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VYACHESLAV FEDOROVYCH KLEPIKOV
(to his 75th birthday)



07.13.2024 75 years have passed since the birthday of Vyacheslav Fedorovich Klepikov, a well-known theoretical physicist, Doctor of physical and mathematical sciences, Professor, Correspondent member of the National Academy of Sciences of Ukraine.

V.F. Klepikov was born in the city of Kharkiv, graduated with a gold medal from the school of physics and mathematics No.27 and, in 1971, from the Faculty of physics and engineering of Kharkiv State University.

In 1972, under the scientific supervision of Academician of the National Academy of Sciences of

Ukraine V.G. Baryakhtar, he defended his thesis for the degree of Candidate in Physics and Mathematics.

In 1995, he defended his thesis for the degree of Doctor in Physics and Mathematics.

In 1971–1990, he worked at Kharkiv Institute of Physics and Technology. In 1990–1992, he initiated the creation of a new institution at the National Academy of Sciences of Ukraine – the Scientific and Technical Center of Electrophysical Processing, which was later renamed the Institute of Electrophysics and Radiation Technologies (IERT) of the National Academy of Sciences of Ukraine, of which he was the Director from the very beginning and till 2021. Currently, he works as an adviser to the directorate and is the Honorary Director of the Institute.

The main scientific results obtained by V.F. Klepikov both personally and in co-authorship:

The conditions for a giant amplification of nuclear magnetic resonance in thin magnetic films were predicted, which allows for the creation of nuclear spin wave detectors, magnetic analogs of the Wilson chamber (detectors of electroneutral particles), as well as nuclear tomographs with a very high resolution, based on such films.

An evolutionary model-independent S-matrix approach was developed.

It proved that the simultaneous correct description of all scattering patterns observed in elastic $^4\text{He}-^{40}\text{Ca}$ scattering – from rainbow scattering to anomalous scattering at large angles and to scattering near the Coulomb barrier – can be achieved in a universal way using the modulus of the scattering matrix and the real part of the nuclear phase being smooth monotonic functions of angular momentum.

Cases of exact solvability of wave equations in conformal quantum field theory with arbitrary (including non-integer) gradients describing non-trivial objects

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(topological solitons, magnetic monopoles, *etc.*) were established.

Methods of radiation and electrophysical modification of the strength and plasticity of solid bodies, as well as stimulation of their superplasticity, was proposed, which is of great importance for the creation of new materials for nuclear power industry.

The methods of quantum electrodynamics were generalized for the case of nonlocal fields of matter and applied to the solution of physical problems of electromagnetic interactions in nuclei.

New methods and a new installation for low-temperature ion-plasma deposition and application of surface strengthening coatings were proposed, which provide a significant improvement in wear resistance, density, uniformity, and adhesion of the deposited layer.

A new concept for evaluating radiation-stimulated processes and transformations was formulated, on the basis of which highly effective means and methods were developed for remote control over the distribution and absorption of electron flows in the radiation zone of the electron accelerator, measurement of electrophysical parameters of matter and radiation processes, which is of great importance for the creation of radiation technologies, in particular, to fight against terrorism (detection of explosives, decontamination of postal items, *etc.*).

V.F. Klepikov has been the Deputy Academician-Secretary of the Department of Nuclear Physics and Energy of the National Academy of Sciences of Ukraine for many years. He is a member of the Na-

tional Commission for Radiation Protection of the Ukrainian Population under the Verkhovna Rada of Ukraine.

V.F. Klepikov is the head of a number of projects of state programs and contracts, the results of his research are summarized in 5 monographs and more than 400 scientific papers and inventions.

V.F. Klepikov skilfully combines scientific, organizational and pedagogical activities. For many years, he has been a professor at the Department of Theoretical Nuclear Physics of V.N. Karazin Kharkiv National University. Among his students are 8 Candidates and 5 Doctors of science.

V.F. Klepikov is an Honored leader in science and technology of Ukraine, laureate of the M. Ostrovsky award, S. Pekar and K. Sinelnikov prizes of the National Academy of Sciences of Ukraine, laureate of the State Prize of Ukraine in the field of science and technology.

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