Photon, mass and gravity

chapter about the gravitational force

Gravitational force and acceleration equation (my personal work; it is the law which I'm stating). One of the major consequences of the rest mass reduction in the gravitational field are new equations for the gravitational force and acceleration, where originally, the equation is derived from the free fall of the small object towards a much bigger one; the generalized equation form is a necessity introduced to accommodate the Newton's third law[1] and proper distance for maximum energy density (see number 6 a).

The gravitational force F between bodies 1 and 2 at the distance R, $G \approx 6.67 \times 10^{-11} \frac{Nm^2}{kg^2}$, C- the speed of light, m_1 and m_2 the initial masses of the bodies 1 and 2 (as energy measurement at initial conditions m_1 and m_2 does not change during the motion if the system is isolated; on the other hand, the rest mass changes even in isolated systems, see number 6 b).

$$F = G\frac{m_1 m_2}{R^2}\frac{1}{1-\frac{2G(m_1+m_2)}{RC^2}}$$

And due to $F=F_{12}=F_{21}=m_1 a_1$, the gravitational acceleration *a;* of the body 1 toward body 2 is derived from $m_1 a = G\frac{m_1 m_2}{R^2}\frac{1}{1-\frac{2G(m_1+m_2)}{RC^2}}$ as:

$$a = G\frac{m_2}{R^2}\frac{1}{1-\frac{2G(m_1+m_2)}{RC^2}}$$

Functions F and *a* are defined for:

$\frac{2G(m_1+m_2)}{C^2} < R$ (In this region the gravitational force is attractive with large values as R goes near $\frac{2G(m_1+m_2)}{C^2}$)

[1] "When one body exerts a force on a second body, the second body simultaneously exerts a force equal in magnitude and opposite in direction on the first body."

$0 < R < \frac{2G(m_1+m_2)}{C^2}$ (In this region the gravitational force is repulsive with large values as R goes near$\frac{2G(m_1+m_2)}{C^2}$).

posted book review will be greatly appreciated

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