

***A new phenomenology of***  
***force and energy***

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## **Abstract**

Until now in modern physics energy and force have been considered two separate and distinct entities, the various forces of nature have not been linked into a single, coherent theory, and general relativity shows inconsistencies with some mechanical phenomena quantum.

The purpose of this article is to show that energy and force are a single entity which I will refer to as “ *energy force* ” furthermore general relativity can harmonize with quantum mechanics in a single theory but needs to be expanded.

To arrive at this result, I used recent studies carried out on some phenomena of quantum mechanics, in particular on the existence, nature and characteristics of "quantum entanglement". The results obtained from the observation and study of " quantum entanglement " show that energy and force are one and that light is to be considered not as an entity that moves with a constant speed but as a accelerating entity which, under certain circumstances, can exceed the 300,000 km/s barrier.

Finally, a new vision of spacetime is provided and the problem of the dual nature (wave and particle) of light is resolved.

## **Introduction**

entanglement or quantum correlation is a quantum phenomenon, not reducible to classical mechanics, for which, in the condition, foreseen by the superposition principle of quantum mechanics, in which two or more physical systems (typically two particles) form a system whose quantum state is represented by a combination of their individual states, the measurement of an observable of a system (subsystem) also *simultaneously determines* the value of the same observable of the others.

Since the state of quantum superposition is independent of a spatial separation of such systems (subsystems), entanglement implies in a counterintuitive way the presence of distant correlations between them and, consequently, the non-local character of the physical reality.

According to quantum mechanics it is possible to create a system consisting of two particles characterized by certain global values of some observables.

This implies that the value of one of these measured on a single particle (a typical example is spin) instantly influences the corresponding value of the other, which will be such as to maintain the initial global value, according to the conservation law.

This remains true even in the experimentally possible case that the two particles are spaced apart, without any spatial limit. It should be noted that the measurement process relating to the single particle is subject to the quantum rules of probability.

In practice, two particles can be obtained which, according to theory, should possess this characteristic, by making them interact appropriately or by acquiring them from a natural process that originates in the same instant (for example a single radioactive decay), so that they are described by a state defined global quantum, while individually maintaining an indefinite character until a measurement is performed.

I will not dwell on the mathematical formalism as many studies carried out with photons are already known [1], [2]; neutrinos [3] and electrons [4] have demonstrated the existence of quantum entanglement .

### **The energy force**

The existence of quantum entanglement is indisputable however the phenomenon does not agree with the theory of relativity which, among its pillars, has the constant of the speed of light at about 300,000 km/s.

We know that the formula for Energy is:

$$E = mc^2$$

where E=energy, m=mass, c=constant (speed of light in vacuum)

The constancy of the speed of light in a vacuum does not agree with the property of *simultaneity* present in quantum entanglement .

Postulating that light is an accelerating entity and not an entity moving at a constant speed resolves this inconsistency.

Let's rewrite the energy formula:

$$E = m a c t$$

where E=energy, m=mass, a=acceleration (acceleration of light),  $c t = 3 * 10^8$  [m]

So "c t" becomes a constant with the unit [m].

Now the *simultaneity* present in the phenomenon of quantum entanglement is explained as light exceeds the speed of 300,000 km/s remaining the fastest body existing in nature.

If it is true that:

$$E = m a c t$$

You get:

$$m = E / a c t$$

Looking at the new Energy formula:

$$E = m a c t$$

We realize that the Energy formula is identical to that of the Force where:

$$F = ma$$

where F=force, m=mass, a=acceleration

Consequently we have:

$$m = F/a$$

Since  $m = m$  then:

$$F/a = E/a c t$$

Therefore we get:

$$F = E / (3 * 10^8 m) = m a$$

This means that by expanding the theory of general relativity and considering light as an accelerating entity it is possible to conclude that force is equal to energy, therefore force and energy are a single entity which I will here call " **energy force** ".

This means that the various fundamental forces of nature and energy are actually manifestations of a single phenomenon, namely the energy force .

We can assert that what up to now has been called " spacetime " is actually " energy- force " generated and locally curved by the mass.

From now on we will say that the mass of planet Earth locally generates and bends the energy-force .

With regard to light, it can be said that it is a manifestation of energy- force in the form of radiation, when it travels in a vacuum it has a constant speed of about 300,000 km/s, however, in general, it is an accelerating entity capable of exceeding the speeds of 300,000 km/s as in the case of quantum entanglement .

## **Light: particle or wave?**

Until now, light has been considered as a physical entity with a dual nature, i.e. both wave and particle, but here I will show that light only has the nature of a particle.

Let's do a thought experiment and imagine seeing a boat moving in a pond, well the boat moving on the water will generate waves or ripples.

Well we can say that the pond is the energy force , the boat that moves inside it is the photon, finally the wave generated by the boat in the pond is the wave generated by the photon that moves inside the energyforce .

We can therefore assert that light is not both a wave and a particle, light is only a particle (photon) while its wave entity is actually a wave of energy- force which is generated by the displacement of the photon within the same energy- force .

## **Results**

1. The phenomenology of energy- force confirms the correctness of the general and restricted theory of relativity which, however, are limited because they describe a particular case of the motion of light, i.e. the one in which it moves at a constant speed, not taking into account the more general case in which light is an accelerating entity;
2. Quantum entanglement represents an empirical demonstration of light as an accelerating entity and not as an entity capable of moving only with constant speed;
3. Spacetime is actually energy- force generated and locally curved by mass;
4. The new phenomenology of energy force is to be understood as an expansion of the theory of general and special relativity harmonizing them with quantum mechanics
5. Light is the fastest-moving entity that exists in nature and is a manifestation of force energy in the form of radiation.

When it travels in a vacuum it does so with a constant speed of 300,000 km/s however it is able to exceed the threshold of 300,000 km/ s under certain circumstances such as for example in the case of quantum entanglement

## **References**

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