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Status of research at the FLNR, JINR

Monday, 24 November 2025 12:00 (25 minutes)

The scientific programme of the laboratory includes experimental research in the synthesis and studies of nuclear physics and chemical properties of new superheavy elements, fusion and fission reactions and multi-nucleon transfer in heavy-ion collisions; studies of the properties of nuclei on the border of the nucleon stability and mechanisms of nuclear reactions with accelerated radioactive nuclei; studies of interaction of heavy ions with various materials.

The flagship projects at the FLNR are focused on synthesis of new superheavy elements at the “Superheavy Element Factory” (SHE factory). SHE factory is based on a specialized accelerator - the DC280 cyclotron and the Dubna Gas-Filled Recoil Separators: DGFRS-II and GRAND (DGFRS-III). The recent results in super heavy element research will be presented.

Another important direction of study is light exotic nuclei near and beyond the borders of nuclear stability. The main facility is the U400M accelerator and a high-acceptance separator, ACCULINNA-2. The results of recent experimental studies on light exotic nuclei, such as 4n,6,7H,7He,10Li, etc.) have demonstrated a high potential of the ACCULINNA-2 setup for detection charged particles and neutrons for studies of exotic nuclei. Opportunities of day-two experiments with RIBs using additional heavy equipment (radio frequency filter, zero angle spectrometer, cryogenic tritium target and new detectors development) and the potential of light RIB research at ACCULINNA-2 will be discussed.

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