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# Production and study of neutron rich heavy nuclei.

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The heavy neutron rich nuclei are very important for nuclear physics investigations, for the understanding of astrophysical nucleosynthesis and r-process. In this region is located the closed neutron shell N=126 which is the last so-called “waiting point”. Study of the structural properties of nuclei along the neutron shell N = 126 could also contribute to the present discussion of the quenching of shell gaps in nuclei with large neutron excess.

A new setup, based on stopping nuclei in the gas cell and subsequent resonance laser ionization and separation by magnetic field is under stage of realization at Flerov lab. JINR. This setup is devoted to synthesis and study of new neutron rich heavy nuclei formed in low energy multi-nucleon transfer reactions.

A creation and launch of this facility will open a new field of research in low-energy heavy-ion physics, and new horizons in the study of unexplored “north-east” area of the nuclear map. It could be helpful also for finding a new way for production of heavy and superheavy nuclei.

The current status of this investigation and its possible extension to the superheavy elements in combination with MR-TOF and Penning trap mass measurement will be discussed.

## Attendance Type

In-person

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