(※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。)

MLF Experimental Report	提出日 Date of Report October 27, 2012
課題番号 Project No. 2011B0001 実験課題名 Title of experiment Inelastic neutron scattering studies of spin excitations in YBa2Cu3O6.45 (Tc = 48 K) 実験責任者名 Name of principal investigator Shiliang Li 所属 Affiliation Institute of Physics, Chinese Academy of Sciences	装置責任者 Name of responsible person Shinichi Itoh 装置名 Name of Instrument/(BL No.) BL12 実施日 Date of Experiment March 12, 2012 – March 20, 2012

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.

YBCO6.45

YBa2Cu3O6.45, single crystal, 4 gram

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.

The sample is put into the [H,0,0] x [0, K, 3.6K] so that Q=(0.5,0.5,1.8) will be at the center of our measurement. Since the spin excitations has a weak c-axis dispersion, the sample is set at three angles with values of ψ = 16.8, 22.8, 31.8 respectively to capture the characteristics of the spin excitations near L = 1.8. Since the instrument's software cannot combine these results, we have developed our own Matlab program to treat the data. Two temperatures, 5 K and 55 K are chosen to observe the change of the spin excitations below and above T_c (48 K).

Fig. 1 and 2 show the main results of our data. The difference between 5 K and 55 K is that the spin excitations change from the incommensurate position to the commensurate (0.5,0.5) position around 12 meV, which is consistent with what we have observed in the triple-axis spectrometer. However, due to the low power J-PARC was running during the experiment, the statistics are not good enough to publish.

