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Changeover the Schrödinger Equation

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Abstract
Quantum theory was originally built on Schrödinger's misfit of the TWO-DIMENSIONAL (complex) "solutions" of the ONE-DIMENSIONAL Harmonic Oscillator equation. The "terrible" consequences of this adjustment "excite the minds." It is for this reason that it is taught that Quantum Mechanics should not be UNDERSTAND, but should be ACCEPTED. But, as shown in this work, non-physical, rough decisions were made and canonized. Namely, on their basis, electronic orbitals were constructed, qualitatively applicable only for the hydrogen atom, but widely used in fundamental and applied science. So the "Strongest Secret" of the theorists is that, in fact, having no Basic Model, they are exclusively engaged in fitting solutions to the "chosen" Schrödinger Equation.
A rigorous mathematical analysis of the oscillations of the Two-Dimensional Oscillator in a paraboloid of revolution gives GROUNDS to believe that it is the Planck-Einstein Quantization, which has been pushed aside by the "developmental", gives a correct description of a parameter hidden for macroscopic measurements – de Broglie matter waves. This made it possible to obtain a physically based Planck-Einstein Quantization (P-E_Q) of the Harmonic Oscillator. And it is correct to use P-E_Q for calculating electron orbitals.

Key Words: ONE-DIMENSIONAL Classical Harmonic Oscillator, 2D model, paraboloid of revolution, de Broglie waves, Planck-Einstein Quantization, allowed (resonant) states.

Introduction

The qualitative description by Quantum Mechanics of the Periodic Table of Mendeleev and the chemical bond [1] overshadowed the catastrophic discrepancies between the experimentally obtained Ionization Potentials [2, 3] and the energy position of the allowed levels obtained from the Schrödinger equation. Be that as it may, the Schrödinger equation was canonized to such an extent that even Richard Feynman, who came close to the original Planck-Einstein Quantization in his path integrals, did not dare to declare his approach to correcting the canonized equation [4, 5]. And as Bob Laughlin said in his Nobel lecture: To describe any quantum phenomenon, it is enough to take the Schrödinger equation and solve it under new boundary conditions [6]. And his solutions give no less serious discrepancies with the shape of electron orbitals [7,8 9] and with experimentally measured phonon spectra [10]. And, as follows from the analysis of basic models [11], a huge number of earlier works, including mine, built on the canonized "Quantum Representations", are simply fitting the results of experiments to quantum mechanical calculations. Whereas ELEMENTARY ANALYSIS, as will be shown below, shows that the Schrödinger equation itself is a very rough fit to Bohr's atomic model.

The return to Physics by Senior Telegrapher Heaviside of Mathematics was actually a return to Newton's Physics where They were ONE. This helped both Maxwell to comb his Electrodynamics and Schrödinger in applying the operator method to describe the microworld. So the very use of the operator method was an undoubted progress, which prompted both Dirac to construct the vector Quantum Mechanics, and von Neumann, to the proof of ITS Completeness. But Completeness was obtained abstractly, for a set of operators, and was perceived concretely, as referring to Schrödinger's solutions, which, as shown above, simply do not correspond to the cautious characterization given by Einstein: "SOME Equations of Classical Physics can be rewritten in operator form." Einstein subtly felt the dissonance of equations with Reality, both some of them obtained by himself and those obtained by Schrödinger. Here is the analysis carried out and was based on the verification of the Classical Equations rewritten by Schrödinger, from which Bohr pushed Einstein himself (into the Theory of Relativity) with the phrase that he takes on the role of God in determining the CORRECTNESS of the Classical Equations used. But God in Science is Logic, which must be followed, commensurate conclusions with Reality.

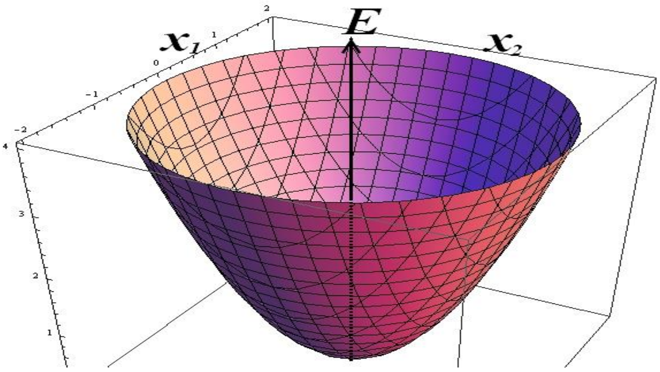
Analysis of the Positions and Solutions of the Stationary Schrödinger Equation.

