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Foundations Of Quantization Principles
(Thematic Collection of Recent Studies Reviewed in Scientific Journals)

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Introduction

"I, apparently, am not literate enough to understand what I counted on the basis of the Quantum Conceptions I have introduced."

Max Planck.

Many quantum-mechanical models are widely used in Solid State Physics and Semiconductor Physics, which the author has been actively involved in for almost half a century of work at the Academy of Sciences. But when interpreting the experimental results, there were many discrepancies with the Basic Theoretical Models, including quantum mechanical ones. In this case, the usual approach to eliminate these mismatches is to introduce additional parameters into the model used. The author of this book himself began with this in his first article on the problems of quantum mechanical interpretations, included in the second edition of this book.

But, if elementary models form a common self - compounded paintings of the description of nature, then basic models with additional parameters are not rare, simply contradict each other. This is quite natural, because They degenerate into purely fitting, in principle, well describing only the local fragments of the general picture, and beyond the scope of the local fragment, they can not rarely give 100% discrepancies with experimental results. The plank, which laid the foundations of quantification, demonstrated to all an alternative approach to all of us, eliminating even endless discrepancies in local models within the framework of a more common model, giving private models as ultimate cases in some para meters. Commerce to the second edition.

So, half a century of active scientific activity gave me not only answers to questions on Quantum Theory, but also new questions on the FOUNDATION (pre)POSITIONS laid down in it and on the SOLUTIONS received. In fact, the successor of Planck's Idea was Einstein, who extended the Idea of Quantization of electromagnetic waves to the quantization of acoustic oscillations. But both of them were actually pushed aside from the development of the Fundamentals of Quantization. And the “developers”, who rushed to actively speculate on the IDEAS of the Coryphaeus, having received rough “Quantum” SOLUTIONS, canonized them. In fact, this meant the reduction of Quantum Theory to Particular Quantum Models, throwing catastrophic discrepancies with many experimental data out of consideration.

At the same time, a certain mysticism of the modern Quantum Theory arose, which was only embellished with the Idea of de Broglie's waves, but which literally demanded not UNDERSTANDING, but its ACCEPTANCE! At the same time, the very Analysis of the FOUNDATIONS of Quantum Theory, their UNDERSTANDING, after the von Neumann theorem on the completeness of Quantum Mechanics, was actually banned! But this theorem, on the one hand, shows only the self-consistency of Particular Solutions in a Particular Model, and on the other hand, pointed to the need for self-consistency of Solutions within the framework of the General Model, the construction of which just required an Analysis

of the FOUNDATIONS of Quantum Theory, the modern development of which reduced only to ITS INTERPRETATIONS. And such a way is fundamentally contrary to Planck's approach in building a more General Model.

And the purpose of this book is not to rewrite textbooks on Quantum Mechanics, but to return the Quantum Theory to the path indicated by Planck-Einstein-de Broglie, to return on the basis of evidence - articles that have passed a wide scientific examination.

One of the founders of Quantum Mechanics once said: "Oh, I don't like this Solid State Physics - he takes PRIMITIVE Models and describes them real crystals [1]." But it was Solid Physics that helped to understand that Quantum Mechanics itself is built on PRIMITIVE, and not on INVARIANT Models. And it helped, thereby, and to solve some cosmological problems [2].

During my conversation with Professor Lev Termen, who, being late for the beginning, sat down with me and asked about previous reports, before his personal speech at the Big Scientific Council of the Ioffe Institute of the Academy of Sciences [3], he dropped a few remarks on the main scientific reports of previous speakers. That, they say, they did this with AF Ioffe half a century ago, right after Lenin signed them a decree on the creation of our institute (in the originally created laboratory). Theremin's remark during his speech, about Albert Einstein, who, as Theremin told him, when he came to him with a request to voice elementary geometric figures on the theremin, painted all the walls of the hall in which he assembled a dance floor for his wife-ballerina, giving out movements in SOUNDS her body on the floor version of temenvox, in general, shocked me in the hall: “Einstein was a good man, but as a physicist he was rather weak and I kicked him out”. I had to admit that, unfortunately, Theremin and Einstein did not understand each other. WHAT the Geniuses did not understand each other, I understood immediately after his report.

Later, thinking about our meeting with Theremin, I also understood WHY these two Geniuses DIDN'T UNDERSTAND each other! Such geniuses as Nikola Tesla and Lev Theremin are so sensitive to Nature that they are able to design devices not only on the basis of formalized scientific calculations, but even without formalizing some Physical Principles. How the same Principle of LIVE MUSIC of the theremin [4] helped me to understand the reports of the Nobel laureates "On the music of a living cell" at the Nobel readings organized by Zhores Alferov [5].

In contrast to such Intuitive Geniuses as Tesla and Theremin, who almost did not leave any records, Albert Einstein “tormented” with finding a Single DESCRIPTION of Nature, intuitively believing that it is such a Single DESCRIPTION and strictly corresponds to the Single Reality [6]. And precisely because he was looking for a Harmonious Description of Nature, he focused on the Unity of Energy and Mass, and trying to reflect this Unified Harmony with a more General than Euclidean Geometry, with the help of the Lobatic-Riemann Geometry, he was looking for the missing ort complementing Space -Time, including Termen. So, by and large, Einstein tried to plug the gaps in Physics with advanced Mathematics, ideally following Heaviside, although he drew an alternative Theory of Relativity to Heaviside's Electromagnetic Theory of Gravity.

Since at the age of 15 I was attracted in an optional school to the "scientific work" of the professor of mathematics of the Pontryagin school, then I saw this mathematical - descriptive message of Einstein in the report of Nobel laureate Bob Laughlin at the above Readings [5], the question in his report was formulated directly "What comes first: Physics or Mathematics?" Bob we talked a little right away during the break between the talks. And the bridge to our understanding was the mention of my personal communication with Theremin. And then they corresponded only about his mathematical music

But only now, working on Quantization for the last year, I realized that Bob's main message to Mathematics, as to different solutions of the Schrödinger equation, is wrong. In fact, Albert Einstein was the first to correctly pick up exactly the UNIVERSAL Idea of Planck's Quantization, again, by eliminating singularities in the Heat Capacity Theory with the help of Quantization, as Planck eliminated singularities in IR radiation. Whereas Bob took the particular, non-invariant Schrödinger equation for General Mathematics [7, 8, 9].

The idea of eliminating parasitic theoretical singularities from the Unified Description of Nature was revived many years later by Ilya Prigogine, another Nobel Laureate, and in Thermodynamics [10]. This made it possible to formulate the Principle of Logarithmic Relativity of various scales of phenomena [11] and to return Thermoelectricity from a stagnation on the sidelines of modern science to its initial position as the Motor of the Heat Science [12] without any singularities-anomalies [13].

And now, again, returning to the Heaviside impedance analysis has helped to understand where Quantum Theory erroneously deviated from the Planck-Einstein Principle of Quantization. [14] allowed to find a phenomenological error in the Schrödinger equation [15].

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