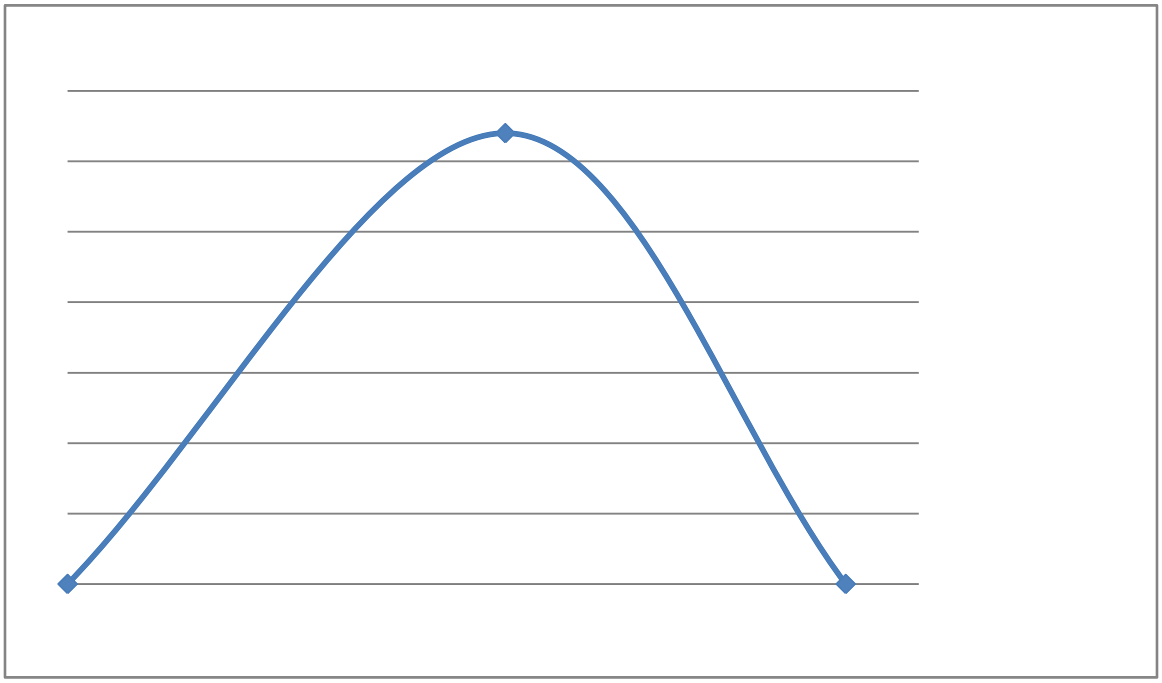
RELATIVE DENSITY OF TIME.

1)***Introduction***

For many centuries now, scientists have been trying to find the origin of time.Perhaps,on more deeper thoughts what is TIME itself? Some think it as some sort of cymatic matter,some think that it is the result of uniform flow of space-time continuum while others think it as quantitative term for ‘existence’. But nobody knows till now what exactly is time?what does it stand for?will it ever end? Etc.In this paper,I have simply tried some tricks with einsteins field equations to get an exact low energy solution for possible physical properties of TIME.

2)TIME AND GRAVITY

There is a correlation between time and gravity.As gravity increases,time approaches at slower pace.As said earlier, we know almost everything more about gravity than about time.I think that time is spread uniformly across the vacuum of universe.It is relative,probably force of somekind which has 4D properties.It has representational value in Ads/cft correspondence for string theory.A serious question to ponder,could time be just the flow of dark energy?



Assume example of this graph.on x axis there is gravity tensor and for y axis it is time.As the curve steadily increases,time keeps on its momentum with respect to gravity but gradually,it slows down to nil while gravity still is expanding,say may be in the singularity of a blackhole.

3)EQUATIONS FOR TIME:-

A]FOR EUCLIDEAN SPACE:-

As demonstrated in the graph,time is inversely proportional to gravity for a relative scale.

$$t \;\alpha\; \frac{1}{g}$$

F=$\frac{GMm}{R^2}$....newtons law where in F=force exerted between 2 objects,

G=gravitation constant,M and m=masses of 2 objects,R=radius between

Them.

$M=\frac{FR^2}{Gm}$

Since $t\ \alpha\ \frac{1}{g}$,

$M_{(t)}=\delta\,\frac{Gm}{FR^2}$

Where δ is a time constant.Its value depends on where it is observed.In Euclidean space,its value is 1.Now,

$D_{(t)}=\frac{M}{V}=\delta\,\frac{VGm}{FR^2}$

Since our observable universe is spherical(or rounded<4d> teseract)

$D_{(t)}=\delta\frac{4\pi GmR^{\,3}}{3FR^2}$,

$D_{(t)}=\delta\frac{4\pi GmR^{\,3}}{3MaR^{\,2}}$.....since F=Ma(newton's second law)

Now,for finding a,we use friedman's equations along with einsteins field equations.

