


(※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。)

 <b>MLF Experimental Report</b>	提出日 Date of Report 2013/10/15
課題番号 Project No.2012B0236  実験課題名 Title of experiment Measurement of Angular Distribution of Prompt Gamma-rays from Radiative Capture Neutron Reactions 実験責任者名 Name of principal investigator Hirohiko Shimizu 所属 Affiliation Nagoya University	装置責任者 Name of responsible person Hideo Harada 装置名 Name of Instrument/(BL No.) BL04 実施日 Date of Experiment 2013/03/03-2013/03/06

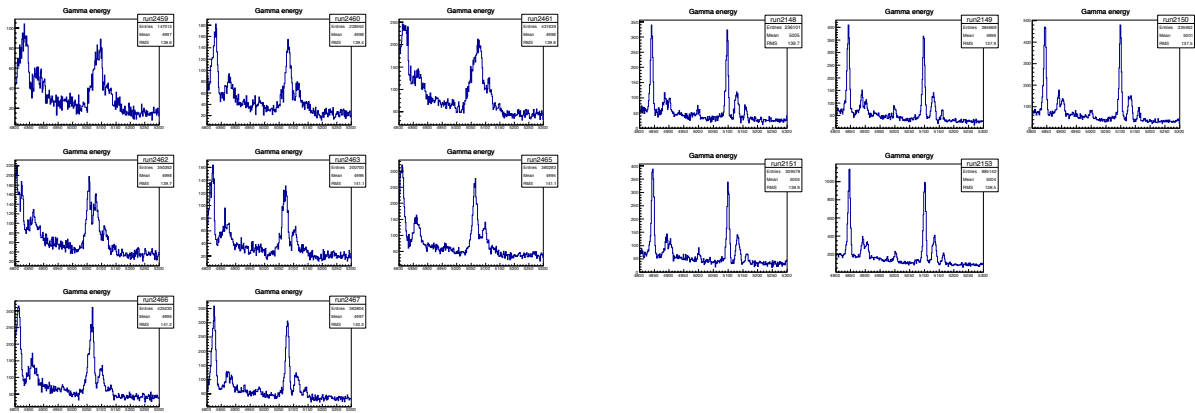
試料、実験方法、利用の結果得られた主なデータ、考察、結論等を、記述して下さい。(適宜、図表添付のこと)  
Please report your samples, experimental method and results, discussion and conclusions. Please add figures and tables for better explanation.

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

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.
<p>This experiment was proposed and carried out for improving the experimental errors of our measurement 2012A0122. The experimental method is common to 2012A0122.</p> <p>We placed a lanthanum foil at the normal sample position, which is located 21.5 m from the moderator surface, and acquired gamma-ray signals from the set of cluster germanium detectors. The amplitude of the gamma-ray signals from individual germanium crystals were recorded as a function of neutron time-of-flight.</p> <p>The obtained time-of-flight spectrum is consistent with the previous experiment. P-wave and s-wave resonances of <math>^{139}\text{La}</math> were observed at <math>\text{tof}=1.8\text{ms}</math> and <math>18\mu\text{s}</math>, which corresponds to the neutron energy of <math>E_n=0.75\text{ eV}</math> and <math>E_n=72\text{ eV}</math>. Random pulser signals with a constant rate were merged into the data acquisition system for the correction of the deadtime of the germanium detectors and the data acquisition system. The pulser signals had a constant amplitude beyond the pulse height region of physics signals and were unambiguously distinguished from physics signals.</p>

## 2. 実験方法及び結果(つづき) Experimental method and results (continued)

The distortion of the tof spectrum due to the dead time of the detector and data acquisition system was corrected so that the pulse signals have a constant rate over the neutron time-of-flight.



In this cycle, we observed worse energy resolution in the gamma-ray spectrum as shown above. The left figure shows the gamma-ray energy spectrum of germanium crystal located at the angle of 90 degree and the right that of the same germanium crystal in the previous measurement. We are currently improving the method to combine the data with different energy resolution.