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Pre-neutron yields with the VAMOS++ spectrometer and its second arm

We report on the pre-neutron mass yields of actinides near ^{232}Th measured in inverse kinematics at the VAMOS++ spectrometer and its newly developed second arm. The experiment used a ^{232}Th beam accelerated for the first time at GANIL, impinging on a carbon target ($100\text{ }\mu\text{g}\cdot\text{cm}^{-2}$) inducing fission of a few actinides from multi-nucleon transfer. The VAMOS++ spectrometer allows to measure the isotopic yields after neutron evaporation with a few percents of resolution. It is coupled with the PISTA detector, an array of DSSD detecting and identifying the target-like recoil at forward angles. This allows a better control of the excitation energy of the fissioning system. We present the new detection setup added to the VAMOS++ spectrometer to measure the second fragment. It is composed of two Multi-Wire Proportional Counters (MWPC) separated by 1.6-m, at 40° from the VAMOS++ spectrometer. This allows a precise velocity measurement of the second fragment which, coupled to the VAMOS identification, give access to the pre-neutron masses and therefore to the neutron evaporation of the fragment detected in VAMOS, event by event.

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