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The Compton Effect on Open High Dimensions of Light Energy State Systems

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Abstract: *The purpose of this research is to study the energy of universal natural systems. It was developed from Einstein's energy equation. We proposed new ideas called even 2n and odd $3n_j$ light dimension energy state systems using Jiradeach's postulates. light dimensions were developed from Einstein's Theory of Special Relativity. We applied these new ideas to the Compton effect in open high dimensions and implemented Jiradeach's quantum hypothesis for 2n photon, ephoton, and $3n_j$ ephoton particles. In all cases, the equations had wavelengths called the Compton wavelength of the electron in even 2n, super relative energy, and odd $3n_j$ light dimension energy state systems. This relationship connects the initial and final wavelengths the scattering angle, which confirms Compton's experimental observation in high dimensions that the wavelength shift depends only on the angle at which they are scattered and not on the frequency (or wavelength) of the incident 2n photons, ephotons, and $3n_j$ ephotons. The results demonstrate that 2n photons, ephotons, and $3n_j$ ephotons in high dimensions confirming that photons behave similar to electrons in materials. In the future, these findings may be applicable to the innovation called the "time machine."*

Keywords: *Compton wavelength of the electron in even 2n light dimension energy state systems, even 2n light dimension energy state systems, Jiradeach's postulates, Jiradeach's quantum hypothesis in high dimensions, odd $3n_j$ light dimension energy state systems*

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I. Introduction

Rationale and motivation

Humans use language as a tool for explaining, thinking, and learning[1,2,3,4]. Communication consists of both tangible and intangible factors. The use of language is an undeniably important tool for communication. Humans use language to explain natural phenomena[5,6,7]. Theoretical physics has continually progressed. Theoretical physics and the theory of quantum mechanic[8,9,10,11,12] led to the theories of special relativity[13,14,15] and general relativity. These two theories[16,17,18,19] effect the understanding of natural systems and have been developed by scientists who played important roles in physics research[20,21,22,23]. Noted scientists include Albert Einstein (1879-1955), Sir Isaac Newton (1643-1727), and James Clerk Maxwell (1831-1879).

Albert Einstein explained natural systems using physics. In Einstein's theory of relativity[24,25,26], energy is described using the equation[27,28,29,30],

$$E = mc^2, \qquad (1)$$

where E = the relative energy of a system , m = the mass of the system (m_p = 1.672621$\times$10^{-27} kg), and c = the speed of light (c = 299,792,458 m/s)[31].

The nature of light consists of two ideas:

1) Light is a wave similar to sound (Christiaan Huygens, 1678)[32,33]
2) Light consists of particles (per Newton, it does not bend around obstacles)[34,35,36,37]

These ideas explained the reflection and refraction of light.

Huygens suggested that light waves propagate in a medium called "luminiferous ether"[38,39,40], which is analogous to soundwaves traveling in air.

Thomas Young (1860) and Augustine Fresnel (1816) confirmed these theories[41,42].

a) Interference
b) Polarization $\Longrightarrow$ transversal wave

After considerable research, Maxwell (1864) developed the theory of electromagnetism[43,44,45]. He proposed that light was electromagnetic (EM) radiation and there was only one ethereal medium for all EM phenomena[46,47,48]. Electromagnetic waves (EM waves) are created as the result of vibrations between an electric field and a magnetic field. EM waves are composed of oscillating magnetic and electric fields. Electromagnetic waves form when an electric field comes into contact with a magnetic field. Hence, they are known as "electromagnetic" waves. The electric and magnetic fields of an electromagnetic wave are perpendicular (at right angles) to each other. They are also perpendicular to the direction of the EM wave.

Einstein's postulates

Einstein developed an axiomatic theory called the Theory of Special Relativity (1905). It specifies the properties of space and time.

$\Rightarrow$ Relativity principle concept based on the Lorentz transformation (1899, 1904).

Hendrik Lorentz was the first one to realize that Maxwell's equations are invariant under this transformation.

In 1905, Henri Poincare developed the transformation of the properties of a mathematical group and named it after Lorentz.

Einstein's postulates[49,50,51]

(E1) All laws of physics are the same in every inertial frame of reference.

(E2) The speed of light is independent of the motion of its source.

This paper explains Einstein's relative energy equation that was discussed and reviewed Eq. (1) and led to the discovery of the super nature relativity energy in high dimensions of light energy state systems.

Light added in relative theory field

As previously noted, the addition of the algebraic energy equation to natural systems that Einstein presented had errors. This was applied to the unified field theory[52,53,54,55,56,57,58], which Einstein attempted to add the base power in all natural systems that merged with the same rule[59,60,61,62,63]. Eq. (1) explained that energy cannot be added to a system. The energy totals up like relatively not the energy totals up in nature system like absolute. Recently, the CERN Institute in the US conducted an experiment on Einstein's unified field test theory[64,65,66,67] because the overall energy image in natural systems results in errors, and the pillar of physics theory development at present is unable to seek all of the basis particles[68,69,70,71,72]. The origin of all mass in the universe, which developed as a hit-and-miss idea from Einstein's theory of relativity is the "super natural relative theory." The way we present the idea of energy nature system like absolute in nature system generally of all universe mass. The philosophy of the idea is profoundly from the Buddhism and every religion that has idea conform astonishingly in the answer of all nature universal system throughout in algebraic equation one system (by energy system in all nature system universe theology). It is presented in the following algebraic equation as follows:

$$E = mc^3 , \qquad (2)$$

where E = the energy of a system, m = the mass of the system, and c = the speed of light.

Eq. (2) relates to philosophy education from the ideas of Buddhadasa Bhikkhu (1906-1993)[73,74,75,76], who developed the jigsaw puzzle theory of relativity. The sources of the idea are as follows:

1. Buddha was told that the dharma had existed before he was born. but Buddha had a revelation on the original theory of natural systems. Buddha believed that the universe is the same in the past, present, and future. The enlightenment of Buddhism is called Nirvana[77,78,79,80,81].
2. Laozi, Taoism savant, was told that there were things that had existed before the world. They were neither materialistic nor spiritual and were called Tao[82,83,84,85,86,87].
3. In Hinduism, there is a belief in Atman, the spiritual life principle of the universe, which is regarded as inherent in the real self of an individual[88,89,90,91,92,93,94].
4. Christianity and Islam both involve belief in God[95,96,97,98,99,100].
5. Early physics postulated the existence of ether energy state systems. It existed before theology was established. It included things that could not be measured or physically changed, but there was a transfer of energy in every space and time in nature[101,102,103,104,105,106]. (In this paper, ether transfer is the light energy in each state system).

The previously mentioned factors can be applied to theoretical physics. In Buddhism, there is an enlightenment called Nirvana. In science, it is called the ether, while Christianity and Islam believe in God. Ataman is a belief in Hinduism, in Taoism, of the Tao. These beliefs provide insight into the purpose of religion and physics, which ultimately have a similar meaning.

Nirvana energy = Tao energy = Atman energy = God energy = Ether energy

These concepts can be considered in the theoretical physics jigsaw puzzle development theory and are part of Einstein's relative energy equation because Eq. (2) included ether energy (the ether energy can transfer energy by light energy in each state system). Eq. (2) presents a new idea including ether energy, and its proof can be found in the Appendix.

Even 2n light dimension energy state systems and odd $3n_j$ light dimension energy state systems

1. Even $2n$ light dimension energy state systems are the state of dual light dimension energy state systems in $2n$ light dimension energy state systems ($n = 1, 2, \ldots, \infty$).

2. Odd $3n_j$ light dimension energy state systems are the state of odd light dimension energy state systems in $3n$ light dimension energy state systems (if $n = 1, 3, 5, \ldots, 2j - 1., j \geq 1$).

