Contribution ID: 7 Type: not specified

F-18 activity mesurements at NMISA

Monday, 13 September 2021 10:00 (30 minutes)

F-18 is an important radionuclide in PET imaging and is produced at iThemba LABS. Therefore, iThemba LABS and other producers and users of F-18 require traceability from a metrology institute. At NMISA the absolute activity of F-18 was determined through a primary measurement using $4\pi\beta$ - γ liquid scintillation coincidence counting. Conventional beta-efficiency extrapolation was employed. Subsequently, a factor for the NMISA ionization chamber was determined and used during a SIRTI comparison. A non-extrapolation method based on a detection efficiency analysis was also employed to analyse the data, using an adaptation of the double-phototube coincidence efficiency for a threshold above the second monopeak. Results and uncertainty budgets for the two methods are presented and discussed. Dissemination of F-18 traceability to iThemba LABS is also presented.

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Session Classification: Metrology and Applications

Track Classification: Metrology and Applications