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## Quasi-free (p,2p) reactions in inverse kinematics for studying the fission yield dependence on temperature and its implication in the stellar nucleosynthesis r-process

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Although the importance of the fission fragment treatment in stellar nucleosynthesis r-process calculations is well established, an aspect of the phenomenological descriptions of fission that has so far remained relatively unexplored in the r-process is the dependence of the fission yields on the excitation energy or temperature of the compound nuclei [1]. Moreover, the fission yields and fission barrier heights of nuclei far from the stability line are also crucial to correctly describe the r-process cycle as well as the transitions from symmetric to asymmetric fission [2]. To determine all these observables, we have carried out at the GSI facility a new experiment in inverse kinematics and using quasi-free (p,2p) reactions as a novel technique to induce the fission process [3]. These new measurements have been performed with state-of-the-art detectors especially designed to measure the fission products with high detection efficiency and acceptance, which were developed by the R3B collaboration [4]. The analysis of this new data will give us for the first time access to the excitation energy of the fissioning system by using the missing mass method and thus it will allow us to investigate the evolution of fission yields with the temperature.

[1] N. Vassh et al., J. Phys. G: Nucl. Part. Phys. 46, 065202 (2019)

[2] T. Kajino et al., Prog. Part. Nucl. Phys. 107, 109 (2019)

[3] J. Benlliure and J.L. Rodríguez-Sánchez, Eur. Phys. J. Plus 132, 120 (2017)

### Topic

Experiment

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