Applying and discovering the new energy formula

1. The even $2n$ light dimension energy state systems equation is demonstrated as follows:

$$E_{2n-sys} = m_{2n-sys} c_n^{2n} \text{ if } n = 1, 2, \ldots, \infty, \quad (3)$$

where E_{2n-sys} = the even $2n$ light dimension energy state systems in the theory of relativity frames

n = the light dimension energy state system (n = 1, 2, …, ∞)

m_{2n-sys} = the mass energy in the even $2n$ light dimension energy state systems

c_n^{2n} = the even $2n$ light dimension energy state systems speed in power $2n$

2. The odd $3n_j$ light dimension energy state systems

Researchers presented the theory that developed into the new idea from Einstein's theory of relativity as

$$E_{3n_j-sys} = m_{3n_j-sys} c_{n_j}^{3n_j} \text{ if } n_j = 1, 3, 5, \ldots, 2j - 1, \quad (4)$$

where E_{3n_j-sys} = the odd $3n_j$ light dimension energy state systems in super relative theory

n_j = the light dimension energy state systems (n_j = 1, 3, 5, …, $2j - 1, j \geq 1$)

m_{3n_j-sys} = the mass energy of the odd $3n_j$ light dimension energy state systems

$c_{n_j}^{3n_j}$ = the speed energy of the odd $3n_j$ light dimension energy state systems in power $3n_j$

Eq. (4) emerged from the discovery of the new idea of basic quantum field structures in the smallest particle energy state systems. We assumed that the mass smallest light particle energy systems had stress perturbation energy state system[107,108,109,110,111]. There were relaxed point energy state systems[112.113,114,115,116] from a dual system to another energy state system[117,118,119,120]. It was the ether point energy state system[121,122] and connected dual-energy state systems[123,124,125,126] by light ether point energy state systems. These systems were restructured by equilateral triangle-based structural symmetry energy state systems[127,128,129,130]. The idea addressed the equilateral triangle-based structural symmetry particle energy state systems that could renormalize three points of the basic structure in relativity energy state systems[131,132,133,134,135], as well as odd *3n* light dimension energy state systems. By each structure of equilateral triangle-based structures relative symmetry particles in energy state systems consecutive energy (hint: the new idea in string theory[136,137,138,139]).

II. Methods

1. We illustrated the idea of Jiradeach's postulates that the light dimension contains more than one dimension of light.
2. We applied Jiradeach's postulates to Jiradeach's quantum hypothesis in advanced high-dimension quantum fields.
3. We applied Jiradeach's quantum hypothesis in the Compton effect in high-dimension light energy state systems.

III. Result

1. We believe that Jiradeach's postulates present more than one dimension of light.

Jiradeach's postulates

(J1) All of the laws of physics are the same in every inertial frame of reference. They are dependent on each dimension of light energy state systems.

(J2) The speed of light is independent of the motion of its source from each and every dimension of light energy.

2. We applied Jiradeach's postulates to Jiradeach's quantum hypothesis in advanced high-dimension quantum fields.

Jiradeach's quantum hypothesis in high dimensions

Inspired by Planck's quantization of electromagnetic radiation[140,141,142], in 1905, Einstein provided a theoretical explanation for the dependence of photoelectric emissions[143,144,145] on the frequency of the incident radiation. He assumed that light is made of corpuscles that carry an energy called photons[146,147,148,149]. From this explanation, Einstein elucidated a new idea of photoelectric emission on the frequency of the incident in high dimensions of super relative energy.

In even *2n* light dimension energy state systems, the elastic scattering called the *2n* photon from a free electron is composed of corpuscles each carrying an energy $E_{2n} = h^n v^n$. A beam of light of frequency v is incident on a metal surface. Each 2n photon transmits all of its energy $h^n v^n$ to an electron near the surface. In this process, the 2n photon is entirely absorbed by the electron. Thus, the electron will absorb energy *only* in quanta of energy $h^n v^n$, irrespective of the intensity of the incident radiation.

In super relative energy, the elastic scattering called an ephoton (e is the abbreviation of ether) is from a free electron that is made of corpuscles that carry an energy $E = hvc$. When a beam of light of frequency v is incident on a metal surface, each ephoton transmits all of its energy hvc to an electron near the surface. In the process, the ephoton is entirely absorbed by the electron. Thus, the electron will absorb energy *only* in quanta of energy hvc, irrespective of the intensity of the incident radiation.

In odd $3n_j$ light dimension energy state systems, which can be illustrated by the elastic scattering called $3n_j$, an ephoton from a free electron is made of corpuscles each carrying an energy $E_{3n_j} = h^{n_j} v_{n_j}^{n_j} c_{n_j}^{n_j}$. When a beam of light of frequency v is incident on a metal surface, each $3n_j$ ephoton transmits all of its energy $h^{n_j} v_{n_j}^{n_j} c_{n_j}^{n_j}$ to an electron near the surface. In the process, the $3n_j$ ephoton is entirely absorbed by the electron. Thus, the electron will absorb energy only in quanta of energy $h^{n_j} v_{n_j}^{n_j} c_{n_j}^{n_j}$, irrespective of the intensity of the incident radiation.

Jiradeach's quantum hypothesis is the dependence of photoelectric emissions on the frequency of the incident radiation in high light dimension energy state systems in even 2*n* light dimension energy state systems, in super relative energy, and in odd $3n_j$ light dimension energy state systems called 2*n* photons, ephotons, and $3n_j$ ephotons.

3. We applied Jiradeach's quantum hypothesis in Compton effect

3.1. We can explain the Compton effect in even 2*n* light dimension energy state systems more effectively than the Compton effect using the old theorem. It variously covers energy that is explained by the Compton effect in high-dimension light energy state systems.

Compton effect in even 2n light dimension energy state systems

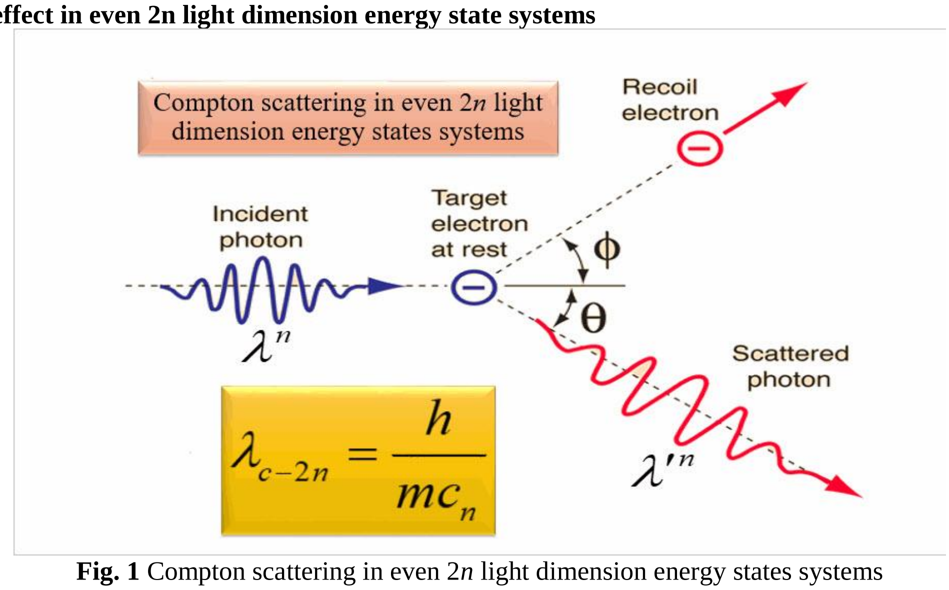

Fig. 1 Compton scattering in even 2*n* light dimension energy states systems

This scattering process in even 2*n* light dimension energy state systems is illustrated by the elastic scattering of a 2*n* photon from a free electron (Fig. 1). The laws of elastic collisions can notably invoke the conservation of energy and momentum.

