

Reaction studies using stored ions

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Reactions of astrophysical interest in explosive scenarios, *e.g.*, with relevance for the γ - or rp -processes, often involve unstable isotopes that cannot be studied using traditional methods. In inverse kinematics, such isotopes are available making use of the Fragment Separator (FRS) at GSI Helmholtzzentrum für Schwerionenforschung, Darmstadt, Germany. By using the ESR storage ring in combination with the gas jet target (p,γ) and (α,γ) reactions can be studied. The detection of the reacted beam can be achieved by using DSSSD which measure the spatial separation after the first dipol magnet.

At energies between 9 MeV/u and 11 MeV/u, a proof-of-principle experiment was carried out investigating the reaction ${}^{96}\text{Ru}(p,\gamma)$. Details about the setup and the ongoing analysis will be presented.

In order to access lower energies, a new setup has been developed and installed at GSI. This new setup involves UHV compatible silicon detectors as well as mechanical manipulators for precise positioning. The current status of the setup, its design values, and the future plans will be presented.

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