Contribution ID: **7** Type: **not specified**

Mass measurements in the vicinity of the N=40 subshell closure

Wednesday, 3 July 2019 16:30 (35 minutes)

Sensitivity studies have shown the predominant role of 67Fe and 69Co on the weak r-process abundance pattern [1]. The individual photodissociation rates in the r-process path depend exponentially on the reaction Q-values. The Q-value for 67Fe(n,γ)68Fe and 68Co(n,γ)69Co reactions are based directly on the masses of 67Fe and 69Co. The double Penning trap JYFLTRAP [2] at the University of Jyväskylä has been successfully used to measure masses of both 67Fe and 69Co influencing the astrophysical weak r-process. The long-living state of 70Co was also measured during the same experiment. The isotopes of interest were produced via proton-induced fission on a natural uranium target at the IGISOL facility [3]. The Time-of-flight Ion Cyclotron Resonance (TOF-ICR) technique [4] and the Ramsey's method of time-separated oscillatory field [5] were used for the mass measurements. The measured nuclei lie beyond the N=40 subshell closure, and provide information about the nuclear structure and mass surface in this region which is known for deformation and shape coexistence. In this talk, the experimental methods, the results and their impact on astrophysics and nuclear structure in the N=40 region will be discussed.

Primary author: CANETE, Laetitia (university of Jyväskylä)

Co-authors: Mrs KHANAM, Afrina (University of Jyväskylä); Dr POVES, Alfredo (Universidad Autónoma de Madrid); Dr DE ROUBIN, Antoine (University of Jyväskylä); KANKAINEN, Anu (University of Jyvaskyla); Prof. JOKINEN, Ari (University of Jyväskylä); Dr BASTIN, Beyhan; Dr PETRONE, Cristina (IFIN-HH); Dr NESTERENKO, Dmitrii (University of Jyväskylä); Dr DE OLIVEIRA SANTOS, François (GANIL); Dr NOWACKI, Frederic (Université de Strasbourg); Dr PENTTILÄ, Heikki (University of Jyväskylä); Prof. MOORE, Iain D. (University of Jyväskylä); Dr POHJALAINEN, Ilkka (University of Jyväskylä); Prof. ÄYSTÖ , Juha (University of Jyväskylä); Mr VILÉN, Markus (University of Jyväskylä); Dr ASCHER, Pauline (CENBG); Mr GIRAUD, Simon (GANIL); Dr ERONEN, Tommi (University of Jyväskylä); Mr ALCINDOR, Valerian (GANIL); Dr RUBCHENYA, Valery A. (University of Jyväskylä)

Presenter: CANETE, Laetitia (university of Jyväskylä)

Session Classification: Session