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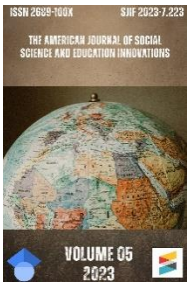

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Research Article

THE ISSUE OF CONTINUITY IN THE STUDY OF GENERAL PHYSICS USING ELEMENTS OF THEORETICAL PHYSICS

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ABSTRACT

In this article pays special attention to the promotion of physical knowledge at the modern stage of scientific and technical development, and describes the issue of coherence among the elements of educational materials in the process of mastering.

KEYWORDS

Lesson, education, physics, method, thinking, ability, learning, molecule, electricity, particle, speed, continuity, idea.

INTRODUCTION

One of the effective ways to increase the degree of scientificity in physics teaching is to present educational material based on fundamental ideas and theories.

It should be noted that this concept will make it possible to solve at a high level such general pedagogical tasks as grasping a variety of facts, perceiving them in interconnection and the simultaneous development of scientific, theoretical and creative thinking, improving the quality of knowledge acquisition, and the formation of a scientific worldview.

A.S. Shurygina [5] in her research determined the role and place of probabilistic-statistical ideas and methods in the physics course and proposed a version of molecular physics taking into account such concepts as random variable, probability, statistical average and fluctuation.

In this area, the works of M. Joraev [1] are worthy of attention, since when studying molecular kinetic theory, he cited scientific and methodological ideas related to enhancing the importance of probabilistic and statistical ideas.

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Continuing in his works the work of V. V. Multanovsky [2] and A. S. Shurygina [8], he gave options for his course of molecular physics.

In particular, he pointed out that in addition to the concepts known to students, it is necessary to introduce the concepts of a statistical system and statistical equilibrium into the basis of the theory, that the basis of the theory consists of the following three principles of equal distribution according to the state of equilibrium, molecular disorder and degree of freedom of energy, thereby asserting, that they must be used when summarizing quality and quantity.

In the history of physics, the use of statistical methods in studying the properties of heat distribution is considered an important innovation.

This is not only an expansion of the boundaries of thermodynamics and statistical physics, but also an important revolutionary event in physics.

Planck [4] considers heat distribution as the absorption and removal of electromagnetic waves by substances, and also introduces this into the laws of thermodynamics and classical electrodynamics.

He makes the following assumption:

$$E = n\,\varepsilon$$

In this case, p ε - is the elementary energy, n - is an integer.

Elementary energy can be distributed over all resonators in different quantities. It follows from this that an individual resonator will be defined not through any energy, but through the energy multiplied by .On December 14, 1900, Planck presented his new and very important discovery to the German Physical Society. These discoveries were accepted as the emergence of primary quantum concepts.

An energy quantum means that energy emission is discrete (intermittent) in nature, i.e. electromagnetic energy is released and absorbed in separate portions. The Planck oscillator can be defined in terms of energies that are multiples of the energy ħ ν.

From this it follows that electromagnetic energy can be distributed and absorbed only in portions. In this case, the discreteness of energy is inextricably linked with the unchangeable value ħ (Planck's constant).In 1905, A. Einstein, in his work "On heuristic views on the generation and rotation of heat," made his next discovery on quantum concepts.

He put forward ideas such as electromagnetic radiation, a discrete idea and the following hypothesis: "light quantum" is the elementary processes of absorption and propagation of quanta. [6, 3] .

Einstein's hypothesis about the light quantum has two important aspects for the development of quantum concepts

Firstly, the idea of radiation consisting of inseparable and limited quantum energy corresponds to the corpuscular theory of light.

Secondly, from the appearance and absorption of light on the basis of these representations, the discreteness of the elementary process arises.

Thus, Einstein encountered the corpuscular theory of light. Subsequently, this quantum theory of light led to the dualism of the corpuscular wave.In 1916, in his work "Absorption and propagation of radiation according to quantum theory" [6], Einstein studied the issues of thermodynamic equilibrium between the Bohr atom and radiation. Through probable concepts, Einstein

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gave a quantum conclusion to Planck's radiation law.These works of Einstein became fundamental and played an important role in the subsequent development of quantum theory. Considering that the propagation and absorption of light appears on its own and without fail, the concept of probability was introduced.

Einstein's important conclusion was the equality of absorption and induction radiation.

These works became an important step from a methodological point of view in the transition from cause-and-effect laws to the laws of probability.

Quantum ideas are inextricably linked with the emergence and gradual development of thermodynamics and statistical physics with the emergence and development of quantum and statistical physics.

Currently, quantum statistics is becoming the basis of our knowledge of processes and patterns related to the properties of substances and area.In general, as a result of large-scale development of science, the concept of "matter wave" was replaced by the "concept of probability wave". The probabilistic explanation of the wave function in a unique way reflects the phenomena of spontaneity of a micro-object. It becomes necessary to know the probability of the state of a micro-object, i.e. premature knowledge in quantum physics has the nature of probability.

This means that the physics of micro-objects is expressed through statistical theories.Of great importance at the present time is the introduction of physical elements and statistical ideas into the content of higher education, the development in students of the skills to make conclusions at the level of fundamental physical theories. To solve this problem, it is necessary to introduce elements of theoretical physics into the educational process.

At the same time, it is necessary to take into account the unique features of the methods of teaching physics. When teaching physics, one should not forget the importance of forming the foundations of a scientific worldview. Physics is also important in the ideological and spiritual education of students.In the formation of a methodological and scientific worldview, in the process of studying a physics course, the methodology of teaching physics is important. The main elements of the block of physical knowledge, in the process of forming a methodological and scientific worldview when studying a physics course, are physical concepts, physical laws and scientific theories. There is no doubt that the system of these connections is inextricably linked with each other. In order for students to master physical concepts, the teacher needs to correctly organize the process of forming theoretical concepts and manage the process of their assimilation.

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