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# Pavel Vladimirovich Logachev (on his 60th birthday)

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On February 13, 2025, the director of the G.I. Budker Institute of Nuclear Physics of the Siberian Branch of the Russian Academy of Sciences (INP SB RAS), Academician of RAS Pavel Vladimirovich Logachev, turned 60.

Pavel Vladimirovich was born on February 13, 1965 in the village of Makarak, Tisulsk district of Kemerovo region to a family of doctors. In 1982, he finished a two-year program at the Physics and Mathematics Boarding School (PMS) no. 165 under Novosibirsk State University (NSU) and entered the Physics Department of NSU. Pavel Vladimirovich graduated from the university with honors in 1989, having served two years, from 1984 to 1986, in the Soviet Army (in the village of Pechenga, Murmansk region), because at that period university students were not given draft deferments.

In 1988, Pavel Vladimirovich began working at the Institute of Nuclear Physics of the Siberian Branch of the USSR Academy of Sciences and moved from laboratory assistant at the physics laboratory to director of the institute. In 1996, P.V. Logachev defended his candidate thesis, "Obtaining ultracold beams and short intense electron bunches from a GaAs photocathode" at the N.S. Dikanskii laboratory under the supervision of A.V. Novokhatskii. The topic of his candidate thesis was a logical continuation of his diploma work, "Experimental study of longitudinal temperature relaxation in an ultracold electron beam," which he defended under the supervision of V.A. Lebedev. In 2009, Pavel Vladimirovich defended his doctoral thesis, "Nondestructive diagnostics of intense charged-particle bunches by a low-energy electron beam."

For seven years, P.V. Logachev headed the sector of the Scientific Department at INP SB RAS, which in the next nine years became, under his leadership, one of the largest and most successful laboratories at the institute. From 2015 to the present day, P.V. Logachev has been director of the Institute of Nuclear Physics SB RAS.

P.V. Logachev is the author of more than 335 scientific works, including over 130 journal papers, three monographs, and three patents. In 2011, he was elected a corresponding member of RAS in the Physical Sciences Division (Nuclear Physics Section) and in 2016, a full member of RAS.

P.V. Logachev is one of the leading accelerator physicists in Russia. A new injection complex of the Institute of Nuclear Physics of SB RAS — a high-performance accelerator source of electrons and positrons for colliders of INP SB RAS, was built and put into operation with his direct participation and leadership. This task required not only implementing new physical ideas, but also, which was no less important, putting into operation new technologies at INP SB RAS that existed neither in Russia nor in the USSR, and some technologies that did not exist anywhere in the world.

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Pavel Vladimirovich Logachev

P.V. Logachev was the first to experimentally create and investigate ultracold electron beams and short intense electron bunches from a gallium-arsenide photocathode. The results he obtained with the promising accelerator technique for fundamental research have also found application in solving important applied problems. The development, with his decisive participation, of new electron guns for electron-beam welding units made it possible to considerably improve and update the technology of vacuum electron-beam welding at leading enterprises in the country.

With the active participation and leadership of P.V. Logachev, a pilot model of a powerful rotating solid-state target based on carbon materials (continuous power density in the beam on the target was 100 kW $cm^{-2}$) was worked out and successfully tested within the framework of implementation of projects of the International Scientific and Technical Center (ISTC). P.V. Logachev's studies in this area proved to be critically important for the choice and justification of technical solutions for units and systems of the powerful neutron target at the SPES (Italy) and SPIRAL-II (France) installations.

P.V. Logachev proposed, investigated, and successfully applied in practice a new method of nondestructive diagnostics of intense charged particle beams. The method is based on

Laboratory Assistant V.I. Edel' and Director P.V. Logachev at the boron neutron capture therapy (BNCT) installation at INP SB RAS (2016).

P.V. Logachev and Prime Minister of the Russian Federation M.V. Mishustin at INP SB RAS (March 5, 2021).

the interaction of a low-energy electron beam with the main intense beam.

A modern technology for the design and production of high-frequency linear S-band (3 GHz) accelerators, including all necessary elements, was created for the first time in Russia at the INP SB RAS under the direct supervision of P.V. Logachev. The creation of these accelerators made it possible to qualitatively solve the problem of positrons for the VEPP-4M and VEPP-2000 colliders at the INP SB RAS. Moreover, a unique technology for computing and creating induction accelerators for electron and positron injectors was developed for the first time in Russia.

The linear induction accelerator LIU-2, designed under the supervision of P.V. Logachev, became a prototype of the injector for a new-generation pulsed X-ray complex. Later on, P.V. Logachev became an active participant in the creation of a multiangle radiographic complex for pulsed tomography at the Russian Nuclear Center-VNIITF (city of Snezhinsk) based on the linear induction acceleration LIU-20, developed by the staff of the INP SB RAS.

P.V. Logachev has extensive experience in scientific and organizational work. Since 2011, he has been a member of the Joint Academic Council for Physical Sciences of the SB RAS, and since 2016, a member of the Presidium of SB RAS.

From 2017 to 2020, Pavel Vladimirovich was a member of the Council for Science and Education under the President of Russia.

Under the leadership and active personal participation of P.V. Logachev, the INP SB RAS became the initiator of the creation, the main developer, and a manufacturer of the unique accelerator complex of the Center for Collective Use, the Siberian Ring Photon Source (CCU SKIF), being created in the science town of Koltsovo, Novosibirsk region. Pavel Vladimirovich's energy and talent, as well as the coordinated work of scientists, engineers, and designers from INP SB RAS, together with colleagues from the Institute of Catalysis of SB RAS, made it possible to approach the final stage of implementation of this project in an unprecedentedly short time under the difficult conditions due to external restrictions.

Under the leadership of P.V. Logachev as director of INP SB RAS, he and his colleagues are realizing several other scientific projects important for the country: stable operation of the unique VEPP-4M and VEPP-2000 collider complexes is being provided, and scientists from the INP SB RAS are successfully acquitting themselves in the development of research tools for the nuclear weapon complex. The intensive scientific and organizational work of P.V. Logachev has allowed the institute to retain its leadership in the country in research and applied developments in the field of nuclear medicine for proton, ion, and boron neutron-capture therapy (BNCT). Without the active participation of P.V. Logachev and the BNCT team at SB RAS team, it would hardly have been possible to create an accelerator neutron source for the Blokhin National Medical Research Center of Oncology.

Pavel Vladimirovich's organizational talent fosters the establishment of intensive and effective work both between different generations and between different subdivisions of INP SB RAS. The main scientific tasks are being solved in close interaction between the younger generation and more experienced representatives of the older generation of scientists, research associates, designers, and experimental production workers from INP SB RAS.

P.V. Logachev devotes much of his time to training scientific personnel. For over fifteen years, he taught at the Department of Accelerator Physics of the Physics Faculty of NSU, delivering the course Sources of Charged Particle Beams, taught physics to schoolchildren at the Physics and Mathematics School under NSU, and supervised students and postgraduates. His innovative ideas for attracting talented schoolchildren and students to science achieved tangible results at INP SB RAS: eight candidate theses have been defended under Pavel Vladimirovich's supervision. He shows special concern for students and colleagues in nonstandard professional and life situations and often, when necessary, personally contributes to solving difficult issues.

On behalf of his colleagues, disciples, and friends, we heartily wish Pavel Vladimirovich sound health, interesting creative tasks, and the ability to pass on his wisdom and accumulated knowledge to future generations of young scientists.

We wish you creative success and prosperity, Pavel Vladimirovich!

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