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Advanced Heavy Ion Accelerators for HED Research

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This presentation outlines ongoing activities on development of heavy ion accelerator facilities, providing high-brightness beams capable of generating intense beams extreme state of matter. Manifested facilities goals is pushing the "intensity" and the "precision frontiers" to the extremes when accelerating full range of ion beam species from p+ to U to highest beam intensities and luminosities.
Consideration is focused on the recent achievements in high power linear accelerator injection chains, rapid cycling superconducting magnets of large synchrotron rings, ultra-high dynamic vacuum technologies, efficient accumulation and cooling of intense heavy ion beams.
Generation of "precision beams", sophisticated beam manipulation methods-stochastic and electron cooling of ion beams, also applicable to the secondary radioactive beams of exotic nuclei is under discussion.
Construction of new generation of heavy ion accelerator facilities is progressing well and forefront accelerator technologies are under development in JINR for low energy as well as for relativistic heavy ion nuclear physics.

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