Considering the incident 2*n* photon of energy in even 2*n* light dimension energy state systems $E_{2n} = h^n v^n$ and the momentum in even 2*n* light dimension energy state systems $p_{2n} = \frac{h^n v^n}{c_n^n}$, the 2*n* photon collides with an electron that is initially at rest. If the 2*n* photon scatters with a momentum in even 2*n* light dimension energy state systems $\vec{p}'_{e-2n}$ at an angle θ while the electron recoils with a momentum in even 2*n* light dimension energy state systems $\vec{p}_{e-2n}$, the conservation of linear momentum yields (if $n = 1, 2, ..., \infty$),

$$\vec{p}_{2n} = \vec{p}_{e-2n} + \vec{p}'_{e-2n}, \tag{5}$$

which leads to

$$\vec{p}^2_{e-2n} = (\vec{p}_{2n} - \vec{p}'_{e-2n})^2 = (\vec{p}_{2n})^2 - 2\vec{p}_{2n}\vec{p}'_{e-2n} + (\vec{p}'_{e-2n})^2, \tag{6}$$

$$\vec{p}^2_{2n} = \vec{p}_{2n}\vec{p}_{2n} = p^2_{2n}$$

$$\vec{p}^2_{e-2n} = \vec{p}_{e-2n}\vec{p}_{e-2n} = p^2_{e-2n}$$

$$\vec{p}_{2n}\vec{p}'_{e-2n} = p_{2n}p'_{e-2n}\cos\theta$$

$$p_{2n} = \frac{h^n v^n_n}{c^n_n} \qquad p^2{}_{2n} = \frac{h^{2n} v^{2n}}{c^{2n}_n}$$

$$p'_{e-2n} = \frac{h^n v'^n_n}{c^n_n} \qquad p'^2_{2n} = \frac{h^{2n} v'^{2n}_n}{c^{2n}_n}$$

$$\vec{p}^2_{e-2n} = p^2_{2n} - 2p_{2n}p'_{e-2n}\cos\theta + p^2_{e-2n}, \tag{7}$$

$$\vec{p}^2_{e-2n} = \frac{h^{2n}v^{2n}_n}{c^{2n}_n} - 2\left(\frac{h^n v^n_n}{c^n_n}\right)\left(\frac{h^n v'^n_n}{c^n_n}\right)\cos\theta + \frac{h^{2n}v'^{2n}_n}{c^{2n}_n}, \tag{8}$$

$$\vec{p}^2_{e-2n} = \frac{h^{2n}v^{2n}_n}{c^{2n}_n} - 2\frac{h^{2n}v^n_n v'^n_n}{c^{2n}_n}\cos\theta + \frac{h^{2n}v'^{2n}_n}{c^{2n}_n}, \tag{9}$$

$$\vec{p}^2_{e-2n} = \frac{h^{2n}}{c^{2n}_n}(v^{2n}_n + v'^{2n}_n - 2v^n_n v'^n_n\cos\theta). \tag{10}$$

Regarding energy conservation, the energy of the electron before and after the collision is respectively given by

$$E_{2n-sys(0)} = m_{2n-sys}c^{2n}_n, \tag{11}$$

$$E_{e-2n-sys} = \sqrt{\vec{p}^2_{e-2n}c^{2n}_n + m^2_{2n-sys}c^{4n}_n}, \tag{12}$$

$$E_{e-2n-sys} = \sqrt{\frac{h^{2n}}{c^{2n}_n}(v^{2n}_n + v'^{2n}_n - 2v^n_n v'^n_n\cos\theta)c^{2n}_n + \frac{h^{2n}}{h^{2n}}m^2_{2n-sys(0)}c^{4n}_n}, \tag{13}$$

$$E_{e-2n-sys} = \sqrt{h^{2n}\left(v^{2n}_n + v'^{2n}_n - 2v^n_n v'^n_n\cos\theta + \frac{m^2_{2n-sys(0)}c^{4n}_n}{h^{2n}}\right)}, \tag{14}$$

$$E_{e-2n-sys} = h^n\sqrt{v^{2n}_n + v'^{2n}_n - 2v^n_n v'^n_n\cos\theta + \frac{m^2_{2n-sys(0)}c^{4n}_n}{h^{2n}}}. \tag{15}$$

The derivation of this relationship using Eq. (10) when the energy of the incident and scattered 2*n* photons in even 2*n* light dimension energy state systems is given by $E_{2n} = h^n v^n_n$ and $E'_{2n} = h^n v'^n_n$, respectively. The conservation of energy dictates that

$$E_{2n} + E_{2n-sys(0)} = E'_{2n} + E_{e-2n-sys}, \tag{16}$$

or

$$h^n v_n^n + m_{2n-sys(0)} c_n^{2n} = h^n v_n'^n + h^n \sqrt{v_n^{2n} + v_n'^{2n} - 2v_n^n v_n'^n \cos\theta + \frac{m_{2n-sys(0)}^2 c_n^{4n}}{h^{2n}}}\ , \tag{17}$$

$$v_n^n + \frac{m_{2n-sys(0)} c_n^{2n}}{h^n} = v_n'^n + \sqrt{v_n^{2n} + v_n'^{2n} - 2v_n^n v_n'^n \cos\theta + \frac{m_{2n-sys(0)}^2 c_n^{4n}}{h^{2n}}}\ , \tag{18}$$

which in turn leads to

$$(v_n^n - v_n'^n) + \frac{m_{2n-sys(0)} c_n^{2n}}{h^n} = \sqrt{v_n^{2n} + v_n'^{2n} - 2v_n^n v_n'^n \cos\theta + \frac{m_{2n-sys(0)}^2 c_n^{4n}}{h^{2n}}}\ , \tag{19}$$

squaring both sides of Eq. (19) and simplifying,

$$\left((v_n^n - v_n'^n) + \frac{m_{2n-sys(0)} c_n^{2n}}{h^n} \right)^2 = \left(\sqrt{v_n^{2n} + v_n'^{2n} - 2v_n^n v_n'^n \cos\theta + \frac{m_{2n-sys(0)}^2 c_n^{4n}}{h^{2n}}} \right)^2 , \tag{20}$$

$$(v_n^n - v_n'^n)^2 + 2(v_n^n - v_n'^n)\frac{m_{2n-sys(0)} c_n^{2n}}{h^n} + \frac{m_{2n-sys(0)}^2 c_n^{4n}}{h^{2n}} = v_n^{2n} + v_n'^{2n} - 2v_n^n v_n'^n \cos\theta + \frac{m_{2n-sys(0)}^2 c_n^{4n}}{h^{2n}}\ , \tag{21}$$

$$v_n^{2n} - 2v_n^n v_n'^n + v_n'^{2n} + 2(v_n^n - v_n'^n)\frac{m_{2n-sys(0)} c_n^{2n}}{h^n} + \frac{m_{2n-sys(0)}^2 c_n^{4n}}{h^{2n}} = v_n^{2n} + v_n'^{2n} - 2v_n^n v_n'^n \cos\theta + \frac{m_{2n-sys(0)}^2 c_n^{4n}}{h^{2n}}\ , \tag{22}$$

$$-v_n^n v_n'^n + (v_n^n - v_n'^n)\frac{m_{2n-sys(0)} c_n^{2n}}{h^n} = -v_n^n v_n'^n \cos\theta\ , \tag{23}$$

$$(v_n^n - v_n'^n)\frac{m_{2n-sys(0)} c_n^{2n}}{h^n} = v_n^n v_n'^n - v_n^n v_n'^n \cos\theta\ , \tag{24}$$

$$(v_n^n - v_n'^n)\frac{m_{2n-sys(0)} c_n^{2n}}{h^n} = v_n^n v_n'^n (1 - \cos\theta)\ , \tag{25}$$

$$\frac{(v_n^n - v_n'^n)}{v_n^n v_n'^n}\frac{m_{2n-sys(0)} c_n^{2n}}{h^n} = (1 - \cos\theta)\ , \tag{26}$$

$$\left(\frac{1}{v_n'^n} - \frac{1}{v_n^n} \right)\frac{m_{2n-sys(0)} c_n^{2n}}{h^n} = (1 - \cos\theta)\ , \tag{27}$$

we end up with

$$\boxed{\left(\frac{1}{v_n'^n} - \frac{1}{v_n^n} \right) = \frac{h^n}{m_{2n-sys(0)} c_n^{2n}}(1 - \cos\theta) = \frac{2h^n}{m_{2n-sys(0)} c_n^{2n}}\sin^2(\frac{\theta}{2})} \tag{28}$$

and the wavelength shift is given by

$$c_n^n \left(\frac{1}{v_n'^n} - \frac{1}{v_n^n} \right) = \frac{c_n^n h^n}{m_{2n-sys(0)} c_n^{2n}}(1 - \cos\theta)\ , \tag{29}$$

