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KEK WNSC: KEK Wako Nuclear Science Center

"Production of neutron-rich nuclei around N = 126 and beyond using multinucleon transfer reactions at KISS project"

Neutron-rich nuclei around the neutron closed shell N = 126 are important for their shape-traditional properties as well as for the investigation of the r-abundance peak at A = 195. Intense theoretical and experimental efforts have been currently invested in the possibility of using multinucleon transfer (MNT) reactions to produce those nuclei. We have been developing KEK Isotope Separation System (KISS) at RIKEN RIBF facility to produce and separate those neutron-rich nuclei for their systematic spectroscopy. The MNT reaction between a 136Xe beam and a 198Pt target is used for their production, its promising potential was demonstrated in the experimental study performed at GANIL.
The region on the nuclear map around the neutron-rich actinide isotopes is another region of interest, which could be efficiently accessed by the MNT reactions. They are also important for their mid-shell properties as well as for the investigation of the r-process in terms of its termination and the fission cycling. We are considering to extend our research scope to the neutron-rich actinide isotopes in the present KISS and are further planning the upgrade of the KISS to focus on those nuclear region.
The experimental results for nuclear production at GANIL and spectroscopic studies at the KISS will be presented with the future plan of the KISS.

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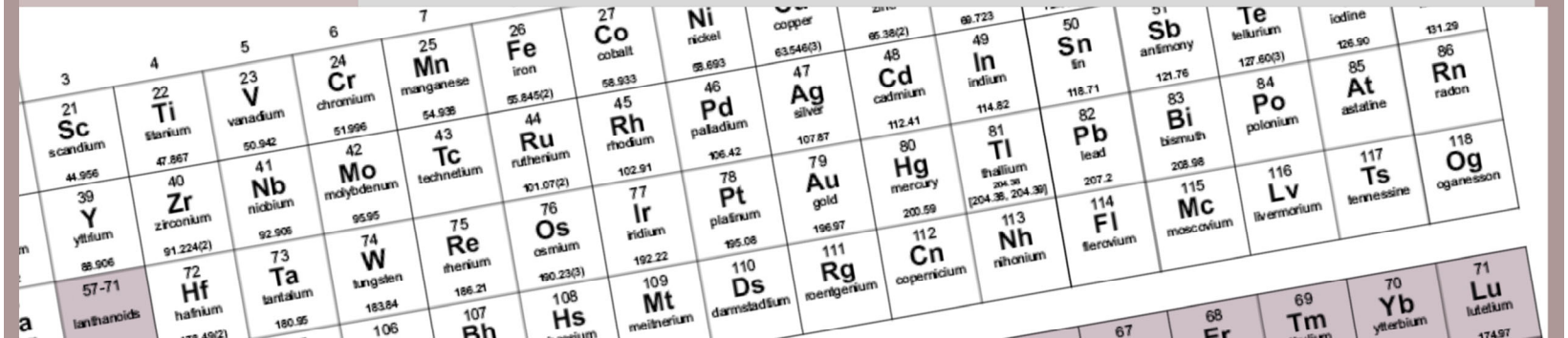
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