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Review Article

On Einstein's Equivalence Principle

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Abstract

Both Relativity and Quantum Mechanics are the pillars of modern physics. Quantum mechanics was created by a number of physicists whereas the special and general relativity theories were solely created by Albert Einstein. Einstein revolutionized theoretical physics. Both the special and general relativity theories have been experimentally verified several times by different researchers. The marvelous predictions of general relativity include perihelion precession of mercury, deflection of light by the sun, gravitational redshift of light, gravitational time dilation, gravitational lensing, the gravitational redshift of light, and the Shapiro time delay, frame dragging, relativistic jets, gravitational vortex, gravitational waves, the sun delaying radio signals, proof from orbiting earth, singularities, black holes, etc. But unfortunately, when scientists apply this to quantum mechanics, they encounter inconsistencies and contradictions. To put in other simple words, Einstein's general relativity is incompatible with quantum physics. This is one of the burning problems in physics. This shows that there is a gap in the theory. It is to be studied, analyzed, investigated and probed. Several experts doubt the Equivalence Principle of Einstein. The author thought over this for more than a decade and attempted to substitute numerical values to this equivalence principle. The author has come across a curious result. The author believes that further studies may yield a clue for the fine tuning of general relativity.

Keywords: Einstein; Equivalence Principle; General Relativity; Prediction s of General relativity

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The equation for inertial force is given by

F = m x a ---------- (1)

Where F is force, m is inertial mass of a body and a is acceleration.

The equation gravitational force is given by

F = G x M x m/r2 ---------- (2)

Where M is the larger body, m is a smaller body is Newton's Universal gravitational constant and r is the distance between bodies M and m'.

Now equating (1) and (2),

m x a = G x M x m'/r2 ---------- (3)

Let us assume that m = m', M = r2 and a= G+x.

Substituting the above values in (3) we obtain that

G + x = G ---------- (4)

This implies that x = 0 ---------- (5)

Discussion

Needless to say eqn. (4) is a contradiction. WE have not introduced any new postulate, principle or hypothesis. Only we have assumed the numerical values. Logically and mathematically it is possible. We are free from fetters to assume that the numerically

m = m', the numerical values of r2 and M can be equal. And G is a constant. WE can accelerate the body m such that the numerical values of acceleration a is greater than that of G. So, there is no either mathematical or logical flaw in our proof and assumptions.

Conclusion

Einstein expressed these equivalence principles as the happiest moment in his life. His general relativity applies this [1-11]. The predictions of general relativity have been experimentally verified. But our findings make us curious. Einstein was an ocean among oceans. The purpose of the author is not to find fault with the general theory of relativity. That's why the author avoids lengthiest discussions and conclusions. The author humbly appeals to the research community to fine tune this equivalence principle so that further predictions of general relativity may be explored and unlocked.

No doubt that Einstein was great, greater and the greatest!

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