Yakov Abramovich Smorodinskiĭ (Obituary)

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On October 16, 1992, after a brief serious illness, Yakov Abramovich Smorodinskiĭ passed away. He was a Doctor of Mathematical Physics, professor, and senior scientist of the Russian Science Center "Kurchatov Institute."

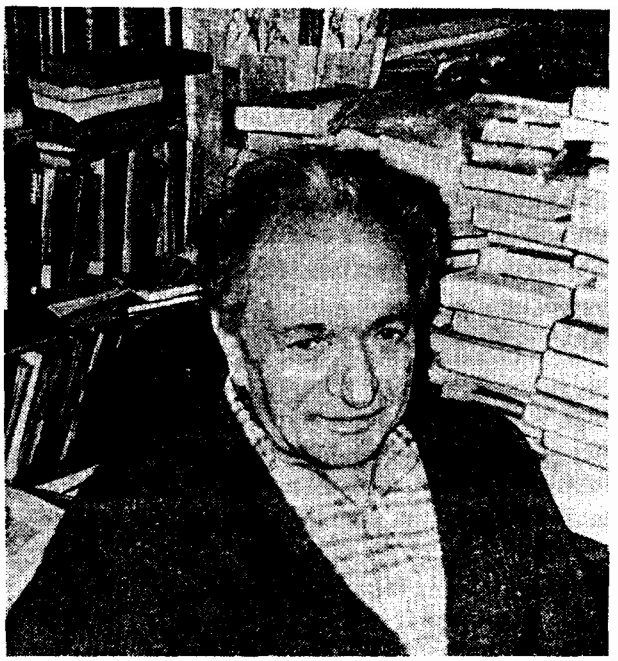
For many physicists in our country and abroad, and for everyone interested in contemporary science, its place in the general system of cultural values, history, and philosophy, Yakov Abramovich was the Teacher. Possessing a truly encyclopedic knowledge and the bright temperament of one who spreads enlightenment, he shared his spiritual wealth with an enormous audience. Association with Yakov Abramovich have many amateurs and professionals not only a plethora of valuable information about problems confronting science, about its latest achievements and a correct understanding of first principles, about experiments under preparation and about facts lying outside the bounds of existing theoretical schemata, but it also gave them something much more important: the very spirit of science, which Yakov Abramovich so loved and which he unselfishly served throughout his entire life.

Yakov Abramovich was born on December 20, 1917 in the city of Malaya Vishera. He graduated from the Physics Department of Leningrad University. He regarded his acceptance as a graduate student by Lev Davidovich Landau as the greatest good fortune of his life. In his words, it was his only chance to get into real physics. When he first applied to become a graduate student, Yakov Abramovich was late (through no fault of his own), but was allowed to take the examination anyway. Lev Davidovich gave him a difficult problem, possibly secretly hoping that the young man from Leningrad would not be able to cope with it and that all the nuisance associated with taking care of the "extra" applicant who had unexpectedly appeared would resolve itself. Yakov Abramovich "disappointed" Landau, and after brilliantly solving the problem he had been given became a student of the famous theoretician.

At that time Yakov Abramovich had already begun to assemble his famous library, the use of which was the highest privilege reserved only for his very closest students and collaborators.

After receiving his PhD right before the war, Yakov Abramovich spent the first years of the war in Kazan', whither the Academy of Sciences had been evacuated by a decree of the government. There in Kazan', under the direction of the famous shipbuilder, specialist in mechanics, and mathematician, Academician Alekseĭ Nikolaevich Krylov, Yakov Abramovich busied himself calculating ice crossings in connection with the needs of the front.

In 1943, Igor' Vasil'evich Kurchatov took charge of organizing efforts to create a Soviet nuclear weapon. Yakov Abramovich returned to Moscow and began calculations on multistage isotope separation under the direction of Academicians Isaak Konstantinovich Kikoin and Sergeĭ L'vovich Sobolev. From that time until the last days of his life he was continuously associated with the Kurchatov Institute. His participation in those efforts of long ago was recognized by a State Prize.



Yakov Abramovich Smorodinskiĭ
(1917–1992)

The range of Yakov Abramovich's scientific interests was unusually wide: from atomic energy to the general theory of relativity, the general theory of nonlinear dynamical systems, and group-theoretical methods of physics in all their diversity. Although our pragmatic time is far removed from the Renaissance era, Yakov Abramovich stood in sharp contrast with the commonly encountered "narrow specialist" type. Together with Lev Davidovich Landau he wrote the *Lectures on the Theory of the Atomic Nucleus,* which has long since become a bibliographic rarity, formerly found on the desks of physicists of the older generation. Many results obtained by Yakov Abramovich have withstood the strict test of time and have entered textbooks (as a rule, "anonymously," without any indication of their origin).

Yakov Abramovich turned from pure theory to applied problems at the behest of a stern time. Many of his colleagues followed the same route. But only a few of them succeeded afterward in making the reverse journey and returning to the bosom of exalted theory. Yakov Abramovich was capable of making this return, which is another proof of his scientific brilliance.

As the years passed, Yakov Abramovich not only sharpened his deep physical intuition, but continued to

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enrich and perfect his mathematical equipment—the most important tool of a theoretician, without which the most brilliant ideas remain pious wishes. The exceedingly rich possibilities of applying symmetry ideas in the most disparate areas of physics caught his attention, and even in his mature years he embraced with enthusiasm the theory of group representations, topology, algebraic geometry, and especially, integral geometry, which was little known then even among mathematicians. The basic idea of this area of mathematics, which lies at the junction of group representation theory and functional analysis, is the transformation of one space with functions prescribed on it into another space with a different set of functions prescribed on it. Yakov Abramovich (in collaboration with Naum Yakovlevich Vilenkin and Gennadiĭ Ivanovich Kuznetsov) applied it to Lorentz-invariant expansions of relativistic amplitudes, transforming the functions on a hyperboloid of one sheet into functions on its line generators (the Radon transform).

Yakov Abramovich took an active part in the development of the tree method, which has been extraordinarily fruitful not only for the orthogonal group, but also for other classical groups.

The logic of this research led Yakov Abramovich to various topics in harmonic analysis on groups, and in orthogonal polynomials of a discrete variable. Recently his attention had been drawn to the so-called q-algebras.

Yakov Abramovich attributed just as much importance to his painstaking and meticulous editorial activity as to his own scientific work. He was one of the founders, and for many years the deputy to the editor-in-chief of the journal *Nuclear Physics*, a member of the editorial council of the publisher Mir, and a member of the board of editors of the journal *Kvant*. His leadership largely influenced the publishing plan in physics of Mir and of the Chief editorial board for theoretical physics literature.

The four-volume edition of the scientific work of Einstein carried out under the direction of Yakov Abramovich was a notable event in the international scientific community. In the process of preparation of this edition, omissions were discovered and corrected in the American edition of Einstein's work and new material was revealed.

As a result of Yakov Abramovich's effort and zeal, the works of Wolfgang Pauli were published and a manuscript of a two-volume edition of the works of Heisenberg was prepared.

Among Yakov Abramovich's immediate students are outstanding specialists who are working successfully in various areas of contemporary physics.

Although his path through life was certainly not strewn with roses, Yakov Abramovich was a happy person and frequently said that he had been fortunate in life: he occupied himself with his beloved science, he loved and was loved, his efforts were accorded recognition in his own lifetime, and he had been able to carry out many projects.

All who have had the good fortune to know Yakov Abramovich personally, and to associate and collaborate with him are deeply grieved at his passing.

"Kurchatov Institute" Russian Scientific Center;
Joint Institute for Nuclear Research

Translated by D. L. Book