Contribution ID: **28** Type: **not specified**

Isomeric yield ratio measurements in the alpha-particle induced fission of Thorium at 32 MeV

Friday, 1 November 2024 10:00 (20 minutes)

The mechanism generating fission fragments' large angular momenta is still a heavily discussed question in nuclear physics. Since they are not directly measurable, experimentally accessible observables are used to derive the angular momenta using nuclear model codes. One of these observables is the yield ratio between spin isomers produced in a fission reaction. For this reason, twenty-one FF's isomeric yield ratios were measured for Th(a,f) at 32 MeV, through the phase-imaging ion-cyclotron-resonance (PI-ICR) technique using the JYFLTRAP double Penning trap at the IGISOL-4 facility in Jyväskylä university. This reaction was chosen in order to compare the newly measured IYR with results from earlier 238U(p,f) campaigns and data in the literature involving the thermal n-induced fission of to investigate, e.g., the impact of the initial spin of the compound system on the IYR. Through PI-ICR, isomers are separated with a high mass resolving power, allowing e.g. to resolve the Sn-129 isomeric pair, with a mass difference corresponding to 35 keV. The separated ions are then projected onto a position sensitive detector (MCP). The images produced are then analyzed to calculate the number of ions measured for each state, using angular projection and clustering methods. The measured IYRs are then corrected to account for the MCP efficiency and the decay and feeding effects from eventual precursors in the beam, as the time from extraction to measurement can be comparable to their half-lives. The analysis and results of the measurement campaign will be presented.

Primary author: CANNAROZZO, Simone (Uppsala University)

Presenter: CANNAROZZO, Simone (Uppsala University)