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# Principle of physical irrationality

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In the Cartesian physics, the Heisenberg uncertainty principle enters the certainty principle points of the space-matter (Principle of physical irrationality), from which the natural way probabilistic method of describing events in the micro world.

Cartesian identity «space ≡ matter» easily transforms the Heisenberg uncertainty principle in the principle of physical irrationality points moving space-matter. Take the known attitude of the Heisenberg uncertainty between the position *x* and momentum p of a particle in space:

$$\Delta x_i \Delta p_i \geq \frac{\hbar}{2}$$

Where « $\hbar$» is Planck's constant (h) divided on 2π.

Note, that here on the right and at the left we have the moment of a momentum and therefore $\Delta x_i = x_i - x_i^0$ defines radius of rotation, and $x_i^0$ is a coordinate of the center of rotation of space-matter. The principle of uncertainty Heisenberg between coordinate and momentum of a particle in space can be written down then so:

$$\Delta p_i \geq \frac{\hbar}{2(x_i - x_i^0)}$$

From this formula we see, that infinitely big momentum is necessary for approach of current coordinate $x_i$ to coordinate of the center of rotation of space-matter $x_i^0$

$$\lim_{x_i \to x_i^0} \Delta p_i \geq \lim_{x_i \to x_i^0} \frac{\hbar}{2(x_i - x_i^0)} = \infty$$

This inequality shows that at reduction of the interval containing a point with coordinate's $x_i^0$, there is an increase in an increment of the momentum necessary for localization of this point of space-matter from its other points. In the infinitesimal interval containing this point, this increment becomes infinite greater. The formula transforms a principle of uncertainty Heisenberg to a principle of definiteness of each point of space-matter with coordinate's $x_i^0$. The principle of definiteness shows that localization of area containing a point of space-matter with coordinate's $x_i^0$ occurs by influence of the momentum exceeding or equal specified size. This principle is a principle of physical irrationality of points of space-matter which specifies their continuity and infinite divisibility.

By analogy to irrational numbers in the mathematician where the irrational number can be shown with a various degree of accuracy in the form of intervals:

$3<\pi<4$;

$3,1<\pi<3,2$;

$3,14<\pi<3,15$ и т.д.

The irrational point of space-matter can be shown in the form of a following interval:

$$(x_0 - \frac{\hbar}{p_x}) \angle x \angle (x_0 + \frac{\hbar}{p_x})$$

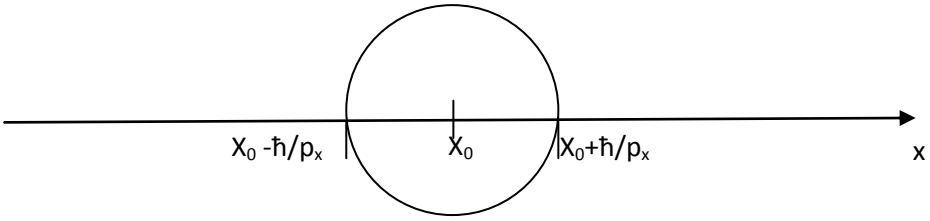
Where $h$ - Planck's constant;

$p_x$ - a projection of the momentum forcing points into rotary motion;

$x_0$ - the rational expected value

$x$ – the irrational points.

According to this formula, localization of a point of space-matter can be made only in the form of an interval with this or that accuracy. Thus with reduction of an interval the momentum increases, i.e. accuracy of localization of a point of space-matter depends on its size, and each point of space-matter with coordinates $x_i^0$ is marked by that infinitely big momentum is necessary for its localization from other points. Thus, the irrational point of space-matter is its infinitesimal interval which remains last not achievable a point of real life.




In processes with a momentum $p_x$ the space-matter inside of the designated circle behaves as a unit, as a firm body impenetrable for this momentum, remaining capable to movement at action of a momentum of greater size

Similarly in the concept of a moving space-matter to open sense of uncertainty between energy and time:

$$\Delta E \Delta t \geq \frac{\hbar}{2}$$

Where $\Delta E$ - uncertainty changes (increment) of energy of system, $\Delta t$ - duration of process.

If to express the period of one electromagnetic fluctuation through frequency $\Delta t = 1/2\pi\omega$ the bottom side of this inequality will look like known expression for energy of quantum $E=\hbar\nu$ according to which the above frequency, i.e. is less period of one fluctuation, the more energy of quantum. Thus, the irrational point of time lies in a time interval

$$(t_0 - \frac{\hbar}{E}) \angle t \angle (t_0 + \frac{\hbar}{E})$$

Where $h$ - Planck's constant;

$E$ - Forcing points into rotary motion;

$t_0$ - the rational point's time

$t$ – The irrational point's time.