$$\frac{c_n^n}{v_n'^n} - \frac{c_n^n}{v_n^n} = \frac{h^n}{m_{2n-sys(0)} c_n^{n}}(1 - \cos\theta)\ , \tag{30}$$

$$(\Delta\lambda)^n = \lambda'^n - \lambda^n = \frac{h^n}{m_{2n-sys(0)}c^{2n}}(1-\cos\theta) = 2\lambda^n_{C-2n}\sin^2(\frac{\theta}{2}) \quad (31)$$

$$\sin\frac{\theta}{2} = \sqrt{\frac{1-\cos\theta}{2}} \qquad \sin^2\frac{\theta}{2} = \frac{1-\cos\theta}{2}$$

$$\left(\sin\frac{\theta}{2}\right)^2 = \left(\sqrt{\frac{1-\cos\theta}{2}}\right)^2 \qquad 2\sin^2\frac{\theta}{2} = 1-\cos\theta$$

$$\lambda^n_{C-2n} = \frac{h^n}{m_{2n-sys(0)}c^n_n}, \quad (32)$$

$$\lambda^n_{C-2n} = \frac{h^n}{m^n c^n_n}, (m_{2n-sys(0)} = m^n) \quad (33)$$

$$\lambda_{C-2n} = \frac{h}{mc_n} \quad (34)$$

where $\lambda_{C-2n} = \frac{h}{mc_n}$ is called the Compton wavelength of the electron in even 2n light dimension energy state systems. This relationship connects the initial and final wavelengths to the scattering angle, confirming Compton's experimental observation that the wavelength shift of X-rays depends only on the angle at which the wavelengths are scattered and not on the frequency (or wavelength) of the incident 2n photons.

In summary, the Compton effect in even 2n light dimension energy state systems confirms that 2n photons behave similar to particles and they collide with electrons similar to material particles.

3.2. We can explain the Compton effect in super relative energy more effectively than the Compton effect using the old theorem. It variously covers energy that is explained by the Compton effect in high-dimension light energy state systems (including ether energy).

Compton effect in super relative energy

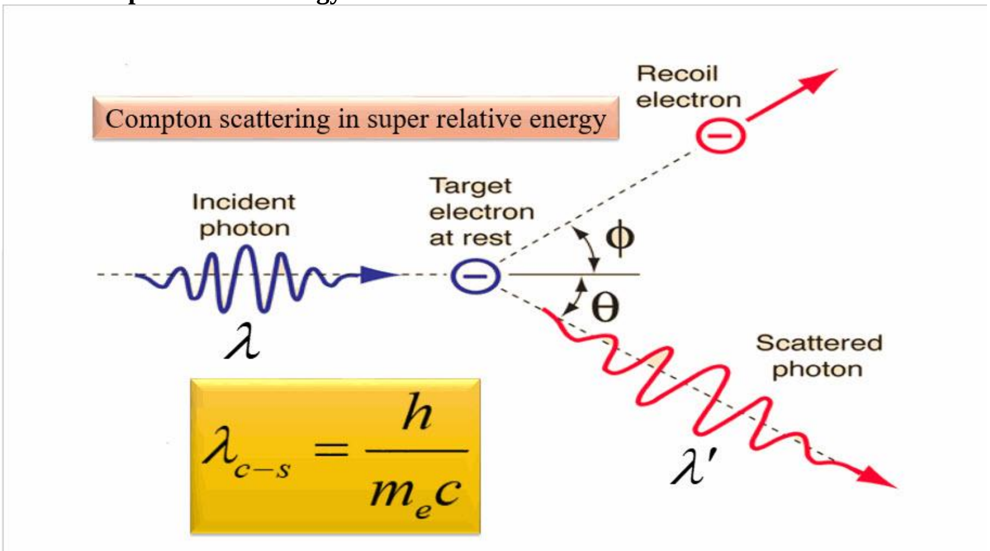

Fig. 2 Compton scattering in super relative energy

This scattering process in super relative energy can be illustrated by the elastic scattering of an ephoton from a free electron (Fig. 2). The laws of elastic collisions can notably invoke the conservation of energy and momentum.

Considering the incident ephoton of energy in super relative energy $E = hvc$ and the momentum in super relative energy $p = \frac{hv}{c}$, the ephoton collides with an electron that is initially at rest. If the ephoton scatters with a momentum in super relative energy $\vec{p}'$ at an angle θ while the electron recoils with a momentum in super relative energy $\vec{p}_e$, the conservation of linear momentum yields

$$\vec{p} = \vec{p}_e + \vec{p}', \tag{35}$$

which leads to

$$\vec{p}_e = \vec{p} - \vec{p}', \tag{36}$$

$$\vec{p}_e^2 = (\vec{p} - \vec{p}')^2 = (\vec{p})^2 - 2\vec{p}\vec{p}' + (\vec{p}')^2, \tag{37}$$

$\vec{p}^2 = \vec{p}\vec{p} = p^2$	$p = \frac{hv}{c}$	$p^2 = \frac{h^2v^2}{c^2}$
$\vec{p}'^2 = \vec{p}'\vec{p}' = p'^2$	$p' = \frac{hv'}{c}$	$p'^2 = \frac{h^2v'^2}{c^2}$
$\vec{p}\vec{p}' = pp'\cos\theta$		

$$\vec{p}_e^2 = p^2 - 2pp'\cos\theta + p'^2, \tag{38}$$

$$\vec{p}_e^2 = \frac{h^2v^2}{c^2} - 2(\frac{hv}{c})(\frac{hv'}{c})\cos\theta + \frac{h^2v'^2}{c^2}, \tag{39}$$

$$\vec{p}_e^2 = \frac{h^2v^2}{c^2} - 2\frac{h^2vv'}{c^2}\cos\theta + \frac{h^2v'^2}{c^2}, \tag{40}$$

$$\vec{p}_e^2 = \frac{h^2}{c^2}(v^2 + v'^2 - 2vv'\cos\theta). \tag{41}$$

Regarding energy conservation, the energy of the electron before and after the collision is respectively given by

$$E_{s(0)} = m_e c^3, \tag{42}$$

$$E_e = \sqrt{\vec{p}_e^2 c^4 + m_e^2 c^6}, \tag{43}$$

$$E_e = \sqrt{\frac{h^2}{c^2}(v^2 + v'^2 - 2vv'\cos\theta)c^4 + \frac{h^2}{h^2}m_e^2c^6}, \tag{44}$$

$$E_e = \sqrt{h^2c^2\left(v^2 + v'^2 - 2vv'\cos\theta + \frac{m_e^2c^4}{h^2}\right)}, \tag{45}$$

$$E_e = hc\sqrt{v^2 + v'^2 - 2vv'\cos\theta + \frac{m_e^2c^4}{h^2}}. \tag{46}$$

The derivation of this relationship using Eq. (41) when the energy of the incident and scattered ephotons in super relative energy is given by $E = hvc$ and $E' = hv'c$, respectively. The conservation of energy dictates that

$$E + E_{s(0)} = E' + E_e, \tag{47}$$

or

$$hvc + m_e c^3 = hv'c + hc\sqrt{v^2 + v'^2 - 2vv'\cos\theta + \frac{m_e^2c^4}{h^2}}, \tag{48}$$

$$\nu+\frac{m_e c^2}{h}=\nu'+\sqrt{\nu^2+\nu'^2-2\nu\nu'\cos\theta+\frac{m_e^2c^4}{h^2}}\,, \tag{49}$$

which in turn leads to

$$(\nu-\nu')+\frac{m_e c^2}{h}=\sqrt{\nu^2+\nu'^2-2\nu\nu'\cos\theta+\frac{m_e^2c^4}{h^2}}\,, \tag{50}$$

squaring both sides of Eq. (50) and simplifying,

$$\left((\nu-\nu')+\frac{m_e c^2}{h}\right)^2=\left(\sqrt{\nu^2+\nu'^2-2\nu\nu'\cos\theta+\frac{m_e^2c^4}{h^2}}\right)^2, \tag{51}$$

