

β -decay and β -delayed neutron emission measurements at GSI-FRS for r -process nucleosynthesis

The rapid neutron capture process (r -process) is one of the main mechanisms proposed to account for the nucleosynthesis of elements heavier than iron. This process involves an enormous amount of very exotic neutron-rich nuclei, with several regions where the nuclear properties are unknown and have to be inferred from theoretical predictions. This contribution summarizes recent experimental efforts at the fragment separator facility of GSI towards the production and measurement of neutron rich nuclei along or near the r -process path. Data acquired in these experiments will provide new information on half-lives and β -delayed neutron emission probabilities, which are a relevant nuclear physics input for r -process model calculations and for the improvement of theoretical models. An overview about the FRS facility and the experimental setup will be presented, with particular emphasis on the BEta deLayEd Neutron detector (BELEN). The latter was recently used for the S323 and S410 experiments, which focussed on exotic nuclei around the $N=82$ and $N=126$ regions, respectively. A brief summary of the data analysis and some preliminary results will be presented.