

OBITUARY

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In memory of Lev Abramovich Rivlin

On 26 March 2013, the scientific community suffered a great loss with the passing of Lev Abramovich Rivlin, an outstanding physicist and a wonderful person. Doctor of Science in Physics and Mathematics, professor L.A. Rivlin was the scientific head of the Laboratory of Applied Physics of Moscow State Technical University of Radio-engineering, Electronics and Automation (MIREA) and a member of the editorial board and editorial council of Kvantovaya Elektronika since its foundation.

L.A. Rivlin was born in Kharkiv in 1922. In his memoirs he wrote, "My 'Childhood, boyhood and youth' in physics passed in the 30th – 50th of the last century (not so simple for our Motherland). I fell in love with Beauty Physics at first sight and at a very tender age, even not knowing its name…". Already at the age of 14, he was elected a president of M. Faraday City Junior Physicists' Society organised by the Ukrainian Physical-Technical Institute and in 1939, he took part in the All-Union Conference on Nuclear Physics and in 1940, he entered the Leningrad Polytechnic Institute. L.A. Rivlin recalls, "… Molotov's radio address of 22 June 1941, I listened to at a bookstore on Nevsky prospect. The same week, I was already in the forests of the Karelian Isthmus building a fortified area, and a month later, on my return I joined the People's Volunteer Corps, which earned itself a glorious reputation for its part in the defence of Leningrad." Having miraculously survived after a blast injury in the winter of 1941–1942 at the Leningrad front, he served in the reconnaissance corps till the end of the war and was awarded battle decorations. In 1946 he again became a student of Leningrad Polytechnic Institute, from which he graduated with honours in 1950.

Of course, Lev Abramovich 'belonged to' fundamental science, but Fate decreed otherwise. After a long ordeal he managed to get a job of an engineer at POB No. 17 (now, the Federal State Unitary Enterprise – Research and Production Corporation 'Istok'), where he worked till 1962, defended the candidate's thesis and became the leading specialist in the field of microwave generators. In particular, under his leadership magnetrons were developed for B-200 missile targeting radars with which air defence forces of our country were equipped for several decades.

At the beginning of the laser era, in 1962, L.A. Rivlin accepted the proposal of M.F. Stel'makh and became one of the first researchers at POB No. 2008 (now, OJSC M.F. Stel'makh 'Polyus' Research Institute). Even before it, in January 1961, he put forward the idea of a nuclear gamma-ray laser. This invention application is now accepted worldwide as a starting point in the development of a new branch of physics, which was later termed by the author the 'quantum nucleonics'.

L.A. Rivlin and his co-workers were the pioneers in the study of radiation dynamics of injection lasers. They were the first to use the methods of integrated technologies, developed for the needs of traditional (Si) microelectronics, for fabrication of semiconductor devices for quantum electronics. In 1970, he defended his doctoral dissertation on this topic, first in the history of 'Polyus'.

He proposed such concepts (widely used in laser physics and technology) as suppression of amplified spontaneous noise with the help of saturable filters, generation of giant pulses using a phototropic filter. Later, he put forward the idea to transmit quantum images using strongly cooled atoms.

In a series of papers on the classical electrodynamics of nonplane physically realised waves, Lev Abramovich found subtle effects of the dispersion of waves in the free space of sub- and superlight propagation and also revealed the possibility of assigning the nonzero inertia and gravitational rest mass to photons of these waves. In addition, we should also note his papers devoted to hard Cerenkov radiation, collective coherent phenomena in charged particle beams, frequency-independent test of a quantum of action, spectroscopy in an ultrastrong gravitational field, two-quantum photon – phonon laser, gravitational self-confinement of collective photons, Bose – Einstein condensation, acceleration of ultracold neutrons, etc. There is no doubt that the next generation of physicists will address his ideas for a long time.

Professor L.A.Rivlin was a member of the American Physical Society and the British Royal Society of Electrical Engineers. The list of his scientific publications, published mainly without coauthors, includes more than 200 papers. The number of international scientific meetings in which he participated, also represents a three-digit number. For a long time, he was a co-chair of the International Quantum Nucleonics Association.

More than half a century, L.A. Rivlin was involved in the training of scientists. Among his many students there are many candidates and doctors of sciences, and his former students at MIPT and MIREA remember Lev Abramovich as a brilliant lecturer.

Lev Abramovich possessed intelligence, encyclopaedic erudition, artistic taste (he was a great connoisseur of Russian poetry), amazing benevolence and compassion, high decency, remarkable sense of humour and unfailing optimism. Personal contacts with him were always joyful and rewarding.

The editorial board, editorial council and editorial staff of Kvantovaya Elektronika, co-workers, friends and students of Lev Abramovich mourn over his death and sincerely express their condolences to his wife and family.

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Translated by I.A. Ulitkin