MLF Experimental Report	提出日 Date of Report
課題番号 Project No. 2014A0103 実験課題名 Title of experiment: Spectrum distribution of slyrmion lattice fluctuations under current flow 実験責任者名 Name of principal investigator T. J. Sato 所属 Affiliation IMRAM, Tohoku University	装置責任者 Name of responsible person K. Shibata 装置名 Name of Instrument/（BL No.） BL02 実施日 Date of Experiment Nov. 7–12, 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.

8 co-aligned single crystals of MnSi (total mass: ~9.1 g)

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.

Inelastic neutron scattering measurements on the itinerant magnet MnSi were performed at BL02-DNA backscattering spectrometer. The sample is co-aligned on the (HHL) horizontal scattering plane, and is set to our handmade sample cell with Neodymium permanent magnets. Scans were mainly performed at three phases of the material such as helical, skyrmion (SkX) and intermediate (IM). To cover full range of the energy transfer, the fast chopper was turned off and the Si(111) analyzers were used throughout the experiment.

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

We successfully observed magnetic excitations from all the three phases. Fig. 1(a) shows the energy transfer dependence of neutron intensity with finite Q-slice for the SkX phase. Peak formations at finite energy and shifting toward higher energy with increasing Q clearly indicate dispersive feature. Another prominent finding is that the SkX and IM phases have roughly 3-4 times intensity gains at low-Q compared to the helical phase (Fig. 1(b)). This gain factor is reduced as Q increases. To clarify anisotropic nature of the magnetic excitations, full analysis on data with sample rotation is now underway.

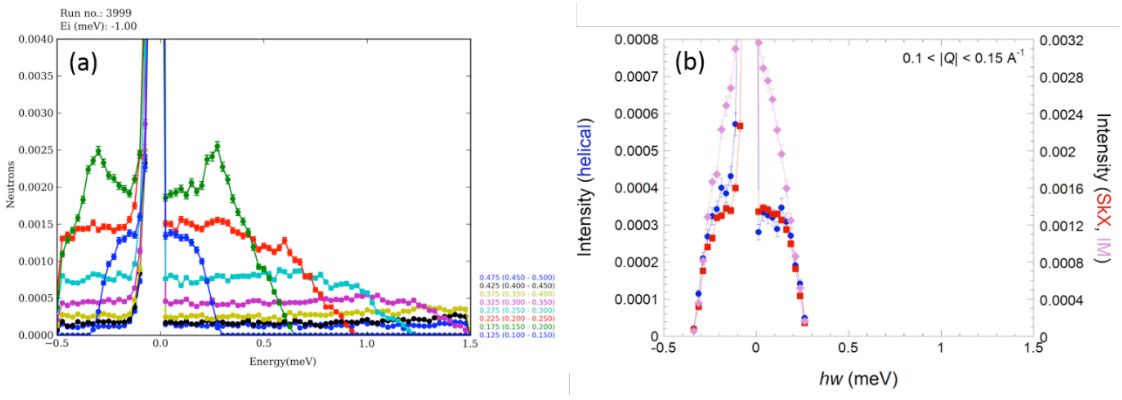

Fig.1: Energy transfer dependence of neutron intensity (a) in the skyrmion phase and (b) of helical, skrmion and intermediate phases at lower Q-regime. Note that right axis in (b) is scaled four times larger than the right axis.