$$(\nu-\nu')^2+2(\nu-\nu')\frac{m_e c^2}{h}+\frac{m_e^2c^4}{h^2}=\nu^2+\nu'^2-2\nu\nu'\cos\theta+\frac{m_e^2c^4}{h^2}\,, \tag{52}$$

$$\nu^2-2\nu\nu'+\nu'^2+2(\nu-\nu')\frac{m_e c^2}{h}+\frac{m_e^2c^4}{h^2}=\nu^2+\nu'^2-2\nu\nu'\cos\theta+\frac{m_e^2c^4}{h^2}\,, \tag{53}$$

$$-\nu\nu'+(\nu-\nu')\frac{m_e c^2}{h}=-\nu\nu'\cos\theta\,, \tag{54}$$

$$(\nu-\nu')\frac{m_e c^2}{h}=\nu\nu'-\nu\nu'\cos\theta\,, \tag{55}$$

$$(\nu-\nu')\frac{m_e c^2}{h}=\nu\nu'(1-\cos\theta)\,, \tag{56}$$

$$\frac{(\nu-\nu')}{\nu\nu'}\frac{m_e c^2}{h}=(1-\cos\theta)\,, \tag{57}$$

$$\sin\frac{\theta}{2}=\sqrt{\frac{1-\cos\theta}{2}} \qquad \sin^2\frac{\theta}{2}=\frac{1-\cos\theta}{2}$$

$$\left(\sin\frac{\theta}{2}\right)^2=\left(\sqrt{\frac{1-\cos\theta}{2}}\right)^2 \qquad 2\sin^2\frac{\theta}{2}=1-\cos\theta$$

we end up with

$$\boxed{\left(\frac{1}{\nu'}-\frac{1}{\nu}\right)=\frac{h}{m_e c^2}(1-\cos\theta)=\frac{2h}{m_e c^2}\sin^2(\frac{\theta}{2})} \tag{58}$$

and the wavelength shift is given by

$$c\left(\frac{1}{\nu'}-\frac{1}{\nu}\right)=\frac{ch}{m_e c^2}(1-\cos\theta)\,, \tag{59}$$

$$\frac{c}{\nu'}-\frac{c}{\nu}=\frac{h}{m_e c}(1-\cos\theta)\,, \tag{60}$$

$$\Delta\lambda = \lambda' - \lambda = \frac{h}{m_e c}(1-\cos\theta) = 2\lambda_{C-S}\sin^2(\frac{\theta}{2}), \tag{61}$$

where $\lambda_{C-S} = \dfrac{h}{m_e c}$ is called the Compton wavelength of the electron in super relative energy. This relationship connects the initial and final wavelengths to the scattering angle. It confirms Compton's experimental observation: the wavelength shift of the X-rays depends only on the angle at which they are scattered and not on the frequency (or wavelength) of the incident ephotons.

In summary, the Compton effect in super relative energy effect confirms that ephotons behave similar to particles and they collide with electrons similar to material particles.

3.3. We can explain the Compton effect in odd $3n_j$ light dimension energy state systems more effectively than using the Compton effect in the old theorem. It variously covers energy explained by the Compton effect in high dimension of light energy state systems (including advanced ether energy).

Compton effect in odd $3n_j$ light dimension energy state systems

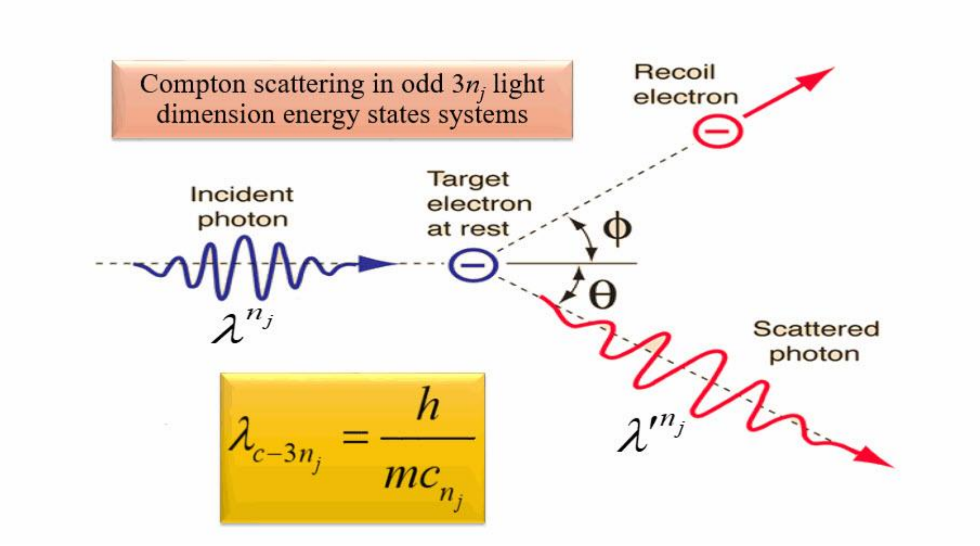

Fig. 3 Compton scattering in odd $3n_j$ light dimension energy states systems

This scattering process in odd $3n_j$ light dimension energy state systems can be illustrated by the elastic scattering of a $3n_j$ ephoton from a free electron (Fig. 3). The laws of elastic collisions can notably invoke the conservation of energy and momentum.

Considering the incident $3n_j$ ephoton of energy in odd $3n_j$ light dimension energy state systems $E_{3n_j} = h^{n_j} v_{n_j}^{n_j} c_{n_j}^{n_j}$ and the momentum in odd $3n_j$ light dimension energy state systems $p_{3n_j} = \dfrac{h^{n_j} v_n^{n_j}}{c_{n_j}^{n_j}}$, the $3n_j$ ephoton collides with an electron that is initially at rest. If the $3n_j$ ephoton scatters with a momentum in odd $3n_j$ light dimension energy state systems $\vec{p}'_{e-3n_j}$ at an angle θ while the electron recoils with a momentum in odd $3n_j$ light dimension energy state systems $\vec{p}_{e-3n_j}$, the conservation of linear momentum yields (if n = 1, 3, 5, …, $2j$–1., $j \geq 1$)

$$\vec{p}_{3n_j} = \vec{p}_{e-3n_j} + \vec{p}'_{e-3n_j}, \tag{62}$$

which leads to

$$\vec{p}_{e-3n_j} = \vec{p}_{3n_j} - \vec{p}'_{e-3n_j}, \tag{63}$$

$$\vec{p}^{\,2}_{e-3n_j} = (\vec{p}_{3n_j} - \vec{p}'_{e-3n_j})^2 = (\vec{p}_{3n_j})^2 - 2\vec{p}_{3n_j}\vec{p}'_{e-3n_j} + (\vec{p}'_{e-3n_j})^2, \tag{64}$$

$$\vec{p}_{3n_j}^2 = \vec{p}_{3n_j}\vec{p}_{2n_j} = p_{3n_j}^2$$

$$\vec{p}_{e-3n_j}^2 = \vec{p}_{e-3n_j}\vec{p}_{e-3n_j} = p_{e-3n_j}^2$$

$$\vec{p}_{3n_j}\vec{p}'_{e-3n_j} = p_{3n_j}p'_{e-3n_j}\cos\theta$$

$$p_{3n_j} = \frac{h^{n_j}v_{n_j}^{n_j}}{c_{n_j}^{n_j}} \qquad p_{3n_j}^2 = \frac{h^{2n_j}v_{n_j}^{2n_j}}{c_{n_j}^{2n_j}}$$

$$p'_{e-3n_j} = \frac{h^{n_j}v'^{n_j}_{n_j}}{c_{n_j}^{n_j}} \qquad p'^2_{3n_j} = \frac{h^{2n_j}v'^{2n_j}_{n_j}}{c_{n_j}^{2n_j}}$$

$$\vec{p}_{e-3n_j}^2 = p_{3n_j}^2 - 2p_{3n_j}p'_{e-3n_j}\cos\theta + p_{e-3n_j}^2 , \tag{65}$$