Let's note that the period of rotation of an interval of space-matter which radius is defined by a momentum according to a principle of physical irrationality of its points here is taken. Reduction of radius reduces a cycle time and increases energy demanded for rotation which reaches infinitely big size in the center of rotation.

This inequality speaks that fulfillment of process for an infinitesimal interval of time, i.e. the big explosion, demands infinitely big energy.

It is necessary to notice, that physical objects it are not rational points of space-matter which in geometry are defined as the objects which have nor lengths, nor width, namely irrational points - intervals which though small were not as, but everyone remain having both length and width. Irrational points of space-matter participate in formation of corpuscles of substance.

Thus, association of two philosophical categories of space and a matter in concept of a uniform category of the moving space-matter, for the first time done by Descartes, enables to change a principle of uncertainty Heisenberg in a principle of definiteness of the moments of time and points of moving space-matter which in turn allows to give the description of its properties.

The principle of definiteness of points of space-matter, or principle of physical irrationality, does absolutely rigid an infinitesimal interval, i.e. an irrational point of space-matter with coordinates $x_0$, y0, z0 it is impossible to shift concerning other infinitely close points and, on the contrary, does ductile, plastic and mobile infinitely big interval of space-matter. This fact specifies that all points of space-matter are under an influence of all space-matter concentrating them. To result set of points of space-matter in rotary movement, the momentum compensating this influence is necessary. At expansion of an interval, it is infinite the greater force concentrated on a point of space-matter, it

is distributed between other points and by that enables each momentum to compensate pressure and to excite rotation of space-matter in an interval corresponding its size. All can be interpreted it as if absolute rigidity of separate irrational points of space-matter passes in elasticity of its tension which decreases up to absolute plasticity at infinite increase in radius of set of points of space-matter. Such distribution of elasticity promotes distribution to its environment of the elastic cross-section waves arising by compensating counteraction to pressure of space-matter, inducing its points to rotate around of the general center as it occurs in cross-section waves.

Such waves of space-matter are electromagnetic waves which require the environment for transfer forward the momentum and by the nature are cross-section waves. The space-matter also is that environment in which electromagnetic waves are formed and extend.

In an electromagnetic wave of a point of space-matter at its movement make rotary movement. With the termination of excitation rotation of points of space-matter comes to an end also. Submitting to a principle of superposition, points of space-matter participate simultaneously in infinite number of oscillatory processes under influence of waves imposed on them, forming changeable in time интерференционную a picture. Making rotary movement in an electromagnetic wave as the firm body, an interval of space-matter remains transparent for other electromagnetic waves and particles of substance. For the reason that irrational particles of space-matter already participate in other movements, there is very complex picture of movement of space-mother in which it is impossible to fix its coordinates in an infinitesimal interval of time.

Representation of irrational points of space-matter in the form of intervals underlies the probabilistic description of events of a moving space-matter.

Let's consider application of the theory of probability of events in space-matter. For this purpose it is used geometrical definition of probability. And the attitude of a measure of the area favorable occurrence of event and, to a measure of all area refers to as geometrical probability of event, i.e.

P(A)=*mes g / mes G*.

Fluctuation and quantum rotation of space-matter can be displayed on a complex plane formula: $\psi_1 = R_1 e^{\frac{i}{h}Et}$ and $\psi_2 = R_2 e^{\frac{i}{h}px}$

Having divided $\psi_2$ on $\psi_1$, we shall receive wave function for an electromagnetic wave:

$$\psi = \frac{\psi_2}{\psi_1} = Ae^{-\frac{i}{h}(Et-px)}$$

Where module $A=R_2/R_1$ is dimensionless number. Multiplying by the conjugate function *, we shall receive a square of module $I\psi I^2=R_2^2/R_1^2$ which in the quantum mechanics is meaningful to density of probability.

Hence, probability of participation of points of space-matter in rotary movement of an electromagnetic wave it will be equal to the attitude of a measure of space-matter *mes g*, participating in rotation to a measure of all area *mes G* in which there are fluctuations. For an electromagnetic wave it is possible to take *mes* $g=2\pi R^2$ and *mes* $G=2\pi\lambda^2$, then this probability will be equal P (A) =*mes g / mes* $G=R^2/\lambda^2$ =1 as $R=\lambda$.

Thus, given clause about the principle of physical irrationality underlying the likelihood description of events in a microcosm, is worthy the first chapter of the textbook on the quantum mechanics.