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#6-125 Fast Neutron Multiplicity Counting for High Mass Plutonium Assay

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The fast neutron multiplicity counting apparatus was consisted of 26 pieces of liquid scintillator detectors in two rings layout, multi-board 500M 14bit digitizers based on PXIe platform, and mechanical mounting structure. Each detector's light output was calibration with Cs-137 source. The apparatus efficiency for fast neutron detection calibrated with Cf-252 source was about 0.17, and the cavity was 35 cm in radius and 70 cm in height for holding the standard container. The fast neutron multiplicity counting experiment was performed with a serial of different high mass plutonium metals ranging from 0.5 kg to 4 kg and the mass assay results were constant with the sample nominal value. This research progress is showing a promising application for nuclear material assay and verification.

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