

Behavior of quantum in gravitation

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Here is proposed a new equation for speed of light in gravitation.

$$c_{gr}^2 + v_{esc}^2 = c^2 \quad (1)$$

c_{gr} - speed of light in gravitation

v_{esc} - gravitation escape velocity

From it follows equations for energy of atom:

$$E_{atom} = E_{inner} + E_{potential} = m * c_{gr}^2 + m * v_{esc}^2 = m * c^2 \quad (2)$$

and for energy of quantum:

$$E_{quantum} = E_{kinetic} + E_{potential} = h * f * \left(1 - \frac{v_{esc}^2}{c^2}\right) + h * f * \frac{v_{esc}^2}{c^2} = h * f \quad (3)$$

Now the energy atom emits is equal to:

$$E_{emission} = \Delta E_{inner} = \Delta E_{atom} * \left(1 - \frac{v_{esc}^2}{c^2}\right) \quad (4)$$

And emission frequency is equal to:

$$f = \frac{E_{emission}}{h} \quad (5)$$

Like we see the frequency of quantum depends on the gravitation where it was emitted .
But after emission the quantum travels in space with constant frequency.
Only speed of quantum is changing in gravitation.
Also kinetic and potential energies are interchanging during this travel. See equation (3).

This view well explains all known behavior of quantum in gravitation.

But here it is not used curved spacetime paradigm.

This way could be useful to combine classic quantum theory with some none relativistic gravitation theory.