Entropic gravity – A way towards Unification in Physics

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It can be done by the concept of entropic gravity. It helps in making a massless beat of photon- boson (A particle of light – A particle of Mass)

So that it can follow wave - particle duality concept of which entire universe is made of gives rises theory of everything (Stephen Hawking). It supports the famous equation of Albert Einsteins $E = mc^2$ means matter and energy are in the thermodynamic equilibrium. Here ($E = h\gamma$) Energy of photon, (mc^2) is the energy of boson / particle of mass.

According to Stephen Hawking Unification of Physics is required for evolution should follow the Arrow of time. A consistent equation is required which Incorporates entity of : -

a) Law of Thermodynamics.
b) Theory of Relativity.
c) Newton's Gravity concepts.
d) Quantum gravity .
e) Defines Planck's curve.

Overcoming Heisenberg's uncertainty principle is a way in this regard (Setphen Hawking). It explains relativistic equation of Planck's curve in the from of entropy change.

$$\Delta S = \frac{hc}{\lambda T}\left\{1-\left(1-\frac{v^2}{c^2}\right)^{1/2}\right\} \qquad (1)$$

(Refers to paper IJCRT – 181067)

When we combine "Theory of Relativity" with "Quantum mechanics" It can be shown that our Universe is energetically finite.

$$\Delta x \cdot \Delta p \geq \frac{h}{4\pi}$$

or $$\Delta x \cdot \Delta p = \frac{h}{4\pi} \cdot \frac{\Delta S}{\Delta S}$$

$$= \frac{h}{2\pi} \frac{T}{2E} \Delta S$$

(Here $E = \frac{1}{2} N k_b T$, If $N = 1$ then $E = \frac{1}{2} k_b T$).

or $$\frac{\Delta x \cdot \Delta p \cdot 2\pi \cdot k_b}{h} = \Delta S$$

or $$\frac{\Delta x \cdot \Delta p \, 2\pi k_b}{h} = \frac{hc}{\lambda T} \left\{ 1 - \left(1 - \frac{v^2}{c^2} \right)^{1/2} \right\}$$

(From eq (1))

Here, ($\lambda T = b =$ weins constant)

Hence, $$\boxed{\frac{\Delta x \cdot \Delta p \, 2\pi k_b}{h} = \frac{hc}{\lambda T} \left\{ 1 - \left(1 - \frac{v^2}{c^2} \right)^{1/2} \right\}}$$

If $v = c$, then.

$$\boxed{\frac{\Delta x \cdot mc \cdot 2\pi k_b}{h} = \frac{hc}{\lambda T} = \Delta S}$$

Here,

mc = momentum of boson.

$\frac{h}{\lambda}$ = momentum of photon.

Above equation combines theory of quantum mechanics with theory of relativity to explain Planck's Curve in the form of entropy change.

Again,

$$\Delta G = T\Delta S + S\Delta T$$

For black body, $\Delta G = 0$

$$T\Delta S = -S\Delta T$$

Free energy changes of Photon = - Free energy changes of boson