity" above the stars surface would temporarily cease.

The M/R ratio derived from (a) [equal to $1.35x10^{27} kg/m$ seems to indicate that a black hole may be of any size and density that satisfies this ratio. However, I would propose that the highest density a black hole can have is that of a neutron, since we have no proof that neutrons (or, thereby, space) can be compressed into a smaller volume (they can be deformed, as proposed earlier in this paper, but not compressed), and because the reasoning above precludes the formation of any smaller hole. The radius of this neutron black hole may be roughly ascertained in this fashion:

$$M/R = \frac{(\epsilon x V)}{R}$$ Where ϵ is density and V is volume.

Ie $$M/R = \frac{(\epsilon x 4/3 \pi R^3)}{R} = 1.35x10^{27} \frac{kg}{meter}$$

From this $$R^2 = \frac{(1.35x10^{27})}{(\epsilon x 4/3 \pi)}$$ where ϵ = density of a neutron = $$\frac{(.4x10^{18kg})}{m^3}$$

So, R = approx 20KM

In conclusion, the would seem to be no such thing as a black "hole", just black stars. There is no passageway to another universe possible here, no singularity either, just in the smallest case a neutron star with an event horizon at its surface