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Lead Activation Neutron Yield Measurement System Used in ICF Experiment YANG CUNBANG, FENG JIE, LIANG ZHIYUAN, National Key Laboratory of Laser Fusion, Research Center of Laser Fusion, CAEP — Lead activation measurement system is used to measure very low yield neutron of DT or DD reaction, activation sample is Pb sheath that surrounds a NaI(Tl) detector or Pb disks in front of it. Using this detector, adding amplifier, single-channel and multi-channel scaling system in computer, we can measure the γ rays from the activated sample(^{207}mPb) with 0.8s half-life decay and calculate the yield. Because half-life decay is too short to move activated sample to measure room manually or mechanic, we place the detector as close as 32cm from the laser target. To minimize this effect of the X-rays burst from the laser irradiated target, we use a gate circuit to remove the detector high voltage about 200ms to 1s adjustable, and restores it less than 100ms after the shot. The drift of the peak address of the pulse-height spectrum is unavoidable because of the NaI(Tl) detectors and the electronic system. We used an embedded multi-channel pulse height analyzer in this system to monitor and adjust the peak address of the spectrum in time. This system is used successfully in ICF experiment on SG-II facility.

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