LEONID VENIAMINOVICH KELDYSH



(07.04.1931 - 11.11.2016)

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IN MEMORY OF LEONID VENIAMINOVICH KELDYSH

A year ago, on 11 November 2016, Leonid Veniaminovich Keldysh passed away. He was a true Scientist in the best sense of the word, a man for whom scientific research, the education of young scientists, and the preservation of science were his life's cause. He made highly important contributions to condensed-matter physics, nonlinear optics, and the theory of nonequilibrium processes. His name is borne by the Franz-Keldysh effect, the Keldysh parameter, and the Keldysh diagram technique. Leonid Veniaminovich's pupils have become outstanding scientists who work in the best physical centers in Russia and around the world.

In 1989–1994, Leonid Veniaminovich was director of the P N Lebedev Physical Institute and, from 1991 through 1996, academician-secretary of the Division of General Physics and Astronomy of the Russian Academy of Sciences. He played an outstanding part in the preservation of physical science in Russia during those hard years, under all circumstances remaining a person of high principle and looking forward with confidence.

For over 50 years, Leonid Veniaminovich was directly affiliated with the "Uspekhi Fizicheskikh Nauk" (Physics–Uspekhi) journal. From 1964 through 1998, he was a member of the journal's Editorial Board and was one of those who determined the face of the journal during that period. In 2009, after the death of V L Ginzburg (who was editor-in-chief of the journal from 1998 to 2009), he took up the banner and became editor-in-chief of the journal. He did his best to preserve and raise the scientific level of the journal, so that it would occupy a prominent place among the world's most prestigious review journals in physics. Leonid Veniaminovich's work as editor-in-chief of the journal captivated him; this was perhaps his chief obligation during his last years.

L V Keldysh's contribution to science was recognized by numerous awards, among them the M V Lomonosov Prize of the Academy of Sciences of the USSR awarded in 1964, Russian Federation President's Prize in the field of education (2003), S I Vavilov Gold Medal (2005), RUSNANOPRIZE-2009 International Award in the field of nanotechnology, I Ya Pomeranchuk Prize (2014), and M V Lomonosov Grand Gold Medal—the highest award from the Russian Academy of Sciences (2015). Among the international awards were the Hewlett–Packard Prize of the European Physical Society (1975) and the Alexander Humboldt Prize (1994); in 1995 he was elected a member of the United States National Academy of Sciences, in 1996 he was elected a member of the American Physical Society, and in 1997 he was honored with the prestigious Roentgen Professorship Award of Wurzburg University. Leonid Veniaminovich was well known and highly respected in the intellectual circles of Russia: in 2001, he was the first physicist to become a laureate of the nongovernmental Triumph Prize.

We dedicate this issue of the journal to the precious memory of Leonid Veniaminovich Keldysh. It comprises reviews on research areas to which Leonid Veniaminovich made major contributions, as well as his little-known work. The first of L V Keldysh's papers published in this issue ("Coherent exciton states") was earlier published in the collection dedicated to the memory of Igor' Evgen'evich Tamm in 1972. It has never been translated into English and this is supposedly the reason why it is little known to the world scientific community. The second of L V Keldysh's papers published in this issue is entitled "Multiphoton ionization by a very short pulse." He started writing it in the autumn of 1997 during his stay at the Miller Institute of Basic Research in Science at the University of California, and so the paper was written in English. This paper is, in principle, fairly well known to physicists, because Leonid Veniaminovich gave it to many colleagues in the form of a manuscript. However, this text has never been published in either periodicals or monographs, although the manuscript has been cited in the world physical literature since 2000. We hope that the material presented in this memorial journal issue dedicated to the memory of Leonid Veniaminovich Keldysh will be interesting and beneficial to our readers.