

# Deduction of New Gravitational Formula: $\bar{F} = -\frac{mc^2}{R}$

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Gravity is a great mystery. No one has since given any machinery. In this paper we give a simple machinery. Gravity is the tachyon centripetal force.

Anybody may understand gravitation.

Using the tardyon and tachyon coexistence principle [1]

$$u\bar{u} = c^2 \quad (1)$$

where  $c$  is light velocity in vacuum,  $u \leq c$  tardyon velocity and  $\bar{u} \geq c$  tachyon velocity.

We deduce a new gravitation formula:  $\bar{F} = -\frac{mc^2}{R}$ .

**Figure 1** shows that the rotation  $\omega$  of body  $A$  emits tachyon mass  $\bar{m}$ , which forms the tachyon and gravitation field and gives the body  $B$  revolutions  $u$  and  $\bar{u}$ .

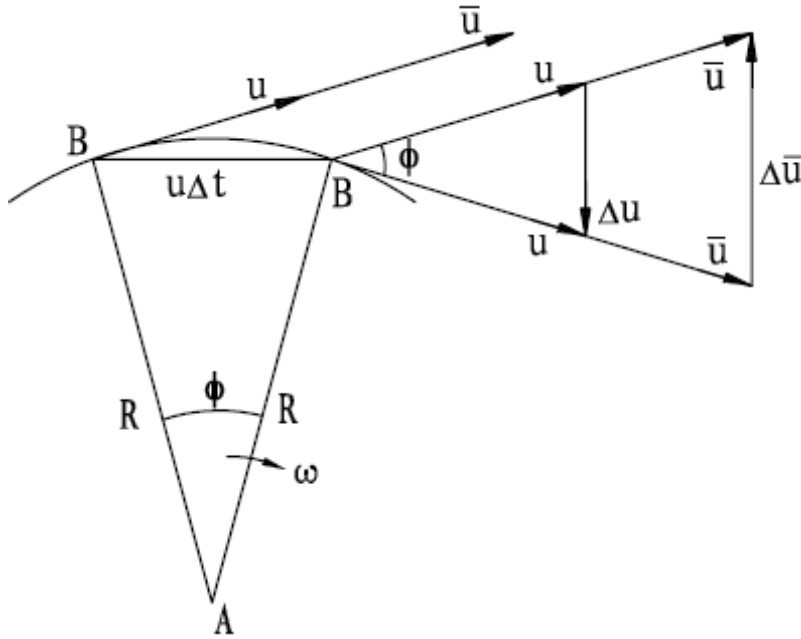


Fig.1. On body  $B$   $\frac{du}{dt}$  and  $\frac{d\bar{u}}{dt}$  coexistence [2].

From Fig. 1 it follows

$$\frac{u\Delta t}{R} = \frac{\Delta u}{u} \quad (2)$$

From (2) it follows the tardyon centripetal acceleration on the body  $B$  [2-6],

$$\frac{du}{dt} = \lim_{\substack{\Delta u \rightarrow 0 \\ \Delta t \rightarrow 0}} \frac{\Delta u}{\Delta t} = \frac{u^2}{R}. \quad (3)$$

From Fig. 1 it follows

$$\frac{u\Delta t}{R} = -\frac{\Delta \bar{u}}{\bar{u}}. \quad (4)$$

From (4) and (1) it follows the tachyon centrifugal acceleration on the body  $B$  [2-6],

$$\frac{d\bar{u}}{dt} = \lim_{\substack{\Delta \bar{u} \rightarrow 0 \\ \Delta t \rightarrow 0}} \frac{\Delta \bar{u}}{\Delta t} = -\frac{u\bar{u}}{R} = -\frac{c^2}{R}. \quad (5)$$

On body  $B$   $\frac{du}{dt}$  and  $\frac{d\bar{u}}{dt}$  coexistence.

From (3) it follows the tardyon centrifugal force on body  $B$  [2-6],

$$F = \frac{M_B u^2}{R}, \quad (6)$$

where  $M_B$  is body  $B$  mass.

From (5) it follows the tachyon centripetal force on body  $B$ , that is gravity [2-6],

$$\bar{F} = -\frac{mc^2}{R}, \quad (7)$$

where  $m$  is the gravitation mass converted into by tachyon mass  $\bar{m}$  which is unobservable but  $m$  is observable.  $\bar{m}$  give all particles mass which replace the Higgs bosons. Elusive Higgs bosons have not been produced at the Large Hadron Collider at CERN. On body  $B$   $F$  and  $\bar{F}$  coexistence.

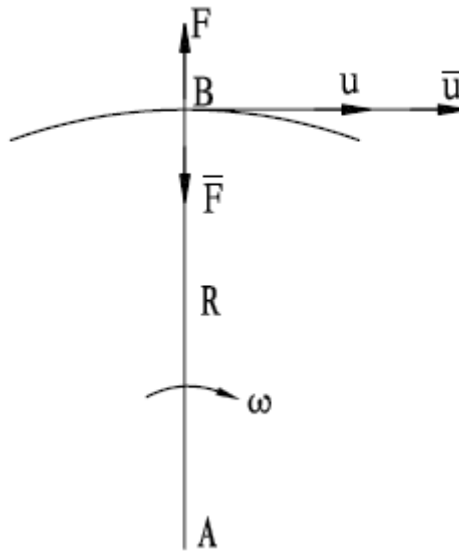


Fig.2. On body  $B$   $F$  and  $\bar{F}$  coexistence[2].

From Fig. 2, it follows

$$F + \bar{F} = 0. \quad (8)$$

From (6), (7) and (8) it follows

$$\frac{m}{M_B} = \frac{u^2}{c^2}. \quad (9)$$

Body  $B$  increases mass  $m$  and centrifugal force is greater than gravitation force, then body  $B$  expands outward. [5,6]

From (7) it follows Newtonian gravitation formula. The  $m$  is proportional to body  $A$  mass  $M_A$ , in (9)  $m$  is proportional to  $M_B$ , is inversely proportional to the distance  $R$  between body  $A$  and body  $B$ . It follows

$$m = k \frac{M_A M_B}{R}, \quad (10)$$

where  $k$  is constant

Substituting (10) into (7) it follows the Newtonian gravitation formula [2-6]

$$\bar{F} = -G \frac{M_A M_B}{R^2}, \quad (11)$$

where  $G = kc^2 = 6.673 \times 10^{-8} \text{ cm}^3 / \text{g} \cdot \text{sec}^2$  is gravitation constant.

## References

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