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Equations of Astroparticles Dynamics.

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ABSTRACT

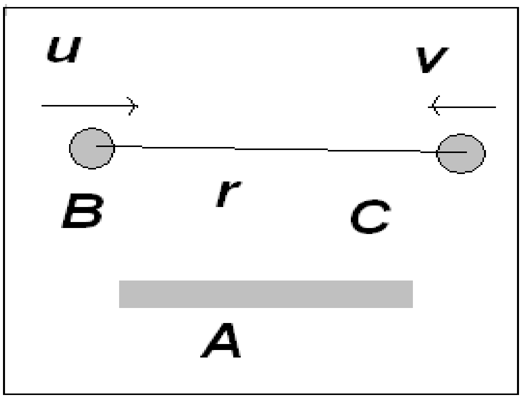
If two astroparticles (separated at a distance 'r' respect to the reference frame 'A') move to their centre of mass due to gravitational field and a man sited in 'A' reference frame measures their velocities as 'u' & 'v'.

Then the relation among 'u', 'v' & 'r' will be $C^2\ln\left[\frac{1}{\left(1-\frac{x^2}{c^2}\right)}\right]=\frac{2Gm_0}{r}$

Where $x=\frac{(u+v)}{\sqrt{\left\{\left(1-\frac{u^2}{c^2}\right)\left(1-\frac{v^2}{c^2}\right)+\frac{(u+v)^2}{c^2}\right\}}}$

KEYWORDS :

Methodology:(Part 1)



If two astroparticles(B &C) (separated at a distance 'r' respect to the reference frame 'A') move to their centre of mass due to gravitational field and a man sited in 'A' reference frame measures their velocities as 'u' & 'v'. Now I will consider that 'C' is moving at a speed 'X' respect to 'B'. Then at a time t respect to A, a person sited at B will observe that C closer to a distance

xt\`($t=\frac{t`}{\sqrt{(1-\frac{u^2}{c^2})}}$ respect to B)

Next a person sited at A will observe that the distance between B & C would be decreased by (u+v)t. Then we have to consider two reference frame (A & C). Here A will observe that this distance moved at a velocity v and the distance is attached to C. Now a person sited at C will observe that A is moving but the distance is fixed. So in this time if we consider the distance respect to C that will be

{ (u+v)t}/√(1-$\frac{v\hat{}2}{c\hat{}2}$) [Because according to C, A

is moving at a speed v]

At last if we transform this length respect to B, it will be $\frac{(u+v)t}{\sqrt{(1-\frac{v\hat{}2}{c\hat{}2})}}\sqrt{(1-\frac{x^2}{c^2})}$.

At last we can write

$$xt`=\frac{(u+v)t}{\sqrt{(1-\frac{v\hat{}2}{c\hat{}2})}}\sqrt{(1-\frac{x^2}{c^2})}$$

or $$x=\frac{(u+v)}{\sqrt{\{\left(1-\frac{u^2}{c^2}\right)\left(1-\frac{v^2}{c^2}\right)+\frac{(u+v)^2}{c^2}\}}}$$

Part 2: At first I will consider that rest masses of B & C are m_0 & $m`_0$ According to the Ayan Banua's theory, force acting on C according to B will be $-\frac{m`_0}{(1-\frac{x^2}{c^2})\hat{}\frac{3}{2}}\frac{d}{dt}\frac{dr}{dt}$ [As r is decreasing]

Then the gravitational force on C according to B will be $\frac{Gm`_0 m_0}{r^2\sqrt{(1-\frac{x^2}{c^2})}}$

Equaling them

$$-\frac{m`_0}{(1-\frac{x^2}{c^2})^{\frac{3}{2}}} d\frac{dr}{dt} = \frac{Gm`_0 m_0}{r^2\sqrt{(1-\frac{x^2}{c^2})}} dr\, \frac{dt}{dr}$$

Or $$-\frac{\frac{dr}{dt} d(\frac{dr}{dt})}{\left(1-\frac{x^2}{c^2}\right)} = \frac{Gm_0}{r^2} dr$$

Intregating both side, we can getg

$$C^2 \ln\left[\frac{1}{\left(1-\frac{x^2}{c^2}\right)}\right] = \frac{2Gm_0}{r} + k \quad [k=I.C.]$$

At a distance r=∞, we get x=0 and k=0

So the final equation is

$$C^2 \ln\left[\frac{1}{\left(1-\frac{x^2}{c^2}\right)}\right] = \frac{2Gm_0}{r}$$

Where $x = \frac{(u+v)}{\sqrt{\{\left(1-\frac{u^2}{c^2}\right)\left(1-\frac{v^2}{c^2}\right)+\frac{(u+v)^2}{c^2}\}}}$

REFERENCES Relativity-The Special and General Theory | by Albert Einstein | Einstein's Theory of Relativity | by Max Born |