Einstein, pushed aside together with Planck, who laid the FOUNDATIONS of QUANTUM [12, 13], correctly formulated the method introduced by Schrödinger (actually for Schrödinger): "Some equations of classical physics can be rewritten in operator form." But Schrödinger, using the Hamiltonian of the One-Dimensional Equation

$$\frac{m\left(x'[t]\right)^2}{2}+\frac{\kappa\left(x[t]\right)^2}{2}\equiv \mathrm{E}\Rightarrow \quad \Omega=\sqrt{\frac{k}{m}}$$

(1)

and with the help of the introduction of the



mystical wave function, he "got" the Stationary, again one-dimensional Equation in the "operator form":

$$-\frac{h^2}{2m}\frac{\partial^2}{\partial x^2}\varphi[x]+\frac{m\omega^2x^2}{2}\varphi[x]=E\varphi[x]$$

(2)

At the same time, Schrödinger acted as a professional fortune-teller, giving out the desired result and inventing all sorts of fables to "substantiate" it. He fitted, with phenomenological errors, Two-dimensional solutions - mystical wave functions of this, in principle, One-Dimensional Equation. Adjusted so that both quanta were (in the radial part of the solution) and two-dimensional orbits - orbitals (these solutions are given in all textbooks on "Quantum Mechanics"). In fact, he used Newton's method of separation of variables to find the wave function, which gives only a particular solution [14]. But on the radial and angular parts, which corresponds not to the One-Dimensional Parabola, but, in fact, to the Paraboloid of rotation (Fig. 1).

Fig.1 True Hamiltonian "implied" by Schrödinger.

The Schrödinger equation in its usual form (f.2) has a strict one-dimensional (radial), but not at all harmonic solution (f.3):

$$\frac{h^2}{2m}y''[x]+\frac{m\omega^2}{2}x^2y[x]=Ey[x]$$

(3)

$$y=C[2]ParabolicCylinderD\left[-\frac{1}{2}-\mathrm{E}^*,ix^*\right]+$$

$$C[1]ParabolicCylinderD\left[-\frac{1}{2}+\mathrm{E}^*,x^*\right]$$

(4)

where $\mathrm{E}^*=\frac{E}{h\omega},\Lambda=\frac{h^2/2m}{h\omega}$ ™ $x^*=\frac{x}{\Lambda}$

The complete solution is the interference of two terms, depending on the real ***x*** purely real and complex, depending on the imaginary ***x***.

And it is the real term that has the property

$$y=ParabolicCylinderD[n,x]$$

(5)

– the function is not equal to zero only in the area of origin only for integer values of n (Fig. 2).

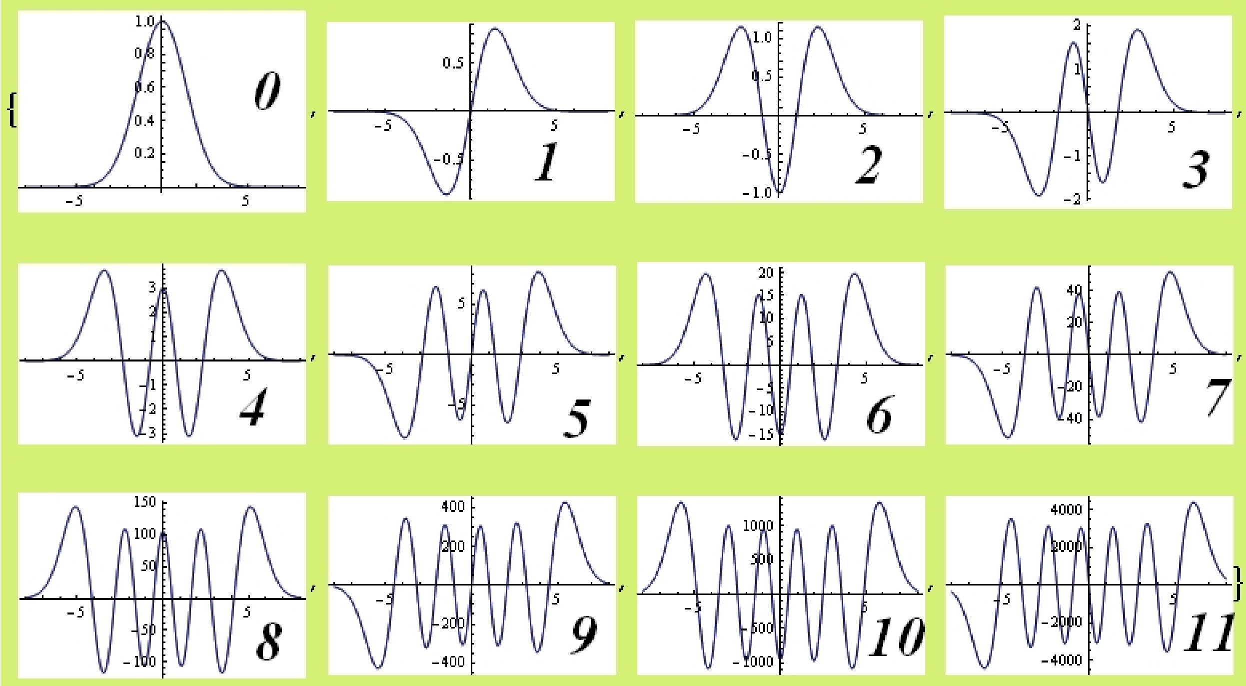


Fig.2. Unnormalized functions of a parabolic cylinder converging at infinity for integer values.

