



Contribution ID: 178

Type: Poster

#07-178 URANIA-V: An innovative solution for neutron detection in homeland security applications

Wednesday, June 23, 2021 4:50 PM (5 minutes)

Detection of neutrons is becoming of the utmost importance, especially in the studies of radioactive waste and in homeland security applications. The crisis of He^3 availability has required the development of innovative techniques. One solution is to develop light gas detectors for neutron counting to be used as portals for ports and airports. The neutron is converted on the Boron-coated cathode, releasing a charged particle, which passage can be identified by the gas detector. While several technologies have been deployed in the past, the project μ RANIA-V (μ Rwell Advanced Neutron Identification Apparatus) aims to detect thermal neutron by means of the μ Rwell technology, an innovative gas detector. The goal is to produce tiles to operate as portals in homeland security or for radioactive waste management. The technological transfer towards the industry has started, thus the production can be cost-effective also owing to a construction process relatively easier compared to similar apparatus. By reading directly the signals from the amplification stage, the neutrons can be counted with simplified electronics further reducing the total cost. The first part of the project, more dedicated to the optimization of the neutron detection technique, has been developed within the ATTRACT-EU call. In this presentation, the project will be described, with details on the μ Rwell technology and on the neutron counting, on the test beam performed, and on the future plans.

Primary authors: FARINELLI, Riccardo (INFN - Ferrara); MEZZADRI, Giulio (INFN - IHEP Fellow)

Presenter: FARINELLI, Riccardo (INFN - Ferrara)

Session Classification: 07 Nuclear Fuel Cycle, Safeguards and Homeland Security

Track Classification: 07 Nuclear Fuel Cycle, Safeguards and Homeland Security