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## Pathway to nuclear structure in heavy neutron rich nuclei in the vicinity of N=126 and nuclei northwest of $^{132}\text{Sn}$ via multinucleon transfer reactions

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Multinucleon transfer (MNT) reactions provide a powerful approach to access exotic neutron-rich nuclei. Excited reaction products have been measured in  $^{136}\text{Xe} + ^{208}\text{Pb}$  at 1 GeV with the high-resolution  $\gamma$ -ray tracking array AGATA coupled to the mass spectrometer PRISMA at LNL (INFN, Italy) positioned at the grazing angle. For the beam-like fragments, energy  $E$ , atomic number  $Z$ , velocity  $\beta$ , charge state  $q$ , and mass number  $A$  were measured in the range  $Z=52\text{--}58$ , enabling a clean selection of the nuclei of interest. Kinematic coincidences were exploited to improve the identification of the hard-to-reach neutron-rich lead isotopes on the target-like side. Based on relative cross-section distributions for different reaction channels, the potential and limitations of this method for producing neutron-rich nuclei will be presented. Preliminary results on excited states of beam-like nuclei in the Xe–Ba mass region will also be presented.

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