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The new accelerator facility for applied research DC-140 FLNR JINR status

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A wide range of applied research with accelerator ions beam is being implemented at the Flerov Laboratory of Nuclear Reactions JINR. Currently, more than 6,000 hours of accelerated time are allocated to such work per year. The volume of applied research is constantly increasing. To meet the requirements for beams and acceleration time, FLNR is implementing a program to create a new accelerator complex, DC-140. The accelerator complex is based on the DC-140 cyclotron with an ion source DECRIS-5M. The complex includes three channels with experimental setups. The cyclotron operates at a single frequency of 8.632 MHz and accelerates ions in two modes: the 2nd harmonic to an energy of 4.8 MeV/nucleon and the 3rd harmonic to an energy of 2.214 MeV/nucleon. The DECRIS-5M work on frequency 18 GHz allows obtaining ion beams from ^{16}O to ^{209}Bi . The extraction of the accelerated beam using an electrostatic deflector operating together with a passive magnetic channel and permanent magnets quadrupole (PMQ) ensures high acceleration efficiency. The experimental channels are equipped with all necessary diagnostic systems, a system for forming the sample irradiation field and experimental chambers. The project started in 2020. The construction of facility has been implemented since 2022. Commissioning of the complex's systems will begin at the end of 2025. The commissioning with accelerated beams started in August 2026. The current status of the project and first experimental results are presented in the report.

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