Those. for the radial part of the wave function, we have the values of “allowed” (guessed by Schrödinger) energies, with the non-physical half of the “zero oscillations”

$$-\frac{1}{2}+E^{*}=n \quad \Rightarrow \quad E^{*}=n+\frac{1}{2}$$

(6)

This purely mathematical, abstract solution is not, strictly speaking, physical, since the function obtained, which describes the movement along a parabolic cylinder, when passing from one parabola of the cylinder section to another, undergoes a discontinuity of the derivative (Fig. 3).

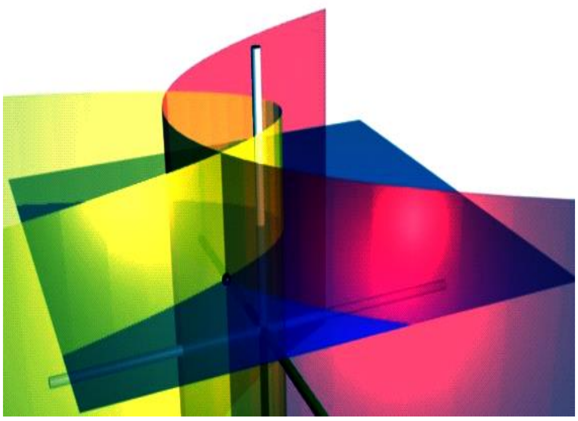


Fig.3. Parabolic cylinder.

The functions shown in Fig. 2 are not normalized, but in fact these are strictly obtained solutions for each "quantum" energy level, similar to those obtained approximately, but normalized "wave functions" of Schrödinger (Fig. 4)

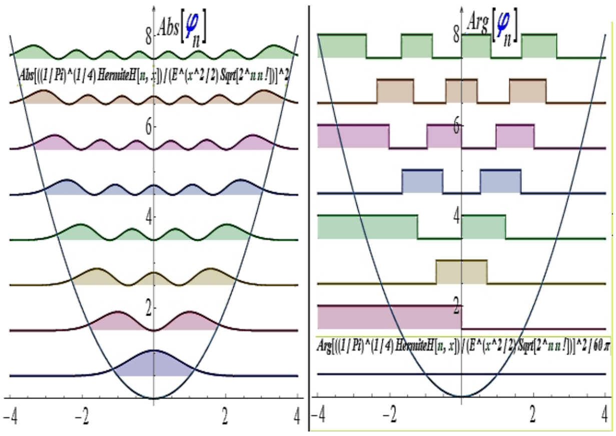


Fig.4. Normalized "wave functions of the Quantum (one-dimensional) Oscillator" by Schrödinger: on the left - their absolute values, and on the right - their corresponding phases.

As can be seen from Fig. 4, Schrödinger's fitting of solutions, in principle, to the incorrect equation of the "Quantum Oscillator", gave only absolute values of "wave functions" similar to physical functions (Fig. 4, on the right), which were interpreted by "quantum physicists" . But the phases corresponding to them are both absurd in magnitude and contain non-physical jumps - discontinuities in the derivatives.

The resulting abstract but rigorous solution is smooth (physical) dependences both on the actual values of the coordinate (shown in Fig. 2) and smooth dependences of the absolute value and phase for the term depending on the imaginary coordinate (f. 4). So, purely it is useful for initial, qualitative analysis.

First, as can be seen from Fig. 2, there are no halves of a quantum (Schrödinger). As can be seen from Fig. 4, the first level corresponds to zero energy. And the maximum of the hidden parameter of the particle is observed in the center, with its minimum bounce, which can be physically related to the fact that the minimum oscillation amplitudes near zero (Fig. 2, first inset) are smaller than the particle size. To be more precise, as follows from Pontryagin's dualism, even for an ideal Newton particle, its spatial uncertainty is less (the article "Analysis of Newton's Elementary Particle" in the book [13]). So, in relation to the electron orbitals of the atom, this term can be safely discarded.

Secondly, the first (and not one-and-a-half, as in Schrödinger) quantum level physically quite corresponds to finding a particle (somewhat blurred), but on a distinguished classical orbit, which will be analyzed in detail in the next part of the work “Correction of the Schrödinger Equation). We will not analyze the quantum levels following from formula 5, in accordance with formula 6, and so on, because taking into account its second, depending on the imaginary coordinate, term of the strict solution (f.4) gives the real and imaginary parts of the function limited in space, but not for all the numbers from formula (6), and also gives a number of additional numbers that also do not fit in any way into the canonized series of permitted levels according to Schrödinger.

