

To conclude, Einsteins theory of General Relativity reveals that gravitational energy is not a usual form of Newtonian mechanical energy, since it is not possible in the framework of this theory to obtain an expression for the energy of the gravitational field satisfying simultaneously both the conditions that:

1. When added to other forms of energy is conserved and
2. The energy within a definite (three dimensional) region at a certain time is independent of the coordinate system.

Thus in general, as argued by Dirac, gravitational energy cannot be localized [50]. However, as is well known, for the case of gravitational waves all moving only in one direction, gravitational energy can be localized. In this particular case we thus have definite expressions for the total energy and momentum, which are conserved and covariant.