Contribution ID: **29** Type: **Oral presentation**

The MONSTER neutron detector array

Thursday 24 May 2018 15:05 (20 minutes)

The MONSTER (MOdular Neutron SpectromeTER) is a time-of-flight (TOF) spectrometer based on scintillation detectors [1,2]. It is originally intended as a research instrument for DESPEC, in the Low Energy Branch of the Super-FRS recoil separator in FAIR, to be utilized in the beta-delayed neutron emission studies far from the beta stability line. The modularity of the detector array nevertheless allows to use it in various combinations, both as a primary as well as an auxiliary detector system, and provides flexibility to easily move to experiments in other laboratories.

MONSTER will consist of 100 cylindrical modules, each 200 mm in diameter and 50 mm thick. As 2018, more than 60 of these modules are operational. All modules are expected to be ready by 2020. Modules are filled with BC501A organic liquid scintillator with well known pulse shape analysis properties, allowing identification of the neutron events. Each module is connected to 120 mm diameter Hamamatsu R4144 photomultiplier, whose output is digitized with Teledyne fast transient recorder unit.

Several institutes participate to the MONSTER collaboration. The most significant are CIEMAT, Madrid, and University of Valencia, Spain; Variable Energy Cyclotron Centre (VECC), Kolkata, India; and University of Jyvaskyla, Finland.

In the presentation, a technical overview of the MONSTER detector array, an outlook for the intended research program and a summary of the current status of the project will be given. In particular, the presentation will concentrate on the experiments and experimental possibilities at the IGISOL mass separator facility in the JYFL Accelerator Laboratory in the University of Jyvaskyla.

[1] A. R. Garcia, et al., Journal of Instrumentation 7 (2012) C05012 https://doi.org/10.1088/1748-0221/7/05/C05012
[2] T. Martínez, et al., Nuclear Data Sheets 120 (2014) 78 https://doi.org/10.1016/j.nds.2014.07.011

Primary author: Dr PENTTILÄ, Heikki (University of Jyvaskyla)

Co-author: ON BEHALF OF MONSTER COLLABORATION

Presenters: Dr PENTTILÄ, Heikki (University of Jyvaskyla); ON BEHALF OF MONSTER COLLABORATION

Session Classification: session 10