One-Dimensional Harmonic Oscillator Quantization.

For a qualitative consideration, we first use the well-known equation of the balance of forces in the Classical Oscillator, which, as shown in [14], takes into account some details that were previously missed in the energy balance. And for the balance of forces of the orthogonal (purely) oscillatory motion of a particle, a particular solution is also obtained:

$$m\frac{d^2x}{dt^2} = -\kappa x \rightarrow \Omega = \sqrt{\frac{k}{m}}$$

$$x''\left[t\right] + \Omega^2 \cdot x\left[t\right] = 0, \qquad x\left[0\right] = A, x'\left[0\right] = 0$$

$$x\left[t\right] \rightarrow A\cos\left[t\Omega\right]$$

(7)

This solution takes into account the time independence of the sum of the kinetic and potential energies of the particle oscillation, each of which changes harmonically:

$$E_K^O = \frac{1}{2}A^2 m\Omega^2 \sin\left[t\Omega\right]^2, \qquad E_P^O = \frac{1}{2}A^2\kappa\cos\left[t\Omega\right]^2 = \frac{1}{2}A^2 m\Omega^2\cos\left[t\Omega\right]^2$$

$$E_\Sigma^O = \frac{1}{2}A^2 m\Omega^2 \sin\left[t\Omega\right]^2 + \frac{1}{2}A^2 m\Omega^2\cos\left[t\Omega\right]^2 = \frac{1}{2}A^2 m\Omega^2$$

(8)

The quantization of this purely one-dimensional oscillation along the x axis in the section of the paraboloid of revolution follows directly from the Real spatial and temporal distribution of Newton's Elementary Particle (which, of course, is not taken into account in the equation of the Classical Harmonic Oscillator used by Schrödinger) [15].

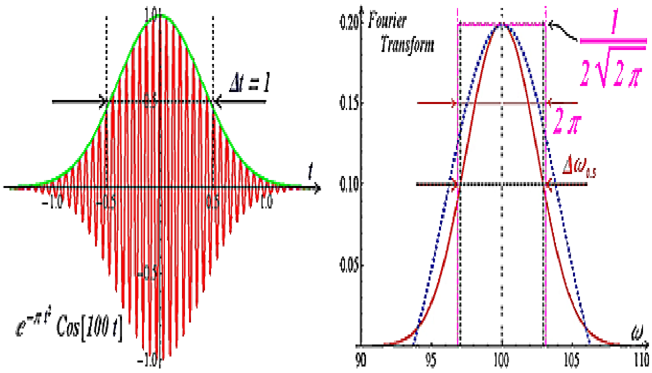


Fig.5. The filling of a smeared single time pulse

with oscillations with a circular frequency equal to 100 (left) and the amplitude of the packet of harmonics of the fundamental pulse filling frequency, which follows from the Fourier transform, equals 100 (right): a – for a smeared pulse (red curve), b – for an ideal Heaviside pulse (one a strip from an infinite series - a blue dotted curve).

Pontryagin's dualism, which reflects the connection of functional spaces, in particular, the frequency-time characteristics of a particle with its spatio-momentum characteristics, as shown in [15] and in Fig. 5, determines, in both cases, the connection between the products of half-widths of their real impulses with the Heisenberg uncertainty principle. Therefore, taking into account for the particle its de Broglie wave [16]

$$\varphi = A\cdot\mathrm{Sin}\left(2\pi\cdot\frac{t}{T} - 2\pi\cdot\frac{x}{\lambda_{dB}}\right) = A\cdot\mathrm{Sin}\left(\omega\cdot t - k_{dB}\cdot x\right)$$

(9)

we can get, without any two-dimensional mysticism (imaginary), a purely Planck Quantization (resonances) of de Broglie waves of a particle and one-dimensional motion of its center of gravity in a section of a paraboloid of revolution along x at frequencies that are multiples of its resonant frequency.

Planck's main hypothesis, which is reliably confirmed both by his calculations of the radiation of the Absolute Black Body and by numerous experiments, is that the frequency of the wave determines the energy of the energy quantum, and the largest, first allowed (resonant) de Broglie wave of the particle in this Oscillator corresponds to its first quantum the level and equality of the quantum energy at the first level of the total energy of the Oscillator E_{Σ}^{O}:

$$\varepsilon_1^{O} = \hbar\omega_1^{O} \qquad\qquad E_{\Sigma}^{O} = \varepsilon_1^{O}$$

(10)

Based on this assumption by Planck, equating the expression for the total energy of the Classical Oscillator (f.8) to the energy of the first quantum level, we obtain the expression for the de Broglie wave frequency of the particle:

$$\frac{1}{2}A_1^2 m\Omega^2 = \hbar\omega_1^{O} \Rightarrow \omega_1^{O} = \frac{m}{2\hbar}A_1^2\Omega^2$$

(11)

