

# Applied studies in the framework of the Fundamental and applied Linear Accelerator Physics collaboration at the electron accelerator LINAC-200

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The electron accelerator LINAC-200 is a unique tool currently commissioned into operation at the JINR, Dubna, with a number of controllable parameters: electron energy in a range from 26 to 200 MeV (anticipated up to 2 GeV), macropulse duration from 30 to 3000 ns with a bunch duration of 1 ps, current from 0 to 60 mA, the capability of adjusting the pulse repetition rate in a range of 286–520 MHz. At present, this facility is the only one in the world with such flexible and reliably adjustable parameters. The high attractiveness of this facility to researchers resulted in the establishment of a new scientific collaboration FLAP (Fundamental and applied Linear Accelerator Physics collaboration). The FLAP collaboration is aimed at investigation of generation of electromagnetic radiation by relativistic electrons for deeper understanding of the nature of electromagnetic interactions and development of advanced diagnostic tools for accelerated beams of charged particles, spintronic devices and novel superfast detectors of electromagnetic radiation; understanding of the origin of CP violation in terms of new axion-like bosons; as well as a number of applied topics, such as nondestructive diagnostics of circulating and extracted accelerated particle beams, development of neutron detectors, pulsed neutron sources, radiobiological issues. The report addresses the development, testing and calibration of detectors based on microchannel plates for non-destructive diagnostics of accelerated ion beams, neutron detectors for applied research, including new concepts of energy production, pulsed neutron sources for studying extreme states of matter.