ses through the target and hits on the wall of experimental hall. The neutron shielding wall shields the neutron coming from the beam dump to neutron detector.

5 - 14 Measurement of Gamma Response Function of EJ301 Organic Liquid Scintillator

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The gamma response functions of EJ301 (5 cm in diameter and 20 cm in height) organic liquid scintillator detectorwith standard ²²Na,⁶⁰ Co and ¹³⁷Cs gamma sources were measured in experiment. Standard gamma sources were mounted on the center of the entrance windowof a cylindrical (5 cm in diameter and 20 cm in height) scintillator cell. The gamma rays emitted from sourcewere detected by EJ301 scintillator coupled to ET 9813KB photo-multiplier tube.



Fig. 1 Experimental setup and electronics setup of electron responses measurement of gamma source.



Fig. 2 Comparison of experimental light output with simulation results.

The layout of experimental setup and electronics setup is shown in Fig. 1. The anode pulses from the photomultipliers of the EJ301 neutron detector were split intotwo by signal dividers. The electronic charges of the one branch were recorded by the Phillips 7166 QDC. Another one was sent to ORTEC CF8000 (constant fraction discriminator) and ORTEC GG8020 (Gate Generator) for a common gate of QDC. The light output data are collected event by eventbasis using a CAMAC-based online data acquisition system. The light output distributions of standard ²² Na,⁶⁰ Co and ¹³⁷ Cs gamma sources were obtained. Background was measured and extracted in the offline data analysis.

In the present work, the gamma response functions of EJ301 neutron detectorwere also simulated by using $GEANT4^{[1]}$ and $GEANT4^{[1]}$ and $GEANT4^{[1]}$ and $GEANT4^{[1]}$.

FLUKA^[2]. The simulation results of GEANT4 and FLUKA are compared with experimental data. As shown in Fig. 2, the results of simulation well agree with the experimental data.

References

- [1] Geant4 Reference Manual, available from http://cern.ch/geant4.
- [2] Fluka Reference Manual, available from http://www.fluka/org/.