And if we assume that the propagation velocity of de Broglie waves, as well as for other fields, is equal to the speed of light, then we obtain an expression for the amplitude of de Broglie wave oscillations at this level:

$$\omega_1^{O} = 2\pi\frac{1}{T} = 2\pi\frac{1}{\lambda_1^{O}/c} = 2\pi\frac{1}{4A_1/c} = \frac{\pi}{2}\frac{c}{A_1} \Rightarrow$$

(12)

Solving together a system of two equations with two unknowns - f.11 and f.12, we obtain an ALLOWED (on a paraboloid) STATE: a point - the resonant frequency and resonant amplitude of the first quantum level and the energy corresponding to them

$$\omega_1^{O} = \frac{1}{2}\sqrt[3]{\frac{m}{\hbar}\left(\pi c\Omega\right)^2}, \qquad A_1 = \sqrt[3]{\frac{\pi\hbar c}{m\Omega^2}},$$

$$\varepsilon_1^{O} = \hbar\omega_1^{O} = \frac{1}{2}\sqrt[3]{m\left(\pi\hbar c\Omega\right)^2} \qquad (13)$$

As can be seen from formulas 13, the oscillation frequency of the de Broglie waves of a particle in the Oscillator at the first quantum level is related to the classical resonance frequency, but non-linearly and through fundamental constants. And, accordingly, we have a nonlinear relationship of the first energy quantum with the frequency of classical resonance.

Those. we obtain that for de Broglie waves, as well as in [17] and in “INERTIA” [18] for gravitation and the Coulomb field, the speed of light determines the inertia and stiffness of the field, which also corresponds to the concepts of the Theory of Relativity. But the quantum parameters also depend on Planck's constant, which is not included in classical considerations. This suggests that Einstein's Theory of Relativity is initially only a special case. And most importantly, we have obtained the Quantum Resonance - the total energy of the particle, taking into account Quantization, can no longer take arbitrary values on a parabola (paraboloid), but can only have an energy value corresponding to the Quantum Resonance, which is determined by formula 13.

But Quantum Resonance has a set of meanings, just like Planck's electromagnetic resonance and Einstein's acoustic waves. For the next energy levels of the Quantum Oscillator from the expression f.12 and assuming the path traversed by the particle during the oscillation period equal to the greater number of de Broglie waves, we obtain

$$L = 4A = n\lambda_{dB} \Rightarrow \lambda_{dB} = \frac{4A}{n} \Rightarrow \omega_n^O = n \cdot \omega_1^O$$

(14)

Those. for the Quantum One-Dimensional Oscillator, we have, without any half of Schrodinger for the quantum - without zero oscillations, an equidistant set of energies.

In this case, the amplitude of the oscillation amplitude, in accordance with formula 12, does not change in the first approximation, which will be displayed below in Fig. 6 in the form of a cylinder embedded in the paraboloid of rotation, for which the energy values on the paraboloid are simply starting.

Thus, a rigorous consideration of one-dimensional quantization has been carried out, which gives strict harmonic solutions for all quantum levels and without any imaginaries [19] that allow one to speak speculatively about two-dimensional Schrödinger orbitals.

2D De Broglie Wave Quantization.

Described above (Fig. 1) as a paraboloid of revolution, the two-dimensional Hamiltonian, in contrast to the one-dimensional Schrödinger parabola, describes both the oscillation of a particle in it (in the section of the paraboloid by a plane passing through x), and its rotation along the orbit, in a one-dimensional model, naturally not taken into account. Both of these displacements of the particle can be considered as harmonic and orthogonal dynamic coordinates. And both independent coordinates naturally contribute to the total energy of the particle's motion.

For quantitative classical estimates of orbital rotation, put the centrifugal force instead of the inertia force into the force balance equation (f.1) and equate it in absolute value to the tension force (which, of course, will also be true along the x axis). From this balance of forces in orbit, we obtain an orbital rotation frequency independent of the radius of rotation

$$m\omega^2 r = \kappa r \rightarrow \omega = \sqrt{\frac{k}{m}} = \Omega$$

(15)

Those. as well as for any oscillation amplitudes and for any radii of rotation, the resonant frequency is the same!

But for an oscillation, the maximum potential energy $E_{P\max}^O$ corresponds to the zero kinetic energy of the oscillation E_K^O (in the radial direction - along ***x***) and only the total energy of the oscillation is preserved (f.8). Whereas the potential energy of rotation does not change when a classical particle moves along an orbit. So, if the amplitude of the oscillation and the radius of rotation are equal: $A = r$ the potential energy of the rotation of the particle along the orbit is equal to the maximum potential energy of the oscillating particle

$$E_P^R = const = E_{Pmax}^O = \frac{1}{2}A^2\kappa = \frac{1}{2}A^2 m\Omega^2 = \frac{1}{2}r$$

(16)

And the kinetic energy of a particle in orbit E_K^R is equal to its potential energy E_P^R

$$E_K^R = \frac{mv_R^2}{2} = \frac{m(\Omega r)^2}{2} = \frac{m\left(\sqrt{\frac{k}{m}}r\right)^2}{2} = \frac{kr^2}{2}$$
(17)

So the total energy of the particle's rotation E_Σ^R, if the radius of the orbit and the amplitude of the oscillation are equal, is equal to twice the total energy of the particle's oscillation E_Σ^O.

$$E_\Sigma^R = 2E_\Sigma^O = r^2 m\Omega^2$$
(18)

So, in addition to the paraboloid of the vibrational energy of the particle shown above (Fig. 1), we also have an additional paraboloid of its total energy of rotation of the particle in a circular orbit embedded in it (Fig. 6).

