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Cyclotron-based production of innovative radionuclides for medicine

Tuesday 6 September 2022 16:00 (40 minutes)

The cyclotron-based production of radionuclides for medicine is one of the research activities carried out in the framework of the SPES (Selective Production of Exotic Species) project at the Legnaro National Laboratories of the National Institute for Nuclear Physics (INFN-LNL). SPES aims at the construction of an advanced ISOL (Isotope Separation On-Line) facility to produce re-accelerated exotic ion beams for nuclear physics studies and to perform multidisciplinary activities,such as radionuclides production for medical applications and neutron-based research.The heart of SPES is the 70 MeV proton-cyclotron with a dual-beam extraction, installed in 2015 in a new building equipped with ancillary laboratories currently under completion. The ISOLPHARM project exploits the ISOL-technique to investigate the production of medical radionuclides, in particular 111Ag [1,2]. This work will mainly present the results obtained with the interdisciplinary project LARAMED (LAboratory of RAdionuclides for MEDicine) [3,4], that in the last ten years had investigated the direct production of 99mTc, 67Cu, 52/51Mn, 47Sc radionuclides and in the next year will study proton-based production of 155Tb. LARAMED research activities are ranging from the nuclear cross section measurements to target development and characterization, radiochemistry, radiopharmaceutical labelling, up to imaging studies and recovery of the enriched material used as target [5-16].A consolidated network of collaborations with national and international facilities, including universities and hospitals, characterizes these research activities on medical radionuclides production at the INFN-LNL.

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