$$\vec{p}_{e-3n_j}^2 = \frac{h^{2n_j}v_{n_j}^{2n_j}}{c_{n_j}^{2n_j}} - 2\left(\frac{h^{n_j}v_{n_j}^{n_j}}{c_{n_j}^{n_j}}\right)\left(\frac{h^{n_j}v'^{n_j}_{n_j}}{c_{n_j}^{n_j}}\right)\cos\theta + \frac{h^{2n_j}v'^{2n_j}_{n_j}}{c_{n_j}^{2n_j}} , \tag{66}$$

$$\vec{p}_{e-3n_j}^2 = \frac{h^{2n_j}v_{n_j}^{2n_j}}{c_{n_j}^{2n_j}} - 2\frac{h^{2n_j}v_{n_j}^{n_j}v'^{n_j}_{n_j}}{c_{n_j}^{2n_j}}\cos\theta + \frac{h^{2n_j}v'^{2n_j}_{n_j}}{c_{n_j}^{2n_j}} , \tag{67}$$

$$\vec{p}_{e-3n_j}^2 = \frac{h^{2n_j}}{c_{n_j}^{2n_j}}(v_{n_j}^{2n_j} + v'^{2n_j}_{n_j} - 2v_{n_j}^{n_j}v'^{n_j}_{n_j}\cos\theta) , \tag{68}$$

Regarding energy conservation, the energy of the electron before and after the collision is respectively given by

$$E_{3n_j-sys(0)} = m_{3n_j-sys}c_{n_j}^{3n_j} , \tag{69}$$

$$E_{e-3n_j-sys} = \sqrt{\vec{p}_{e-3n_j}^2 c_{n_j}^{4n_j} + m_{3n_j-sys}^2 c_{n_j}^{6n_j}} , \tag{70}$$

$$E_{e-3n_j-sys} = \sqrt{\frac{h^{2n_j}}{c_{n_j}^{2n_j}}(v_{n_j}^{2n_j} + v'^{2n_j}_{n_j} - 2v_{n_j}^{n_j}v'^{n_j}_{n_j}\cos\theta)c_{n_j}^{4n_j} + \frac{h^{2n_j}}{h^{2n_j}}m_{3n_j-sys}^2 c_{n_j}^{6n_j}} , \tag{71}$$

$$E_{e-3n_j-sys} = \sqrt{h^{2n_j}c_{n_j}^{2n_j}\left(v_{n_j}^{2n_j} + v'^{2n_j}_{n_j} - 2v_{n_j}^{n_j}v'^{n_j}_{n_j}\cos\theta + \frac{m_{3n_j-sys}^2 c_{n_j}^{4n_j}}{h^{2n_j}}\right)} , \tag{72}$$

$$E_{e-3n_j-sys} = h^{n_j}c_{n_j}^{n_j}\sqrt{v_{n_j}^{2n_j} + v'^{2n_j}_{n_j} - 2v_{n_j}^{n_j}v'^{n_j}_{n_j}\cos\theta + \frac{m_{3n_j-sys}^2 c_{n_j}^{4n_j}}{h^{2n_j}}} . \tag{73}$$

The derivation of this relationship using Eq. (68) when the energy of the incident and scattered $3n_j$ ephotons in odd $3n_j$ light dimension energy state systems is given by $E_{3n_j} = h^{n_j}v_{n_j}^{n_j}c_{n_j}^{n_j}$ and $E'_{3n_j} = h^{n_j}v'^{n_j}_{n_j}c_{n_j}^{n_j}$, respectively. The conservation of energy dictates that

$$E_{3n_j} + E_{3n_j-\text{sys}(0)} = E'_{3n_j} + E_{e-3n_j-sys} , \tag{74}$$

or

$$h^{n_j}v_{n_j}^{n_j}c_{n_j}^{n_j} + m_{3n_j-sys}c_{n_j}^{3n_j} = h^{n_j}v'^{n_j}_{n_j}c_{n_j}^{n_j} + h^{n_j}c_{n_j}^{n_j}\sqrt{v_{n_j}^{2n_j} + v'^{2n_j}_{n_j} - 2v_{n_j}^{n_j}v'^{n_j}_{n_j}\cos\theta + \frac{m_{3n_j-sys}^2 c_{n_j}^{4n_j}}{h^{2n_j}}} , \tag{75}$$

$$v_{n_j}^{n_j} + \frac{m_{3n_j-sys}c_{n_j}^{2n_j}}{h^{n_j}} = v'^{n_j}_{n_j} + \sqrt{v_{n_j}^{2n_j} + v'^{2n_j}_{n_j} - 2v_{n_j}^{n_j}v'^{n_j}_{n_j}\cos\theta + \frac{m_{3n_j-sys}^2 c_{n_j}^{4n_j}}{h^{2n_j}}} , \tag{76}$$

which in turn leads to

$$(v_{n_j}^{n_j} - v'^{n_j}_{n_j}) + \frac{m_{3n_j-sys}c_{n_j}^{2n_j}}{h^{n_j}} = \sqrt{v_{n_j}^{2n_j} + v'^{2n_j}_{n_j} - 2v_{n_j}^{n_j}v'^{n_j}_{n_j}\cos\theta + \frac{m_{3n_j-sys}^2 c_{n_j}^{4n_j}}{h^{2n_j}}} , \tag{77}$$

squaring both sides of Eq. (77) and simplifying,

$$(v_{n_j}^{n_j} - v_{n_j}'^{n_j})^2 + 2(v_{n_j}^{n_j} - v_{n_j}'^{n_j})\frac{m_{3n_j-sys}c_{n_j}^{2n_j}}{h^{n_j}} + \frac{m_{3n_j-sys}^2 c_{n_j}^{4n_j}}{h^{2n_j}} = v_{n_j}^{2n_j} + v_{n_j}'^{2n_j} - 2v_{n_j}^{n_j}v_{n_j}'^{n_j}\cos\theta + \frac{m_{3n_j-sys}^2 c_{n_j}^{4n_j}}{h^{2n_j}}, \tag{78}$$

$$v_{n_j}^{2n_j} - 2v_{n_j}^{n_j}v_{n_j}'^{n_j} + v_{n_j}'^{2n_j} + 2(v_{n_j}^{n_j} - v_{n_j}'^{n_j})\frac{m_{3n_j-sys}c_{n_j}^{2n_j}}{h^{n_j}} + \frac{m_{3n_j-sys}^2 c_{n_j}^{4n_j}}{h^{2n_j}} = v_{n_j}^{2n_j} + v_{n_j}'^{2n_j} - 2v_{n_j}^{n_j}v_{n_j}'^{n_j}\cos\theta + \frac{m_{3n_j-sys}^2 c_{n_j}^{4n_j}}{h^{2n_j}}, \tag{79}$$

$$-v_{n_j}^{n_j}v_{n_j}'^{n_j} + (v_{n_j}^{n_j} - v_{n_j}'^{n_j})\frac{m_{3n_j-sys}c_{n_j}^{2n_j}}{h^{n_j}} = -v_{n_j}^{n_j}v_{n_j}'^{n_j}\cos\theta, \tag{80}$$

$$(v_{n_j}^{n_j} - v_{n_j}'^{n_j})\frac{m_{3n_j-sys}c_{n_j}^{2n_j}}{h^{n_j}} = v_{n_j}^{n_j}v_{n_j}'^{n_j} - v_{n_j}^{n_j}v_{n_j}'^{n_j}\cos\theta, \tag{81}$$

$$(v_{n_j}^{n_j} - v_{n_j}'^{n_j})\frac{m_{3n_j-sys}c_{n_j}^{2n_j}}{h^{n_j}} = v_{n_j}^{n_j}v_{n_j}'^{n_j}(1-\cos\theta), \tag{82}$$

$$\frac{(v_{n_j}^{n_j} - v_{n_j}'^{n_j})}{v_{n_j}^{n_j}v_{n_j}'^{n_j}}\frac{m_{3n_j-sys}c_{n_j}^{2n_j}}{h^{n_j}} = (1-\cos\theta), \tag{83}$$