$\vec{a}=\frac{\overline{a}}{\ddot{a}}-\frac{4\pi G}{3}\left(\rho+\frac{3\rho}{C^2}\right)+\frac{\wedge C^2}{3}$

since, $\frac{\overline{a}}{\ddot{a}}$=H where H is the HUBBLE parameter,

$\vec{a}=H-\frac{4\pi G}{3}\left(\rho+\frac{3\rho}{c^2}\right)+\frac{\wedge C^2}{3}$

Therefore,

$D_{(t)}=\frac{4\pi RG}{3H-4\pi G\left(3\rho+\frac{9\rho}{C^2}\right)+\wedge C^2}$

$D_{(t)}=\frac{84.533}{3x70.4-83.77x10^{-11}\left(3\rho+\frac{9\rho}{C^2}\right)+8\pi(\frac{G}{C})^2\rho_{vac}\ \ x\ 9\ x\ 10^{16}}$

$D_{(t)}=-\frac{0.40025}{4\pi G\left(3\rho+\frac{9\rho}{C^2}\right)+8\pi(\frac{G}{C})^2\rho_{vac}\,C^2}$

Where ø is Joshi's coefficient(time expansion-distance)= <u>0.40255</u>

Units(ø) = $\frac{Ly\ m^3 s^3\ m_p}{Kg^2}$

Therefore, the final equation for relative time density for Euclidean space becomes

$$D_{(t)} = -\frac{\emptyset}{4\pi G\left(3\rho + \frac{9\rho}{C^2}\right) + 8\pi\left(\frac{G}{C}\right)^2 \rho_{vac}\, C^2}$$

B]FOR NON-EUCLIDEAN SPACE:-

$D_{(\check{t})}=\frac{V}{M}$.....since t α $\frac{1}{g}$

M=$\frac{FR^2}{gm}$, therefore

$D_{(\check{t})}=\frac{VGm}{FR^2}$

$D_{(\check{t})}=\frac{4\pi R^3 G_\infty M_{BH}}{Ma\,(\frac{GM}{C^2})^2}$

Where, $(\frac{GM}{C^2})^2$ is the schwarzarchild radius M_{BH} is mass of a blackhole and G_∞ is the gravitational tensor in a blackhole which tends to infinity.

$D_{(\check{t})}=\frac{4\pi\,(\frac{GM}{C^2})^3 G_\infty M_{BH}}{Ma\,(\frac{GM}{C^2})^2}$

$D_{(\check{t})}=\frac{4\pi GM}{C^2}$ since the acceleration equal gravitation tensor.

$D_{(\check{t})}=\frac{181.79\ x\ 10^{-11}\ \ x\ M}{9\ x\ 10^{16}}$

$D_{(\check{t})}$=$2.0198\ x\ 10^{\ -26}\ x\ M$ where M is the mass of a blackhole.<u>(Φ) $2.0198\ x\ 10^{\ -26}$</u> is mass-gravity relation constant in a blackhole.

units(Φ)=$\frac{m^3 s^2}{Kg}$

Therefore,the final equation for relative density of time for non-euclidean space is

$$D_{(\check{t})}=\Phi M$$

4)Carrier particle of time?

Every kind of force has its carrier particle in this universe:-

a)Gluon-strong gauge field

b)photon,W boson and Z boson-electroweak gauge field

c)Higgs boson-virtual carrier of Higgs field

d)several types of fermions for Fermionic fields.

Gravity originally is not included in the Standard model.Though many think that GRAVITONS are the particles responsible for excitations of gravitational waves.Its existence is still unproven as quantum gravitation theory is still incomplete and gravitons are too weak to be detected.Since gravity and time are inversely related to each other,It made me think that what if the anti-graviton is carrier of time?

5)Applications for many worlds interpretation,other concepts in quantum mechanics.

As time is considered a force(or pseudo force),it certainly does not defy the Gallilean symmetry of space-time as well as Poincare transformation. So It propensates the The many world interpretation without actual need to prove the wavefunction collapse.Theoretically,just as Gravity can travel through higher dimensions,Time can too.So if speaking of MWI,the decoherence of dirac notion is sorted out completely(as $\langle\Phi|\Psi\rangle$ the complex vector space operators of Gravity-Time interaction become diametrically opposite, Ψ then cannot collapse).Now if considering the penrose conjecture,which generalizes the mass of universe and blackholes as other subunit of space by virtue of positive mass theorem , m$\geq\sqrt{\frac{A}{16\pi}}$ …. Under condition for dominant energy

the newly proven relative time density does not interfere with this inequality.

6)General Solutions for Einstein's Constant

The following solutions are valid for relative density of time.

ρ_{vac} =$\frac{\wedge C^2}{8\pi G}$..where $8\pi G$ is EInsteins energy tensor.

$\wedge$=$\frac{(n-1)(n-2)}{2\alpha^2}$ ..where $\wedge$ is the exact solution for density in vacuum of de-sitter space S(U2).

7)Conclusions.

So far,I have successfully proven that mathematically speaking, time does have physical property of density. It differs for various analogues of ecliptic, hyperbolic spaces such as Lorentz space, Minkowski space ,de-sitter and anti de-sitter space(primary analogue of gallilean and Euclidean space in conformal field theory for string theory).Then,it is safe to assume that time is indeed a pseudo force of unknown nature.Time does not end at planck scale and it affects the function of planck wall.Also,Time may be just a stagnant field of WIMPS(weakly interacting massive particles) which are hypothetical carrier of dark matter.

My original work:-

Sudhanva s joshi