

F-18 activity measurements at NMISA

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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 $4\pi\beta\text{-}\gamma$ 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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