(※本報告書は英語で記述してください。ただし、産業利用課題として採択されている方は日本語で記述していただいても結構です。)

CROSS TOKAI **Experimental Report** J-PARC	承認日 Date of Approval 2014/03/23 承認者 Approver TAKEDA Masayasu 提出日 Date of Report 2014/10/29
課題番号 Project No. 2012B0177 実験課題名 Title of experiment 実験責任者名 Name of principal investigator Kazuya Yamamura 所属 Affiliation Osaka University	装置責任者 Name of responsible person Masayasu Takeda 装置名 Name of Instrument/(BL No.) BL17 実施日 Date of Experiment 2012/12/1-12/6 2013/1/13-1/14

試料、実験方法、利用の結果得られた主なデータ、考察、結論等を、記述して下さい。(適宜、図表添付のこと)
Please report your samples, experimental method and results, discussion and conclusions. Please add figures and tables for better explanation.

1. 試料 Name of sample(s) and chemical formula, or compositions including physical form.

No sample was measured.

Performance test of focusing mirrors was carried out.

2. 実験方法及び結果 (実験がうまくいかなかった場合、その理由を記述してください。)
Experimental method and results. If you failed to conduct experiment as planned, please describe reasons.

Using a 2-dimensional RPMT detector, we observed the profile of the neutron beam focused with a stacked focusing mirror. We also tried to demonstrate 2-dimensional focusing in the KB configuration..

In the first half of the machine time, commissioning of the RPM detector was carried out following the experiment 2012B0155 (2012/11/29-12/1), then the stacked focusing mirror was aligned as shown in Fig.1.

The focusing geometry, illustrated in the right panel of Fig.1, is based on ellipses each of which prescribes a single supermirror in the stack and shares their two focusing points. The first focal point was located at 6950 mm from the moderator where the slit S1 is installed while the second one at 18000 mm from the moderator which correspond to the detector position. The stacked focusing mirror was placed on a goniometer for optical devices at 14175 mm from the moderator. In the experiment neutron beam was narrowed by the slit S1, extracted downward and then reflected upward by the focusing mirror to focus vertically on the detector surface.

Figure 2 shows the 2-dimensional profile of the focused beam in the left panel and a horizontal cutout at A-A' in the left panel. We found that the beam was focused to 1.95 mm in full width at half maximum (FWHM)

at the detector surface..

Afterwards we tried 2-dimensional focusing in the Kirkpatric-Baez (KB) configuration using two 1-dimensional elliptic mirrors. The experimental setup is shown in Fig.3. However, unfortunately, we couldn't carry out the measurement because of time deficit.

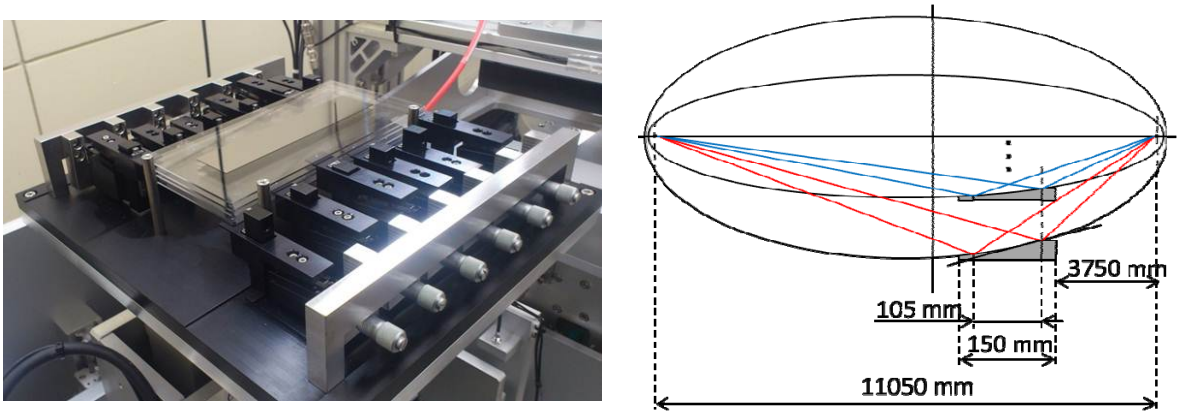
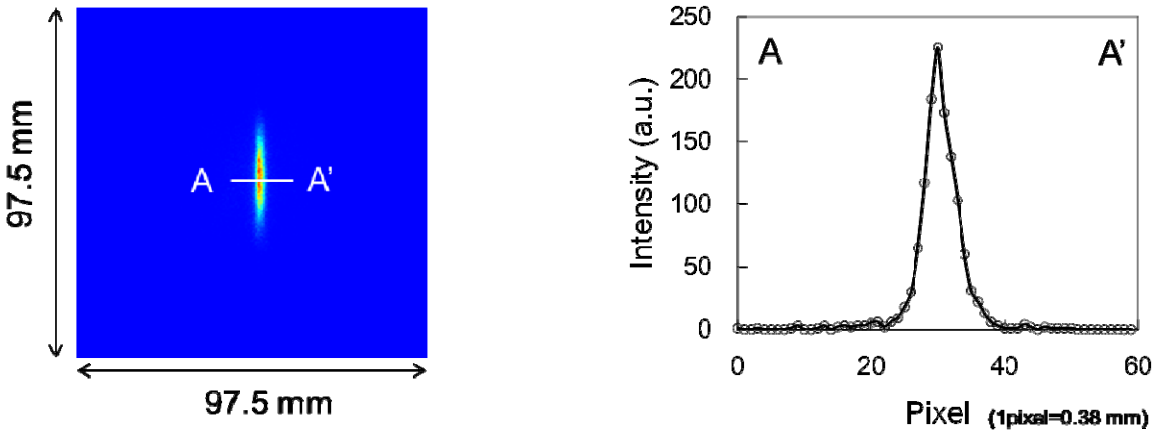


Fig.1 (Left Panel) Stacked focusing supermirror. (Right Panel) Focusing geometry using the stacked focusing supermirror.



(A) (B)

Fig.2 1-dimensionally focused beam profile measured with an RPMT detector: (A) 2-dimensional map of the intensity profile. (B) 1-dimensional cut-out from the 2-dimensional map along "A-A'".

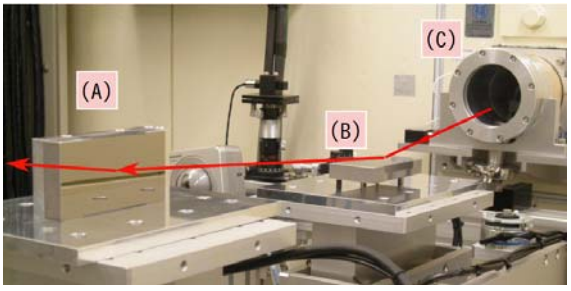


Fig.3

A Kirkpatrick-Baez setup of focusing mirrors: (A) transversally- focusing mirror, (B) vertically-focusing mirror, (C) Exit of beam tube. The two focusing mirrors were installed on the two goniometers for optical devices of BL17.