



Contribution ID: 14

Type: **Physics and astrophysics of neutron deficient nuclei**

alpha-elastic scattering in inverse kinematics for the astrophysical *p*-process

Over the past years, several sensitivity studies [1 - 4] have been performed in order to identify the uncertainties caused by the nuclear input in reaction networks aiming at describing the production of the *p*-nuclei. All studies indicated a strong dependence of the final abundance distribution of the heavy *p*-isotopes on the α -nuclear potential, highlighting the strong need of characterising α -particle induced reactions. Despite the astrophysical *p*-process, α -particle induced reaction cross sections play an essential role under certain *r*-process conditions [5 - 7], and well as in the αp -process [8].

Recent developments in target production [9,10] allow for the measurement of α -particle induced reactions in inverse kinematics, opening a new window in the study of α -nuclear interactions with exotic beams at low energies. Due to the lack of experimental data in the region around the heavy *p*-nuclei, uncertainties in the astrophysical modelling of the *p*-process are still dominated by the α -nuclear potential. The use of radioactive beams in this mass region at energies around the Coulomb barrier surrounded by position-sensitive charged particle detectors provides a unique opportunity to validate models and to reduce the uncertainties in the nuclear potential, and consequently of the astrophysical modelling.

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