A New Definition for the Theory of Everything Based on Quanta of Energy

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In ancient times, people believed that all matter was composed of four basic elements: earth, water, fire, and air. However, as science progressed, it became clear that these four elements could be broken down into even smaller components—molecules and atoms. According to the classical definition, an atom is the smallest unit of a substance. Later discoveries revealed that atoms themselves are made up of smaller particles, each with unique properties: electrons, protons, and neutrons.

According to the foundational definition, quantum signifies "small and discrete packets". This definition of energy in the universe aligns with the classical idea that everything is composed of smaller components. For instance, molecules are composed of atoms, like the atoms are made up of protons, neutrons, and electrons. Similarly, photons are discrete packets that form part of larger entities such as electrons, protons, and neutrons.

The photon can be defined as the smallest, lightest, and fastest packet that traverses the universe, existing in all galaxies and circulating throughout the cosmos. The standard quantum energy is essentially the photon, whose energy is calculated using Planck's relation ($E=h\vartheta$). It is important to note that the energy of a quantum packet is highly variable and depends on its frequency. For example, considering a frequency range from 300 THz to 900 THz, the energy quanta in this narrow band of the electromagnetic spectrum can vary significantly.

To define a standard unit, it must be constant. In the SI system, the unit of length is one meter, which is a fixed measure, and the unit of mass is one kilogram, also a fixed measure. Therefore, to define a standard quantum of energy, we must introduce a unit with a constant value.

If we now seek to define the true classical concept of a quantum, it refers to the smallest indivisible packet of energy. One of the most accurate representations of such a quantum packet is the photon—an entity that is extremely small, lightest, and travels at the highest possible speed. Photons are ubiquitous, essential for life, and thus serve as the most fitting candidates for representing a quantum of energy. Their constant speed and energy characteristics make them ideal for defining a base unit of energy.

Since we want to define a fixed, fundamental unit of quantum energy, the most appropriate approach would be to consider the photon's constant mass multiplied by the square of its constant speed. As established in earlier works, the actual speed of a photon is 3.3 C. Therefore, the corresponding relationships can be expressed as follows:

$$E_Q = \frac{1}{2}m_p(3.3\,C)^2$$

$$E_Q = \frac{1}{2}(1.64 \times 10^{-36})(3.3 \times 3 \times 10^8)^2$$

$$E_Q = s_Q = 8 \times 10^{-19}\,J$$

Where s_Q is the unit of quantum energy unit which this constant value can be referred to as the standard quantum energy in the universe.

However, as photons exhibit both linear and rotational motions, characterized by their intrinsic helical motion, the experimentally calculated energy will be as follows, which represents the linear quantum translational energy:

$$E_Q = hf = s_Q i$$

Where h is Planck's constant, f is the frequency, and i is a variable coefficient.

Note:

According to experiments conducted at MIT and the University of Michigan—focused on energy measurements at very short distances—it was observed that Planck's equation $E_Q = hf$ does not hold perfectly under such conditions.

With this simple and precise definition of the quantum as the fundamental unit of all energy in the universe, its corresponding formula can be universally applied across all forms of energy. This conceptual foundation enables the development of a comprehensive, efficient, and practical Theory of Everything. Based on this idea, the following generalized relationships can be established:

$$E_Q = s_Q = 8 \times 10^{-19}\,J$$

$$E_{et} = s\,a$$

For each kind of energy, we could calculate the a:

$$a = \frac{diffrent\ kind\ of\ Energy}{s}$$

For instance, for current electric energy, we could say the energy is equal to the energy of n electrons with the mass m_e that move with the speed of v:

$$E = I^2Rt = n\left(\frac{1}{2}m_e v^2\right) = s\,a$$

$$a_e = \frac{I^2Rt}{s}$$

Or for the kinetic energy of Earth because of its rotation around Sun:

$$a_k = \frac{\frac{1}{2} m_E v^2}{s} = \frac{n \frac{1}{2} m_p v^2}{s}$$

Where m_E is the mass of Earth, v is its speed, and m_p is the mass of a photon.

Therefore, all energy in the universe could be formulated in one relation:

$$E_{et} = s\, a$$

$$s = 8 \times 10^{-19}\, J$$

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