Faddeev Ludwig Dmitrievich

Doctor of Science, Professor, Full Member of Academy of Science of Russia

L.D. Faddeev was born in 1934 on the 10-th of March in the family of mathematicians — Dmitrii Konstantinovich Faddeev and Vera Nikolaevna Faddeeva.

Ludwig Dmitrievich got his education at the Physics Department of Leningrad State University. He attended the lectures of academicians V.I. Smirnov and V.A. Fock. His scientific supervisor during the postgraduate studies was academician O.A. Ladyzhenskaya. First scientific researches of L.D. Faddeev beared on the perturbation theory of continuous spectrum, dispersion relations and inverse problem in quantum scattering theory. In his habilitation thesis (1963) he studied the quantum three-body scattering problem and derived the system of integral equations called now Faddeev's equations. Methods of scattering theory were later successfully used in the theory of automorphic functions.

His scientific interests principally concerned mathematical problems in quantum field theory. Together with V.N. Popov he developed a consistent scheme of quantization for non-Abelian gauge theories (Yang-Mills fields), thus creating the mathematical background for modern theories of elementary particles.

The problems connected with infrared divegencies in gauge theories were succesfully surmounted for the case of quantum electrodynamics where L.D. Faddeev (together with P.P. Kulish) gave the definition of the scattering matrix using correct asymptotic conditions. In the middle of 60-th he found the analyticity properties for the scattering amplitude of

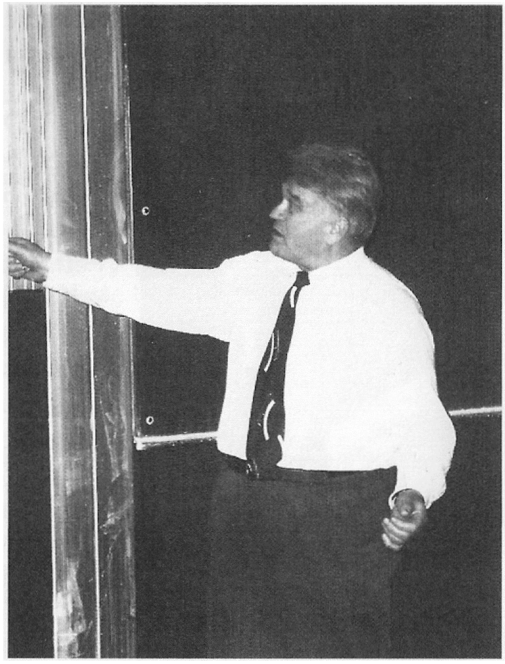
Schrödinger equation which enabled him to solve the inverse scattering problem (reconstruction of a potential from scattering data) in the three-dimensional case.

It has been shown in his article with V.E. Zakharov that the solution of nonlinear evolutionary KdV equation by means of inverse scattering problem provides the transformations to the complete set of action-angle variables in infinite-dimensional Hamiltonian systems.

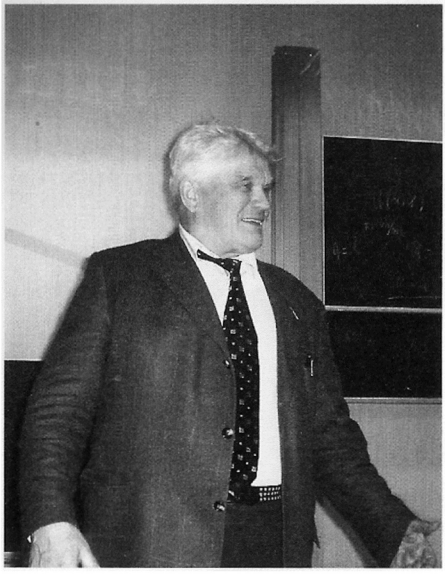
Quantization of solitons equations by semiclassical methods in the frame of path integral and further by algebraic approach led L.D. Faddeev to the development of the quantum analog of the inverse scattering method. The substantial role of R-matrix, matrix or algebraic solution of Yang-Baxter equation was pointed out. These results showed the way to the theory of quantum groups (work by V.G. Drinfeld and M. Jimbo).

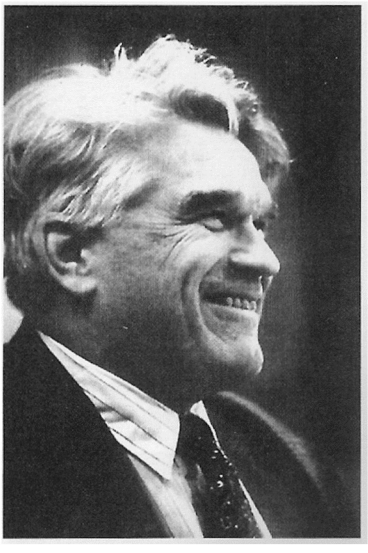
The use of Hamiltonian methods when analysing two-dimensional conformal field theories evoked the appearence of finite-dimensional quantum

groups in these theories as a part of the infinite-dimensional hidden symmetry typical for integrable models. The research on anomalies of quantum gauge fields and the discovery of a particular cocycle allowed L.D. Faddeev to formulate this problem in the framework of general cohomology of groups.



The scientific achievements of L.D. Faddeev acquired a broad recognition in his homeland and abroad. In 1976 he was elected a full member of Academy of Science of USSR. Now he is the academician-secretary of the Department of Mathematical Sciences of Russian Academy of Science. For several years he was the Vice-President (1982-1986) and the President (1986-1990) of International Mathematical Union. He is a laureate of State Prize (1971), of D. Heineman Prize in mathematical physics of American Physical Society (1974), of Pomeranchuk Prize (2002), he is nominated by Dirac medal of International Center of Theoretical Physics (1991), Max Plank medal (1996) and got several governemental awards (1981), (1987), (1994), (2004). Recently, (June 2005) the State Prize of Russia was handed



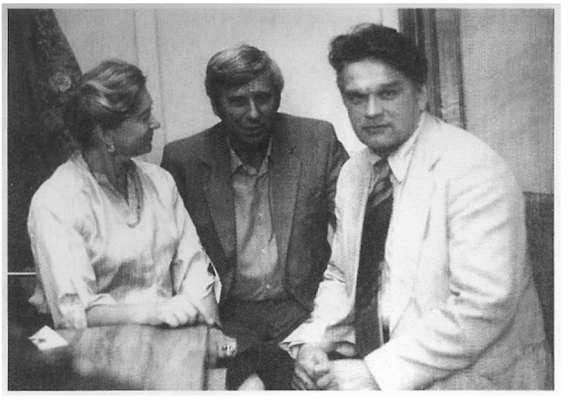


over to him by the President of Russia — V.V. Putin.

L.D. Faddeev is elected as a foreign member of American Academy of Arts and Science, of American National Academy of Science, of Polish Academy of Science, of Academy of Science of Czechoslovakia, of Finnish Academy of Science and Literature, of Svedish National Academy of Science, of European Academy, of French Academie des Sciences. He is Doctor "Honoris Causa" of Paris University, University of Buenos-Aires, University of Uppsala, National University La Plata, Honorary Professor of Nankai University.

L.D. Faddeev is the Editor in Chief of the Journal "Functional Analysis" and the member of editorial boards of: "Journal of Mathematical Physics", "Letters in Mathematical Phisics", "Reviews in Mathematical Physics", "Annals of Physics" and others.

He is the author of several books and around 200 papers. The list of books is given. The detailed list of publications can be found on the website: *www.pdmi.ras.ru*.



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