

Report on the “Status of the Factory of Superheavy Elements: Cyclotron DC-280”

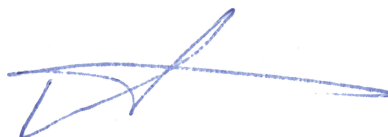
A complete construction and a successful commissioning of the Superheavy Elements Factory (SHEF) are important conditions to be fulfilled before the beginning of ambitious new program on the synthesis and study of super heavy elements at FLNR.

The installation of a new high-current DC280 cyclotron for the production of intensive heavy-ion beams with the energy ranging from 4 to 8 MeV/nucleon has made recently impressive progress and its commissioning should start by the end of 2017. The design and the construction of the accelerator are performed and followed by a very experienced team of high quality specialists from FLNR giving a good level of confidence that the design specifications of the cyclotron and of its sub-systems (ion sources, beam lines, diagnostic system etc.) will be reached.

A short report on the “Status of the Superheavy Elements Factory” submitted to the PAC should be completed answering the following questions:

- 1) *The efficiencies of injection, acceleration and extraction systems of the cyclotron are on the upper end of those achieved at other facilities. Are those systems based on the well known and save design? What are the tests foreseen in order to confirm the expected performances? Where are the most important beam intensity losses inside the cyclotron and what is the principle of the accelerator protection system?*
- 2) *What are the major components and principles of operation of the diagnostic systems used inside the cyclotron and along the beam lines?*
- 3) *What is the timeline and more detailed plans for the magnetic field measurements, RF tests, commissioning with beams? When the cyclotron is expected to be available for the first experiments?*
- 4) *What are, in the coming few years, the necessary vs. available human resources and funding for the construction and commissioning of the DC280 cyclotron?*

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