If, and in the case of a quasi-one-dimensional consideration of the motion of a particle in orbit, we start from Planck's main hypothesis, then the resonant frequency and rotation of the particle in orbit determines the energy of the rotation quantum, which corresponds to the frequency of the largest, first de Broglie wave of the particle in orbit.

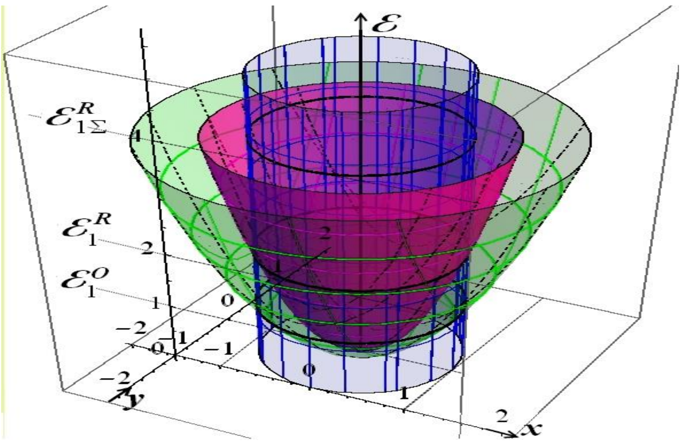


Fig.6. Intersection (black lines) of paraboloids of revolution with a cylinder (blue) for rotational energy (red, nested) and vibrational energy (green).

If, and in the case of a quasi-one-dimensional consideration of the motion of a particle in orbit, we start from Planck's main hypothesis, then the resonant frequency and rotation of the particle in orbit determines the energy of the rotation quantum, which corresponds to the frequency of the largest, first de Broglie wave of the particle in orbit.

In this case, similarly to formula 10, we obtain the first quantum level for orbital rotation.

But the actual movement of a particle in orbit is determined by kinetic energy, its potential energy, we can assume, plays the role of a stand - the height at which a vessel with liquid is located, in which waves walk. **So let's assume that only the energy of motion is quantized** E_K^R

$$\varepsilon_1^R = \hbar\omega_1^R \qquad E_K^R = \varepsilon_1^R$$
(19)

If we assume that the de Broglie wave resonance frequency is equal to the classical rotational resonance frequency, then we obtain interesting but absurd results. Therefore, we have equated the classical expression for the kinetic energy of the particle's orbital rotation (f.14) to the energy of the first quantum rotational level. In this case, we obtain an expression for the frequency of a wave of a particle in orbit by simply replacing the oscillation amplitudes in f.11 with the radius of the orbit:

$$\frac{1}{2}r_1^2 m\Omega^2 = \hbar\omega_1^R \Rightarrow \omega_1^R = \frac{m}{2\hbar}r_1^2\Omega^2$$
(20)

And if, as in a one-dimensional consideration, we assume that the propagation velocity of de Broglie waves is equal to the speed of light, then instead of the expression for the amplitude from f.12, we get an expression that differs by $\frac{\pi}{2}$ the radius of the quantum orbit at this level:

$$\omega_1^R = 2\pi\frac{1}{T} = 2\pi\frac{1}{\lambda_1^R/c} = 2\pi\frac{1}{2\pi r/c} = \frac{c}{r_1} \Rightarrow r_1 = \frac{c}{\omega_1^R} \Leftrightarrow A_1 = \frac{\pi}{2}\frac{c}{\omega_1^O}$$
(21)

Solving together a system of two equations with two unknowns - now f.20 and f.21, we get the ALLOWED (on a paraboloid) STATE: circle -

resonant frequency and resonant radius of the first quantum level and the energy corresponding to them

$$\omega_1^R=\sqrt[3]{\frac{m}{2\hbar}c^2\Omega^2}=\left(\frac{2}{\pi}\right)^{2/3}\omega_1^O=0.74\omega_1^O,\quad r_1=\sqrt[3]{\frac{2\hbar c}{m\Omega^2}}=\left(\frac{2}{\pi}\right)^{1/3}A_1=0.86A_1$$

$$\varepsilon_{K1}{}^O=\hbar\omega_1^R=\sqrt[3]{\frac{m}{2}\hbar^2c^2\Omega^2}=0.74\varepsilon_1{}^O\Rightarrow\quad \varepsilon_{\Sigma 1}{}^O=\varepsilon_{K1}{}^O+\varepsilon_1{}^O=1.74\varepsilon_1{}^O$$

