RADIOACTIVE ION BEAMS (RIBs) FOR THE STUDY OF HEAVY NEUTRON-RICH NUCLEI

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Quasi-elastic, multi-nucleon transfer (MNT) reactions induced by the RIBs with energy 4–6 MeV/u allow one to produce moderately excited nuclei with atomic numbers $95 < Z < 110$ and neutron numbers approaching $N = 172$ (see in Fig. 1). This offers a new approach to the study of so far unknown nuclei in neighborhood of the recently discovered island if super-heavy nuclei [1, 2]. Informative for the study of r-process in the neutron star mergers [3, 4] will be data specifying significant fission characteristics obtained for the nuclei along the ^{254}Cf-feeding path by means of the RIB MNT reactions. The choice of suitable RIBs available from the newly built ACCULINNA-2 fragment separator [5] and possible results of appropriate experiments will be discussed.

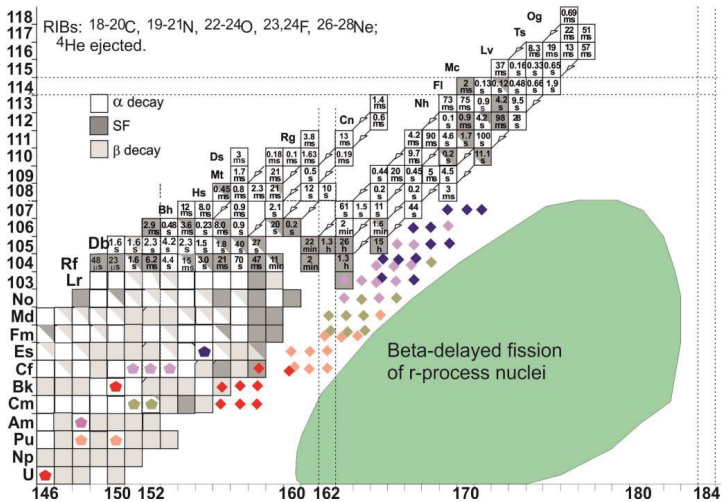

Fig. 1. Plot showing nuclei in the vicinity of the stability island. Targets suitable for the MNT implementation and the so far unknown neutron-rich nuclei lying on the β-decay path of r-process products are shown with pentagons and diamonds, respectively.

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