Who is right?

Lubomir Vlcek

Rokytov 132, 086 01, Slovak Republic

Email: lubomir.vlcek@gmail.com

Through the work of Max Planck, Albert Einstein, Louis de Broglie, Arthur Compton, Niels Bohr, and many others, current scientific theory holds that all particles also have a wave nature (and vice versa).[1] This phenomenon has been verified not only for elementary particles, but also for compound particles like atoms and even molecules. For macroscopic particles, because of their extremely short wavelengths, wave properties usually cannot be detected.[2] Wave–particle duality is an ongoing conundrum in modern physics. Most physicists accept wave-particle duality as the best explanation for a broad range of observed phenomena; however, it is not without controversy.

Albert Einstein , who, in his search for a Unified Field Theory , did not accept wave-particle duality, wrote: [3]

This double nature of radiation (and of material corpuscles)...has been interpreted by quantum-mechanics in an ingenious and amazingly successful fashion. This interpretation...appears to me as only a temporary way out...

The pilot wave model, originally developed by Louis de Broglie and further developed by David Bohm into the hidden variable theory proposes that there is no duality, but rather a system exhibits both particle properties and wave properties simultaneously, and particles are guided, in a deterministic fashion, by the pilot wave (or its " quantum potential ") which will direct them to areas of constructive interference in preference to areas of destructive interference . This idea is held by a significant minority within the physics community.

When in this idea we will replace the "quantum potential" by "electromagnetic potential" (or by " interference of electromagnetic waves"), the idea will be acepted large majority of physicists.

In 1900 Max Planck hypothesized that the frequency of light emitted by the black body depended on the frequency of the oscillator that emitted it, and the energy of these oscillators increased linearly with frequency (according to his constant h, where E = hv).

Theoretical Planck´s oscillator we can replace with circulating electron along ellipse around the nucleus of an atom between two Bohr´s energy levels, while electron moving alternately with acceleration and deceleration. This electron really blinks. When an electron moves at the speed of a higher Bohr energy levels (from afnucleus) to lower (towards perinucleus) radiates spectral lines of certain thickness. (real blinks) For example, spectral line Halfa 656.281 + - 1.4 nm. From the thickness of the spectral lines we can easily identify the smallest (in afnucleus) and largest (in perinucleus) the

speed of the electron around the nucleus of an atom, taking into account the kinetic energy of the electron in the direction of movement and against the movement if we know that according to the Doppler principle is the lowest wavelength (highest frequency) and against the direction of motion of the electron is a wavelength of the highest (lowest frequency).

Physics in the past formulated at least part of the truth about the physical phenomena.

Some ideas, even if they were doubtful and rejectable, are still valid today:

1. Electron radiates electromagnetic waves if and only if moves with acceleration from the higher Bohr´s energy levels to a lower. In atom, as a source of electromagnetic waves , them it then , when it moves from afnucleum to perinucleum along the ellipse . If the electron moves with decelerated motion, when it absorbs energy , while moving from a lower to a higher energy level, in the direction from perinukleum to afnucleum along the ellipse with of very small eccentricity . Eccentricity of the ellipse is maximal, when electron radiates head of series. Minimal, almost zero, eccentricity corresponds to edge series.

Faulty arguments leveled against classical physics - the electron is moving with acceleration along of a spiral towards the nucleus - we will find in Beiser[4] 5.7 The failure of classical physics , p.120 , Fig.5.12 : " Electron in an atom should be according to classical physics, rapidly converge to the nucleus , because as a result of its acceleration radiates energy."

Because the electron flashes **4,568e+14** times per second, i.e. emits energy **4,568e+14** times per second and absorbs energy **4,568e+14** times per second (for spectral line **Hα**). Electron creates in the transmission medium, electromagnetic wave **4,568e+14** times per second and absorbs energy **4,568e+14** times per second (for spectral line **Hα**) - Beiser´s argument is unfounded.

Atom is no oscillator. Atóm resembles to the solar system with the same "planets" (electrons) and different distances from the nucleus. Electron in an atom not to skip, but moves continuously with great speed, which increases from the value **0,002717146 c** (in afnucleum) to **0,0027212042 c** (in perinucleum). Then decreases from the value **0,0027212042 c** (in perinucleum) to **0,002717146 c** (in afnucleum) etc.

Changing the speed of the electron is repeated **9,135877e+14** times per sec. (spectral lines **Hα**).

2. The quantum harmonic oscillator as the quantum-mechanical analog of the classical Planck´s harmonic oscillator we can replace with circulating electron along ellipse around the nucleus of an atom between two Bohr´s energy levels, while electron moving alternately with acceleration and deceleration. Linear harmonic oscillator is only the projection of the real motion of the electrons along the ellipse in the plane perpendicular to the plane of the ellipse.

Or more accurately, is only the projection - of rotating ellipses (Sommerlfeld's ellipses around perinucleus) - in a plane perpendicular to the plane of the ellipses.

In quantum mechanics are used so imprecise and imperfect expressions of motion of electrons around the nucleus.

References

[1] Walter Greiner (2001). *Quantum Mechanics: An Introduction*. Springer. ISBN 3-540-67458-6.

[2] R. Eisberg and R. Resnick (1985). *Quantum Physics of Atoms, Molecules, Solids, Nuclei, and Particles* (2nd ed.). John Wiley & Sons. pp. 59–60. ISBN 047187373X.

[3] Paul Arthur Schilpp, ed, *Albert Einstein: Philosopher-Scientist* , Open Court (1949), ISBN 0-87548-131-7 , p 51.

[4] BEISER, A.: Perspectives of Modern Physics (Czech translation) Academia, Praha 1975.