(22)

The first allowed level for rotational (kinetic) energy in orbit, in accordance with f.13, has a potential base on the energy paraboloid, not quantized, classical, but on the resonant quantum radius, which is qualitatively depicted in Fig. 6 in the form of a ring at the intersection of the paraboloid swing with cylinder. This level itself (total) qualitatively corresponds to the ring at the intersection of the embedded paraboloid with the cylinder. But quantitatively the mutual arrangement of levels is given in f.22.

Therefore, for a qualitative consideration, the quantum first level for the motion of a particle in an orbit, taking into account the potential energy of the particle, is simply assumed to be equal to twice the quantum of a linear oscillator, as shown in Fig. 6 in the form of rings on a cylinder.

Similarly to formula 15 for a comb of quantum levels of a linear Oscillator, we also have a comb of equidistant quantum levels for orbital movement, but with a potential bias and with a smaller energy step

$$\omega_n{}^R=n\cdot\omega_1{}^R\rightarrow\varepsilon_{Kn}{}^R=n\cdot\hbar\omega_1{}^R$$

(23)

And so, the comb of rotational levels approximately coincides with the comb of the linear oscillator, but is shifted one level up, as shown on the cylinder rings in Fig.6. In principle, the allowed ring-states may not coincide with the classical paraboloid, but quantum stretching of the orbit by excited de Broglie waves requires special consideration and will not be discussed here.

For the correct quantization of the total motion: oscillations and orbital motions, it is also necessary to start from a correctly constructed classical model. The simplest total motion corresponds to the first two allowed energy levels. In this case, the swing amplitude and orbit radius coincide in magnitude and in phase. Thus, the particle moves along the elliptical orbit shown in Fig.7.

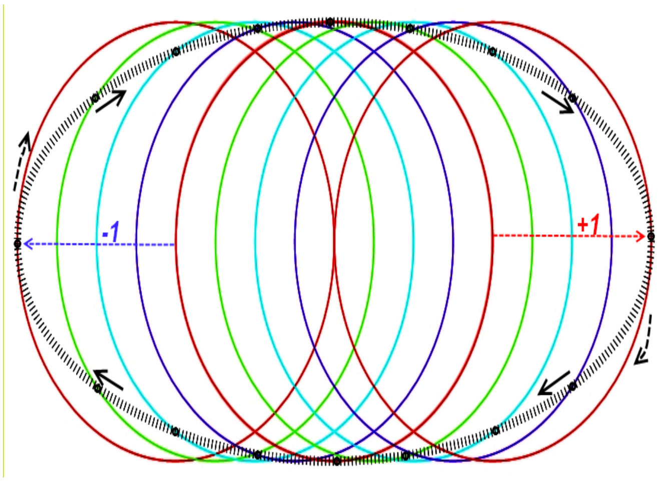


Fig.7. The total motion of the particle corresponding to the sum of the first quantum of oscillations and the first quantum of motion along the orbit.

And for a quantum refinement of a simple sum of two quanta, it is required to equate the maximum de Broglie wavelength to the circumference of the ellipsoid. The integral along this line, in principle, is not taken - convergent series are used to calculate it, but taking into account the independence of the dynamic coordinates considered in the classical model, from purely physical considerations, the circumference is equal to the sum of the displacements - linear and along the circle and is determined by a simple analytical expression:

$$L=4r+2\pi r=\lambda_{dB\_1\Sigma}$$

$$\omega_{1\Sigma}{}^R=2\pi\frac{1}{T}=2\pi\frac{1}{\lambda^R_{dB\_1\Sigma}/c}=2\pi\frac{1}{(4r_1+2\pi r_1)/c}=\frac{c}{(4+2\pi)r_1}$$

$$\Rightarrow r_1=\frac{c}{(4+2\pi)\omega_{1\Sigma}{}^R}\Leftrightarrow A_1=\frac{\pi}{2}\frac{c}{\omega_1^O}$$

(24)

By solving the system of equations, one can obtain quantization formulas for the sum of oscillation and rotation, similar to formulas 22. Moreover, these quantum waves corresponding to synchronous oscillation with simultaneous rotation also have a potential base, as shown for the first total level in Fig. 6.

Thus, the interference of de Broglie waves makes it possible to construct the entire comb of allowed (resonant) energy levels.

There is one more degree of freedom not taken into account in consideration - this is the oscillation of the axis of rotation of the orbit. The revision of its quantization also needs to be started from the revision of the classical model. Oscillation of the orbit axis is determined by the initial quantum level of orbital motion considered in the framework of the two-dimensional model and the Coriolis force. Its correct account requires consideration of a 3-dimensional model, both for the classics and for quantization, both for the oscillation of the circle axis and for the oscillation of the ellipse axis. What should be taken into account that the oscillations of the ellipse is anisotropic.

