



Contribution ID: 57

Type: **Contributed talk**

New half-lives measurements for r-process in $A \sim 225$ Po-Fr nuclei

Tuesday 17 September 2024 17:20 (15 minutes)

The astrophysical rapid-neutron capture process (r-process) of explosive nucleosynthesis is responsible for the formation of half of the heavy nuclei above Fe. Actinides are produced towards the end of this process, when the neutron flux is expected to be minimal, and it is supported also by fission processes. Given that the r-process path runs far away from the accessible species, in this heavy region of the chart of nuclides, experimental inputs on β decay for nuclei beyond $N = 126$ are useful to test global nuclear models.

In this paper results from an experiment performed at GSI-FAIR within the HISPEC-DESPEC Phase-0 experimental campaign will be discussed. $220 < A < 230$ Po-Fr nuclei were populated in a relativistic fragmentation reaction induced by a 1 GeV ^{238}U beam. The species were selected and identified using the FRagment Separator and implanted in the DEcay SPECTroscopy station to study their β decay. The DESPEC station is composed of Double Sided Silicon-Strip Detectors sandwiched between two plastic scintillators, surrounded by a γ -detection array of HPGe and LaBr₃(Ce) detectors.

The extracted β -decay half-lives are discussed with recent theoretical models, to assess the impact of the measured values in the r-process predictions. Perspectives of future measurements in the region will be provided.

Primary authors: BENZONI, Giovanna (INFN Milano); POLETTINI, Marta (University of Padova and INFN Padova)

Presenter: POLETTINI, Marta (University of Padova and INFN Padova)

Session Classification: Plenary Session