

Development of neutron two-dimensional position detector systems by using MPPC

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KEK KENS-DAQ group is developing several neutron detectors and readout systems. 2 systems are developed by using a ZnS/6LiF neutron scintillator and MPPC (Multi Pixel Photon Counter: a semiconductor light sensor).

One is named M-PSD (MPPC position-sensitive detector) which uses charge-division method like the ^3He -PSD [1,2]. Therefore a NEUNET (neutron network) system [1] which is widely used in the J-PARC (Japan Proton Accelerator Research Complex) can be used for its readout system. A 2-dimensional detector which consists of 21 M-PSD boards at intervals of 5 mm. The detection area of the detector is $128 \times 105 \text{ mm}^2$. Each board has 32 MPPCs at intervals of 4 mm, and the spatial resolution is about 1mm.

The other is named MHPD (MPPC high count pixel detector) which processes data at each MPPC independently to obtain high count rate.

We will present the latest development of the detector systems.

References

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[2] S. Satoh, T. Ino, and M. Furusaka, Y. Kiyonagi, N. Sakamoto, K. Sakai, NIMA529(2004) 421-424.

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