Modification and denunciation of the "Stationary" Schrödinger Equation.

In the modified "one-dimensional" Schrödinger Hamiltonian for a particle in orbit, for the kinetic energy we use instead of ***x*** the path traveled by the particle along the orbit ***l***. In this case, the potential energy of the particle, of course, does not depend on the coordinate, and the Schrödinger equation is simplified. Instead of the standard stationary Schrödinger equation, we obtain a differential equation for the hidden parameter along the orbit:

$$-\frac{h^2}{2m}\frac{\partial^2}{\partial l^2}\varphi\left[l\right]+\frac{m\Omega^2 r^2}{2}\varphi\left[l\right]=E_{\Sigma}^{R}\cdot\varphi\left[l\right]=m\Omega^2 r^2\varphi\left[l\right] \quad (25)$$

This equation also includes potential energy, but it does not depend on the variable (path). Thus, an unsolvable differential equation (its formal solutions, as shown above, contain non-physical functions) actually turns into a solvable one in the form of harmonic waves.

The resulting equation has only one term physically dependent on the path traveled (corresponding to both the particle's orbital motion and its propagation, as shown above, of its de Broglie waves) - the kinetic energy. Simplified equation solution with boundary conditions shown:

$$-\frac{h^2}{2m}\varphi''\left[l\right]=\frac{m\Omega^2 r^2}{2}\varphi\left[l\right]=E_K^R\cdot\varphi\left[l\right],\quad \varphi\left[0\right]=0,\ \varphi'\left[0\right]=A \quad (26)$$

It has the form of an ordinary harmonic standing wave of a hidden (for macroscopic measurements) parameter, called the Schrödinger wave function

$$\varphi\left[l\right]=A\frac{h}{mr\Omega}\sin\left[\frac{mr\Omega}{h}l\right]\rightarrow\ \varphi\left[l\right]=A\frac{\lambda}{2\pi}\sin\left[2\pi\frac{l}{\lambda}\right] \quad (27)$$

Considering that the maximum wavelength is equal to the circumference, we obtain the radius of the Schrödinger orbit for the first quantum level

$$2\pi\frac{l}{\lambda}=\frac{mr\Omega}{h}l\Rightarrow\lambda=\frac{2\pi h}{mr\Omega}=\frac{2\pi h}{\sqrt{mE_K^R}} \quad (28)$$

Considering that the maximum wavelength is equal to the circumference, we obtain the radius of the Schrödinger orbit for the first quantum level

$$\lambda_{\max}=\frac{2\pi h}{mr\Omega}=2\pi r_{1Sh}\Rightarrow r_{1sh}=\sqrt{\frac{h}{m\Omega}}\Rightarrow\lambda_{\max}=2\pi\sqrt{\frac{h}{m\Omega}} \quad (29)$$

As you can see, the Schrödinger radius qualitatively differs from that obtained by ELEMENTARY de Broglie wave quantization

$$r_1=\sqrt[3]{\frac{2\hbar c}{m\Omega^2}}=\sqrt[3]{\frac{\hbar}{m\Omega}\frac{2c}{\Omega}} \quad (30)$$

Thus, the correctly used one-dimensional Schrödinger equation, in principle, describes the same interference of de Broglie waves. But the difference in the powers of the coefficients indicates that the type of operator chosen by Schrödenger was not entirely rigorous. But in the expression for the Schrödinger radius corresponding to the first quantum level, there is no speed of light. And this determines the fundamental point, that it is not stationary, but static - the solutions of the Schrödinger equation give a frozen wave. So the substitution of concepts was made and according to a snapshot of the spatial distribution of the hidden parameter, and fantasies are built about how and where the Particle MOVES. But just as many lines can be drawn from a point, so from a snapshot one can only fantasize the dynamic characteristics of the medium in which de Broglie waves propagate.

Conclusion.

It was from MISSION that the mysticism of two-dimensional mathematical solutions for a one-dimensional model was hidden behind the mystical parameter "wave function", to which the entire "understanding" of Quantum Theory in various interpretations was reduced. Whereas the analysis Whereas the Planck-Einstein Quantization of de Broglie waves gives a simple physical meaning to the parameter of de Broglie waves hidden for macroscopic measurements - this is the energy density of the field that forms the de Broglie wave. On the other hand, the "hardness" of the field obtained from the interference of de Broglie waves contains both the speed of light and Planck's constant. Whereas in similar formulas obtained from classical models and from the Theory of Relativity, Planck's constant is absent, which directly indicates the incompleteness of their Basic Models.

The correction of electronic atomic and molecular orbitals, which were directly associated with Schrödinger's solutions, will make it possible to solve the problems of many areas of science and technology associated with Physics.

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