$$\left(\frac{1}{v_{n_j}'^{n_j}} - \frac{1}{v_{n_j}^{n_j}}\right)\frac{m_{3n_j-sys}c_{n_j}^{2n_j}}{h^{n_j}} = (1-\cos\theta), \tag{84}$$

we end up with

$$\boxed{\left(\frac{1}{v_{n_j}'^{n_j}} - \frac{1}{v_{n_j}^{n_j}}\right) = \frac{h^{n_j}}{m_{3n_j-sys}}(1-\cos\theta) = \frac{2h^{n_j}}{m_{3n_j-sys}}\sin^2(\frac{\theta}{2}),} \tag{85}$$

and the wavelength shift is given by

$$c_{n_j}^{n_j}\left(\frac{1}{v_{n_j}'^{n_j}} - \frac{1}{v_{n_j}^{n_j}}\right) = \frac{c_{n_j}^{n_j}h^{n_j}}{m_{3n_j-sys}c_{n_j}^{2n_j}}(1-\cos\theta), \tag{86}$$

$$\boxed{\begin{array}{ll} \sin\frac{\theta}{2} = \sqrt{\frac{1-\cos\theta}{2}} & \sin^2\frac{\theta}{2} = \frac{1-\cos\theta}{2} \\ \left(\sin\frac{\theta}{2}\right)^2 = \left(\sqrt{\frac{1-\cos\theta}{2}}\right)^2 & 2\sin^2\frac{\theta}{2} = 1-\cos\theta \end{array}}$$

$$\frac{c_{n_j}^{n_j}}{v_{n_j}'^{n_j}} - \frac{c_{n_j}^{n_j}}{v_{n_j}^{n_j}} = \frac{h^{n_j}}{m_{3n_j-sys}c_{n_j}^{n_j}}(1-\cos\theta), \tag{87}$$

$$\boxed{(\Delta\lambda)^{n_j} = \lambda'^{n_j} - \lambda^{n_j} = \frac{h^{n_j}}{m_{3n_j-sys}c_{n_j}^{n_j}}(1-\cos\theta) = 2\lambda_{C-3n_j}^{n_j}\sin^2(\frac{\theta}{2})} \tag{88}$$

$$\lambda^{n_j}_{C-3n_j} = \frac{h^{n_j}}{m_{3n_j-sys} c^{n_j}_{n_j}} , \quad (89)$$

$$\lambda^{n_j}_{C-3n_j} = \frac{h^{n_j}}{m^{n_j} c^{n_j}_{n_j}} , \; (m_{3n_j-sys} = m^{n_j}) \quad (90)$$

$$\boxed{\lambda_{C-3n_j} = \frac{h}{mc_{n_j}} ,} \quad (91)$$

where $\lambda_{C-3n_j} = \frac{h}{mc_{n_j}}$ is called the Compton wavelength of the electron in odd $3n_j$ light dimension energy state systems that shows the relationship that connects the initial and final wavelengths to the scattering angle. It confirms Compton's experimental observation that the wavelength shift of X-rays depends only on the angle at which the wavelengths are scattered and not on the frequency (or wavelength) of the incident $3n_j$ ephotons.

In summary, the Compton effect in odd $3n_j$ light dimension energy state systems effect confirms that $3n_j$ ephotons behave similar to particles and they collide with electrons similar to material particles.

IV. Discussion

1. High-dimension light identifies the dimension of light in more than one dimension[150,151,152,153,154,155,156]
2. Jiradeach's postulate was variously applied in advanced quantum fields in high-dimension energy state systems[157,158,159,160,161].
3. High-dimension light demonstrates wave-particle duality; moreover and is consistent based on Einstein's research on the nature of light[162,163,164,165]

3.1. We proved the Compton effect in even $2n$ light dimension energy states, in super relative energy, and in odd $3n_j$ light dimension energy state systems by implementing Jiradeach's quantum hypothesis in various high-dimension energy state systems.

3.2. The equations (the Compton effect in even $2n$ light dimension energy state systems, in super relative energy, and in odd $3n_j$ light dimension energy state systems) were proved using the conservation of energy and momentum (principle of symmetry), which were consistent and symmetrical.

V. Conclusion

1. The purpose of this paper was to study the energy of natural systems. The energy of natural systems was developed from Einstein's energy equation. Researchers proposed the $2n$ and odd $3n_j$ light dimension energy state systems using Jiradeach's postulates.
2. Light dimensions were developed from Einstein's theory of relativity. We applied the Compton effect to high-dimension light energy state systems and implemented Jiradeach's quantum hypothesis in high-dimension light energy state systems using $2n$ photons, ephotons, and $3n_j$ ephotons in high-dimension Compton wavelengths.
3. In all cases, the process equations contained the Compton wavelength of electrons in even $2n$ light dimension energy state systems, in super relative energy, and in odd $3n_j$ light dimension energy state systems. This relationship connects the initial and final wavelengths to the scattering angle, confirming that Compton's experimental observation in high dimensions revealed that the wavelength shift depends only on the angle at which they are scattered and not on the frequency (or wavelength) of the incident $2n$ photons, ephotons, and $3n_j$ ephotons. The results showed $2n$ photons, ephotons, and $3n_j$ ephotons in high dimensions, confirming that photons behave similar to electrons in materials. We applied the super relative theory, which is the beginning of the transformation of matter into open space and time in high dimensions.
4. In all cases, the process equations used the principle of symmetry.
5. In the future, these findings may be applicable to the innovation called the "time machine."

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Ⅵ Appendix

Appendix A

1. Proof of Eq. (3)

From
$$E = mc^2, \quad (A.1)$$
$$(E)^n = (mc^2)^n, \quad (A.2)$$
$$E^n = m^n c^{2n}, \quad (A.3)$$
$$E_{2n-sys} = m_{2n-sys} c_n^{2n}. \quad (A.4)$$

In (A.3), E^n is replaced with E_{2n-sys} in even 2*n* light dimension energy state systems in the theory of relativity (the meaning of the equation is presented the even 2*n* light dimension energy state systems in theory of relativity frames).

m^n is replaced with m_{2n-sys} in the even 2*n* light dimension energy y state systems in the theory of relativity (the equation demonstrates the even 2*n* light dimension energy state systems in theory of relativity frames).

c^{2n} is replaced with c_n^{2n} in even 2*n* light dimension energy state systems in the theory of relativity (the equation demonstrates the even 2*n* light dimension energy state systems in theory of relativity frames).

2. Proof of Eq. (4)

From
$$E = mc^3, \quad (A.5)$$
$$(E)^{n_j} = (mc^3)^{n_j}, \quad (A.6)$$
$$E^{n_j} = m^{n_j} c^{3n_j}, \quad (A.7)$$
$$E_{3n_j-sys} = m_{3n_j-sys} c_{n_j}^{3n_j}. \quad (A.8)$$

In (A.7), E^{n_j} is replaced with E_{3n_j-sys} in the odd $3n_j$ light dimension energy state systems in the theory of relativity (the equation demonstrates the odd $3n_j$ light dimension energy state systems in theory of relativity frames).

m^{n_j} is replaced with m_{3n_j-sys} in the odd $3n_j$ light dimension energy state systems in the theory of relativity (the equation demonstrates the odd $3n_j$ light dimension energy state systems in theory of relativity frames).

c^{3n_j} is replaced with $c_{n_j}^{3n_j}$ in the odd $3n_j$ light dimension energy state systems in the theory of relativity (the equation demonstrates the odd $3n_j$ light dimension energy state systems in theory of relativity frames).

