

CENTENARY OF QUANTUM THEORY: WHAT COMES NEXT?

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This talk is dedicated to the centenary of the creation of quantum theory and on the occasion of the International Year of Quantum Science and Technology.

It will outline the chronology of the last 350 years of the theory of fundamental evolution equations, which represent the laws of Nature. The discussion will cover the origins of the evolution equations that describe quantum systems. Additionally, the talk will survey the mathematical structure of modern quantum theory and the prospects for its future development.

Examples of applications of fundamental evolution equations that have sparked the second quantum revolution in our time will also be provided.

REFERENCES

- [1] Victor Gerasimenko. *Nonlinear kinetic equations of quantum systems*. In: Modern Problems of Mathematics and its Applications I. Kyiv: IM, pp. 82–112, 2020.
- [2] Victor Gerasimenko. *Hierarchies of quantum evolution equations and dynamics of many-particle correlations*. In: Statistical Mechanics and Random Walks: Principles, Processes and Applications. N.Y.: Nova Science Publ., Inc., pp. 233–288, 2013.