

実験報告書様式(一般利用課題・成果公開利用)

(※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>Experimental Report</b> 	承認日 Date of Approval Nov. 20, 2014 承認者 Approver Ryoichi Kajimoto 提出日 Date of Report Nov. 20, 2014
課題番号 Project No. <b>2013B0050</b>  実験課題名 Title of experiment Explore the spectrum of spin excitations in non-superconducting BaFe <sub>1.8</sub> Ni <sub>0.1</sub> Cr <sub>0.5</sub> As <sub>2</sub> 実験責任者名 Name of principal investigator Rui Zhang 所属 Affiliation Institute of Physics, Chinese Academy of Sciences	装置責任者 Name of Instrument scientist Ryoichi Kajimoto 装置名 Name of Instrument/(BL No.) 4SEASONS 実施日 Date of Experiment March 6 <sup>th</sup> to 11 <sup>th</sup> , 2014

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.
Nickel and Chromium co-doped iron arsenide compound BaFe <sub>1.8</sub> Ni <sub>0.1</sub> Cr <sub>0.5</sub> As <sub>2</sub>

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>We plan to conduct the time of flight experiment on the sample by conducting experiment at different temperature and incident energy to find the spin excitation spectrum of BaFe<sub>1.8</sub>Ni<sub>0.1</sub>Cr<sub>0.5</sub>As<sub>2</sub>, which is non-superconducting. By comparing the spectrum with the superconducting sample we can have the information the correlation between spin excitation and superconductivity.</p> <p>The data analysis is still in progress, from what we have we can see roughly that the spin resonance disappears and the band top does not change much comparing to superconducting BaFe<sub>1.8</sub>Ni<sub>0.1</sub>As<sub>2</sub>. Also, the low-energy spin excitation at (<math>\pi</math>, 0) of the low energy spectrum has become isotropic comparing with superconducting BaFe<sub>1.8</sub>Ni<sub>0.1</sub>As<sub>2</sub>.</p>

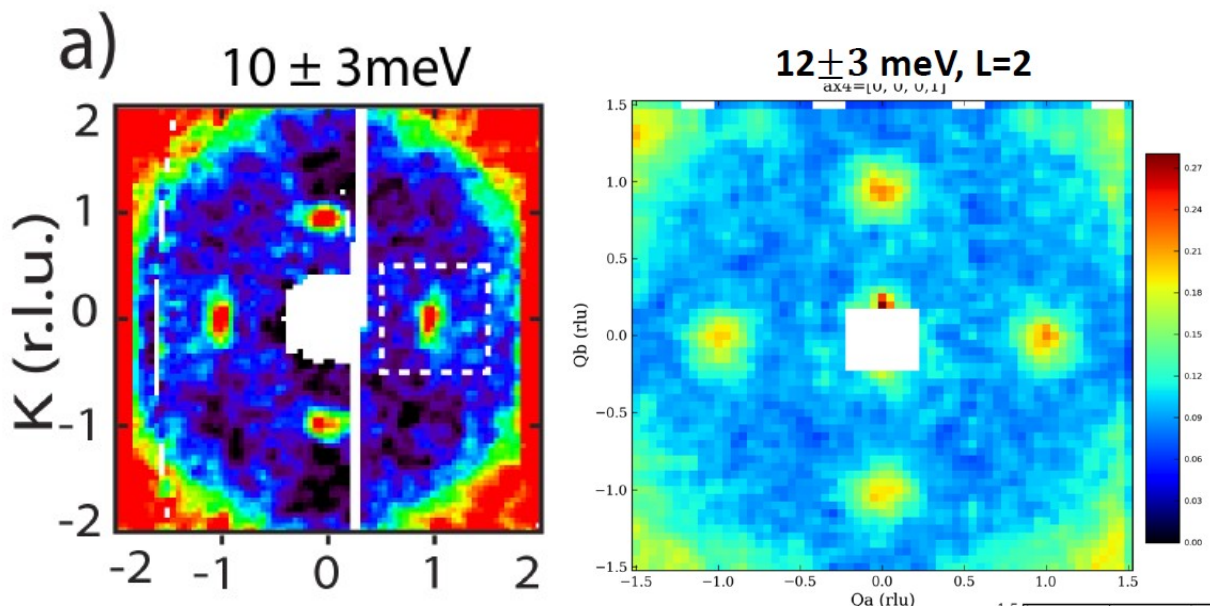


Fig. 1 BaFe<sub>1.8</sub>Ni<sub>0.1</sub>As<sub>2</sub> low energy spin spectrum(left) comparing with BaFe<sub>1.8</sub>Ni<sub>0.1</sub>Cr<sub>0.5</sub>As<sub>2</sub>(right).