Appendix B. Ether calculations

The equation of energy system will be generally similar to Einstein's theory as demonstrated in the following equation:

$$E = \frac{mc^2}{\sqrt{1-\frac{v^2}{c^2}}}, \quad (B.1)$$

where *E* = the energy
m = the mass
c = the speed of light
v = the mass velocity

If v<< c is used to obtain the value of energy system in nature system, generally $E = mc^2$ will follow Eq. (1) as indicated in the following equation:

$$k = \frac{1}{\sqrt{1-\frac{v^2}{c^2}}}, \quad (B.2)$$

where k = the perturbation of the ether energy
c = the speed of light
v = the mass velocity energy

from the knowledge of the ether as delivered speech before the absolute system will can show the perturbation system ether condition as follows from (B.2) lead c multiply by through (do not forget that value c this the condition c in ether system) will get the equation

$$ck = \frac{c}{\sqrt{1-\frac{v^2}{c^2}}}\,, \tag{B.3}$$

which from (B.3) creates a new algebraic equation,

$$\frac{k}{1/c} = \frac{1}{\frac{1}{c}\sqrt{1-\frac{v^2}{c^2}}}\,, \tag{B.4}$$

$\frac{k}{1/c}$ replaced with k_e results in a new equation:

$$k_e = \frac{1}{\frac{1}{c}\sqrt{1-\frac{v^2}{c^2}}}\,, \tag{B.5}$$

where k_e is the constant of the behavioral light ether dimension energy state system from Eq. (1) multiplied by

$$k_e E = k_e mc^2\,, \tag{B.6}$$

From (B.6), replacing $k_e E$ with the symbol E_{e-sys} (keep in mind that value this the energy that have behavioral condition light ether dimension energy state system) as in the following equation:

$$E_{e-sys} = k_e mc^2\,, \tag{B.7}$$

$$E_{e-sys} = \frac{mc^2}{\frac{1}{c}\sqrt{1-\frac{v^2}{c^2}}}\,, \tag{B.8}$$

$$E_{e-sys} = \frac{mc^3}{\sqrt{1-\frac{v^2}{c^2}}}\,, \tag{B.9}$$

If $v << c$ is used to obtain the value of energy system in nature system generally (the ether condition remains the same), the algebraic equation will be

$$E_{e-sys} = mc^3. \tag{B.10}$$

Appendix C. Explanation of odd 3n light dimension energy state systems in super relative theory

From $E = mc^2$ replace by $E_{2n-sys} = m_{2n-sys}c_n^{2n}$,

$v = v_{2n-sys}$, $c = c_{2n-sys}$

results in

$$E_{2n-sys} = \frac{m_{2n-sys}c_n^{2n}}{\sqrt{1-\frac{v_{2n-sys}^2}{c_{2n-sys}^2}}}\,, \tag{C.1}$$

where E_{2n-sys} = the even *2n* light dimension energy state systems in theory of relativity frames

n = the light dimension energy state (*n* = 1, 2, …, ∞)

m_{2n-sys} = mass energy in even *2n* light dimension energy state

c_n^{2n} = even *2n* light dimension energy state speed in power *2n*

c_{2n-sys} = even *2n* lights dimension energy state speed

v_{2n-sys} = velocity in even *2n* lights dimension energy state systems speed

n = the light dimension energy state systems (*n* = 1, 2, …, ∞)

If v_{2n-sys} □ c_{2n-sys} is used to obtain the value called super relativity energy state in even *2n* light dimension energy systems in theory of relativity frames $E_{2n-sys} = m_{2n-sys}c_n^{2n}$, it follows from (B.2) that replacing k with k_{n_j}, $v = v_{n_j}$, $c = c_{n_j}$ will result in:

$$k_{n_j} = \frac{1}{\sqrt{1-\frac{v_{n_j}^2}{c_{n_j}^2}}}, \tag{C.2}$$

where k_{n_j} is the perturbation ether energy state system in n_j dimension energy state systems (n_j = 1, 3, 5,…,2*j*-1., *j* ≥ 1).

From the knowledge of the ether as delivered speech before absolute system illustrates the ether system condition as follows:

from (C.2) lead c^{n_j} multiplied by the (keep in mind that value c^{n_j} is the condition c^{n_j} in *n* dimension ether energy state systems) results in:

$$c^{n_j}k_{n_j} = \frac{c^{n_j}}{\sqrt{1-\frac{v_{n_j}^2}{c_{n_j}^2}}}, \tag{C.3}$$

Replacing c^{n_j} with $c_{3n_j-sys}^{n_j}$, v_{n_j} by v_{3n_j-sys}, c_{n_j} by c_{3n_j-sys} results in:

$$c_{3n_j-sys}^{n_j}k_{n_j} = \frac{c_{3n_j-sys}^{n_j}}{\sqrt{1-\frac{v_{3n_j-sys}^2}{c_{3n_j-sys}^2}}}, \tag{C.4}$$

where $c_{3n_j-sys}^{n_j}$ = odd $3n_j$ light dimension energy state systems speed in power *n*

n_j = the light dimension energy state systems (n_j = 1, 3, 5,…,2*j*-1., *j* ≥ 1)

v_{3n_j-sys} = velocity in odd $3n_j$ light dimension energy state systems

c_{3n_j-sys} = odd $3n_j$ lights dimension energy state systems speed

From (C.4):

$$\frac{k_{n_j}}{1/c_{3n_j-sys}^{n_j}} = \frac{1}{\frac{1}{c_{3n_j-sys}^{n_j}}\sqrt{1-\frac{v_{3n_j-sys}^2}{c_{3n_j-sys}^2}}}, \tag{C.5}$$

$\frac{k_{n_j}}{1/c_{3n_j-sys}^{n_j}}$ is replaced with $k_{3n_j-ether}$, resulting in

$$k_{3n_j-ether} = \frac{1}{\frac{1}{c_{3n_j-sys}^{n_j}}\sqrt{1-\frac{v_{3n_j-sys}^2}{c_{3n_j-sys}^2}}}, \tag{C.6}$$

where $k_{3n_j-ether}$ is the constant of the behavioral condition light ether odd $3n_j$ light dimension energy state systems from (A.4) lead value multiply by the following equation:

$$k_{3n_j-ether}E_{2n-sys} = k_{3n_j-ether}m_{2n-sys}c_n^{2n}, \tag{C.7}$$

from (C.7), replacing $k_{3n_j-ether}E_{2n-sys}$ with E_{3n_j-sys} (keep in mind that the values of the energy that have behavioral condition odd *3n_j* light dimension energy state systems) results in:

$$E_{3n_j-sys} = k_{3n_j-ether}m_{2n-sys}c_n^{2n}, \tag{C.8}$$

$$E_{3n_j-sys} = \frac{m_{2n-sys}c_n^{2n}}{\frac{1}{c_{3n_j-sys}^{n_j}}\sqrt{1-\frac{v_{3n_j-sys}^2}{c_{3n_j-sys}^2}}}, \tag{C.9}$$

$$E_{3n_j-sys} = \frac{m_{2n-sys}c_n^{2n}c_{3n_j-sys}^{n_j}}{\sqrt{1-\frac{v_{3n_j-sys}^2}{c_{3n_j-sys}^2}}}, \tag{C.10}$$

If $v_{3n_j-sys} << c_{3n_j-sys}$ is used to obtain the value called the odd $3n_j$ light dimension energy state systems in theory of super relative (the ether energy condition remains the same) will result in:

$$E_{3n_j-sys} = m_{2n_j-sys}c_n^{2n}c_{3n_j-sys}^{n_j}, \tag{C.11}$$

from (C.11), if $c_{3n_j-sys}^{n_j}$ = $\lambda_{effect-3n_j}c_n^n$ if $\lambda_{effect-3n_j}$ is the effect of odd $3n_j$ light dimension energy state systems results in:

$$E_{3n_j-sys} = \lambda_{effect-3n_j}m_{2n-sys}c_n^{2n}c_n^n, \tag{C.12}$$

results in

$$E_{3n_j-sys} = \lambda_{effect-3n_j}m_{2n-sys}c_n^{3n}, \tag{C.13}$$

replacing $\lambda_{effect-3n_j}m_{2n-sys}$ = m_{3n_j-sys} results in:

$$E_{3n_j-sys} = m_{3n_j-sys}c_n^{3n}, \tag{C.14}$$

c_n^{3n} replacing $c_{n_j}^{3n_j}$ in odd $3n_j$ light dimension energy state systems results in:

$$E_{3n_j-sys} = m_{3n_j-sys}c_{n_j}^{3n_j}, \tag{C.15}$$

In which the super nature relativity energy is in odd $3n_j$ light dimension energy state systems (the equation demonstrates odd $3n_j$ light dimension energy state systems).

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