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## ACCELERATOR TECHNOLOGIES IN UKRAINE FOR THE FCC (e+ e-) AND FCC(hh)

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Until 1993, the Kharkiv Institute of Physics and Technology was the largest scientific center in Ukraine where nuclear physics research was conducted using beams of  $\gamma$ -quanta, electrons, protons, and other charged particles. The institute had a number of unique accelerator facilities: the largest linear accelerators in Europe, LU-2000 and LU-300, the H-100 storage facility, and a number of lower energy accelerators. A large team of highly qualified specialists in nuclear and accelerator physics was formed at the institute. After 1993, the production of klystrons for our accelerators was eliminated in Russia, and large accelerator facilities were shut down and it was impossible to resume their operation. Experimental work, which is the basis of nuclear physics research, practically stopped, and researchers were forced to transfer their research to other facilities outside Ukraine or retrain. The absence of “live” work primarily led to the outflow of young specialists from this field of research and the aging of personnel.

Currently, there are only four electron accelerators in Ukraine: the 10 MeV LU-10 technological accelerator, the 30 MeV LU-30 accelerator, the LU-40 accelerator at KIPT, which were restored after damage, and the 25 MeV M-30 microtron at the Institute of Electron Physics, National Academy of Sciences of Ukraine, Uzhhorod. In connection with this, it became necessary to create a new state program for the development of fundamental and applied nuclear physics research using accelerators and electron storage facilities, as well as a multifunctional accelerator complex for its implementation, which were emphasized in 2022 in [1,2].

In 2023, a monograph was published [3], which outlined the concept of the complex. This conceptual project was based on the ideas for the development of accelerator technologies laid down in the European Strategy for Particle Physics - Accelerator R&D Roadmap [4]. The strategy is a roadmap for the development of accelerators in Europe in the next 5-10 years. These accelerator technologies may be used in the future in the implementation of the FCC(hh) project.

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