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

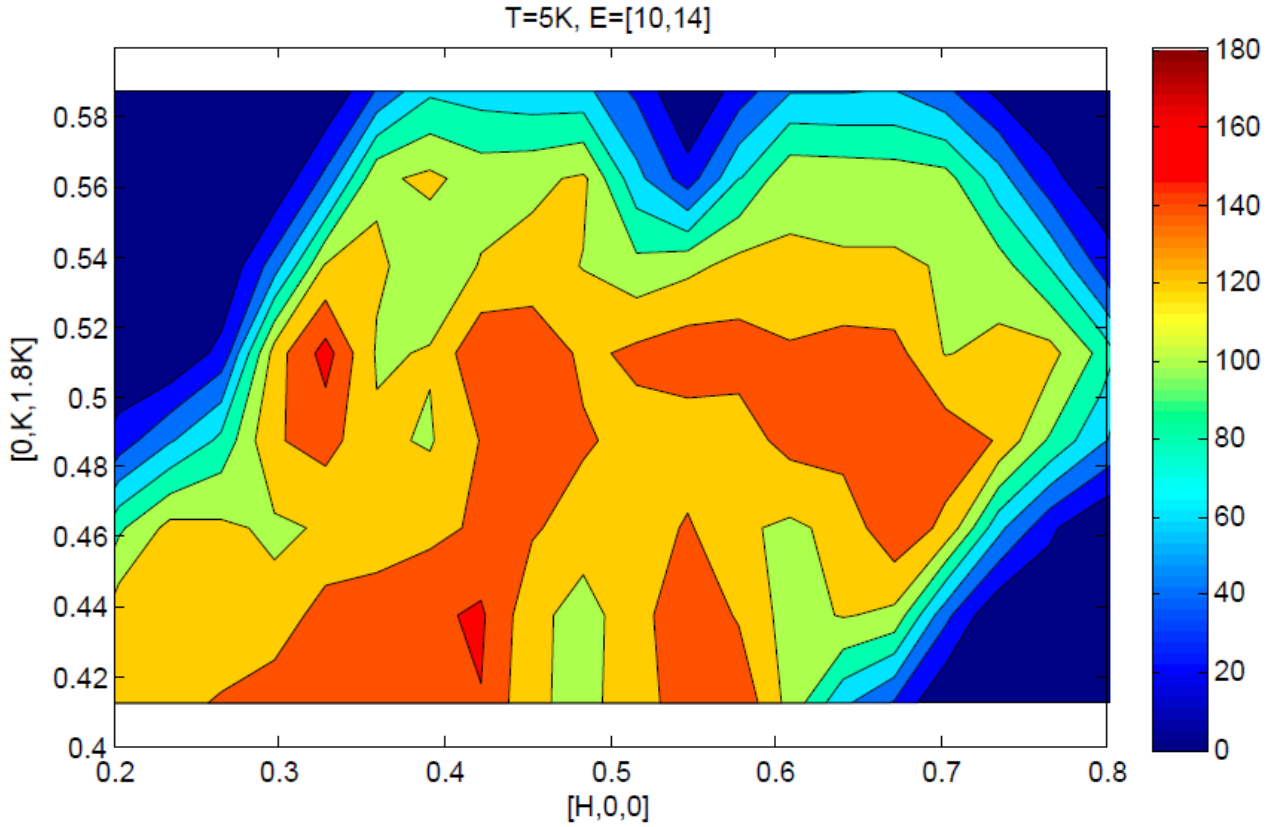

Fig. 1 In-plane spin excitations from 10 to 14 meV at 5 K.

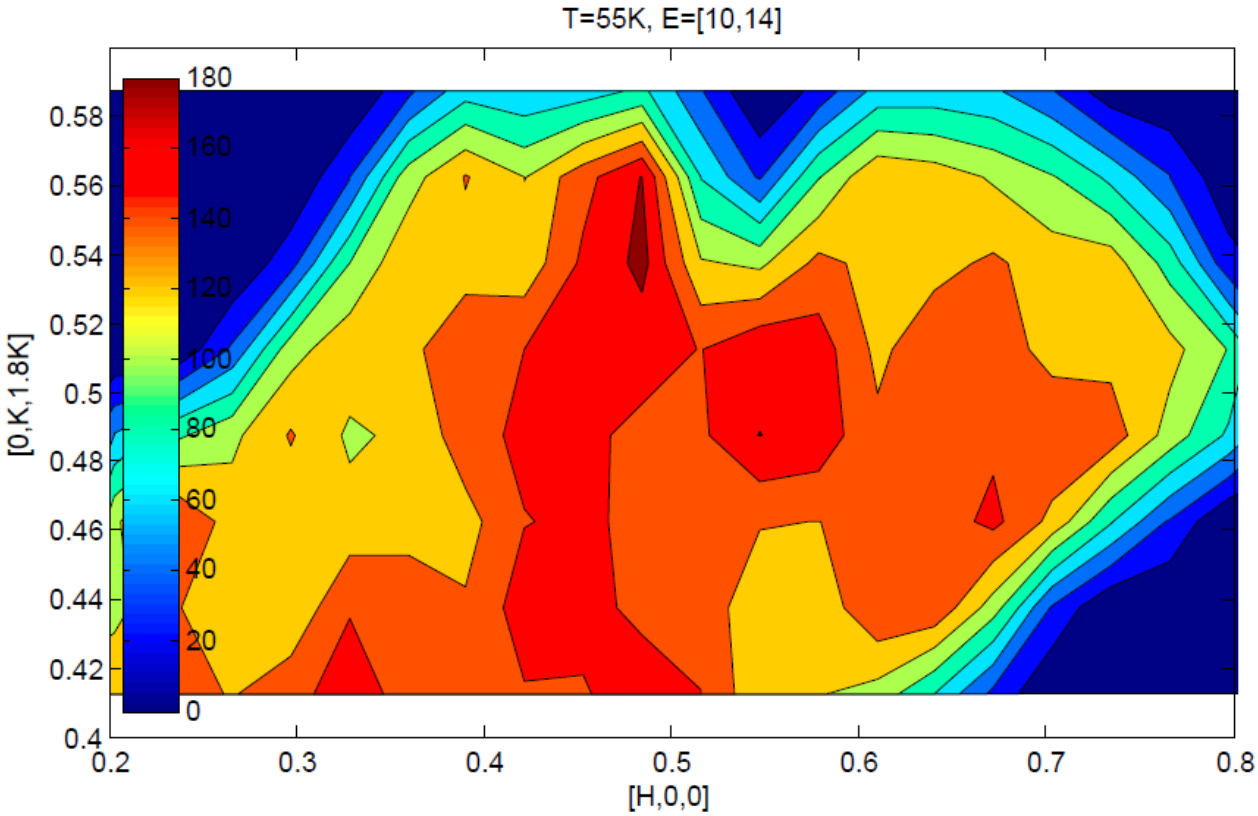

Fig. 1 In-plane spin excitations from 10 to 14 meV at 55 K.