

	<h1>MLF Experimental Report</h1>	提出日 Date of report
		2014/6/25
実験装置名/BL番号 Name of Instrument/BL10		
実験装置責任者 Name of the person responsible for the instrument:		
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1. 研究成果概要 (a)装置グループ内の成果、(b)ユーザー課題実装時における特筆すべきサポート、(c)ユーザー課題の執行状況について、まとめてください。A4 サイズ用紙使用のこと。

Outline of your activities. Following results at your instrument should be reported in A4 size papers: (a) results of your instrument group, (b) significant user support works, and (c) statistical summary of user experiments.

(a) Results of our instrument group

[Periodical measurement]

To investigate neutronic performance as well as to keep JSNS in optimum operating condition in J-PARC, we periodically measured the neutron spectra at BL10 in the several conditions of instrumental devices, such as rotary collimator, B<sub>4</sub>C slits, and so on. Figure 1 shows the neutron spectra measured by the same setting in May, 2013 and in Feb., 2014. The proton beam power in each measurement was about 300 kW. Four condition sets, denote as FS A, B, C and D in the Fig. 1, were applied in each experiment. A little difference in the cold neutron intensity was observed after normalization. The reason would be that unexpected neutron reflection at the vacuum duct was suppressed by the replacement of the duct of beam-transport section.

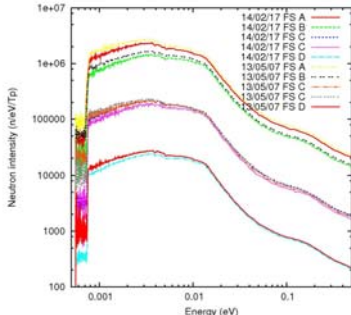


Fig.1 Measured neutron spectra in May, 2013 and Feb. 2014.

[Improved measurement method]

For a precise measurement of a neutron spectrum, three improvements have been incorporated; precise measurement of a detector efficiency, dead time correction, and DAQ system check. For the dead time correction, pulse signals from a random pulse generator (RPG) were used. If counting loss due to over rate was occurred, pulse counts from the RPG would be changed. Figure 2 shows measured neutron spectra with pulse counts from a RPG. Longer wavelength region (so-called second frame) was measured in the same experimental condition to see the pulse counts at low counting rate. We conclude that any counting loss didn't occurred at the first frame measurement since the RPG counts were almost unchanged from that of the second frame

## 1. 研究成果概要(つづき) Outline of experimental results (continued).

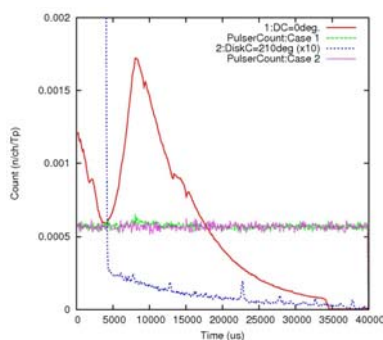


Fig.2 Measured neutron spectra with pulse counts from the random pulse generator.

### (b) Significant user support works

Device controllers for two B<sub>4</sub>C slits, 5-axis goniometer, and thermal neutron blocker were integrated into a control rack, as shown in Fig. 3 (right). Many users said that the electrical noise at BL10 was drastically reduced after renewal of the controller.



Fig. 3 The former controllers and drivers for two slits and a goniometer (left), and the newly integrated one (right).

### (c) Statistical summary of user experiments

There was no intrinsic failure of the instrument components of BL10, and all the approved proposals were carried out, except for the external factor due to the accident of J-PARC in May.

56.5 days were lost due to the Hadron accident.

After all, 15.5 and 21.0 days were assigned to the general use of 2012A and that of 2012B, respectively.

22.5 and 10.5 days were assigned to the project use of 2013P0600 and 2013P0800, respectively.

必要に応じて、A4 サイズの用紙に続きを記入して下さい。

Please use A4-size papers for further reporting, if necessary.