 MLF Experimental Report	Date of Report
Project No. 2017A0125 Title of experiment Paramagnetic excitations in the spin ladder materials BaFe ₂ S ₃ Name of principal investigator Yuan Wei Affiliation Institute of Physics, Chinese Academy of Science	Name of person responsible for instrument Hideki Yoshizawa Name of Instrument/(BL No.) BL-12 HRC Date of Experiment 2017.06.23–2017.06.28

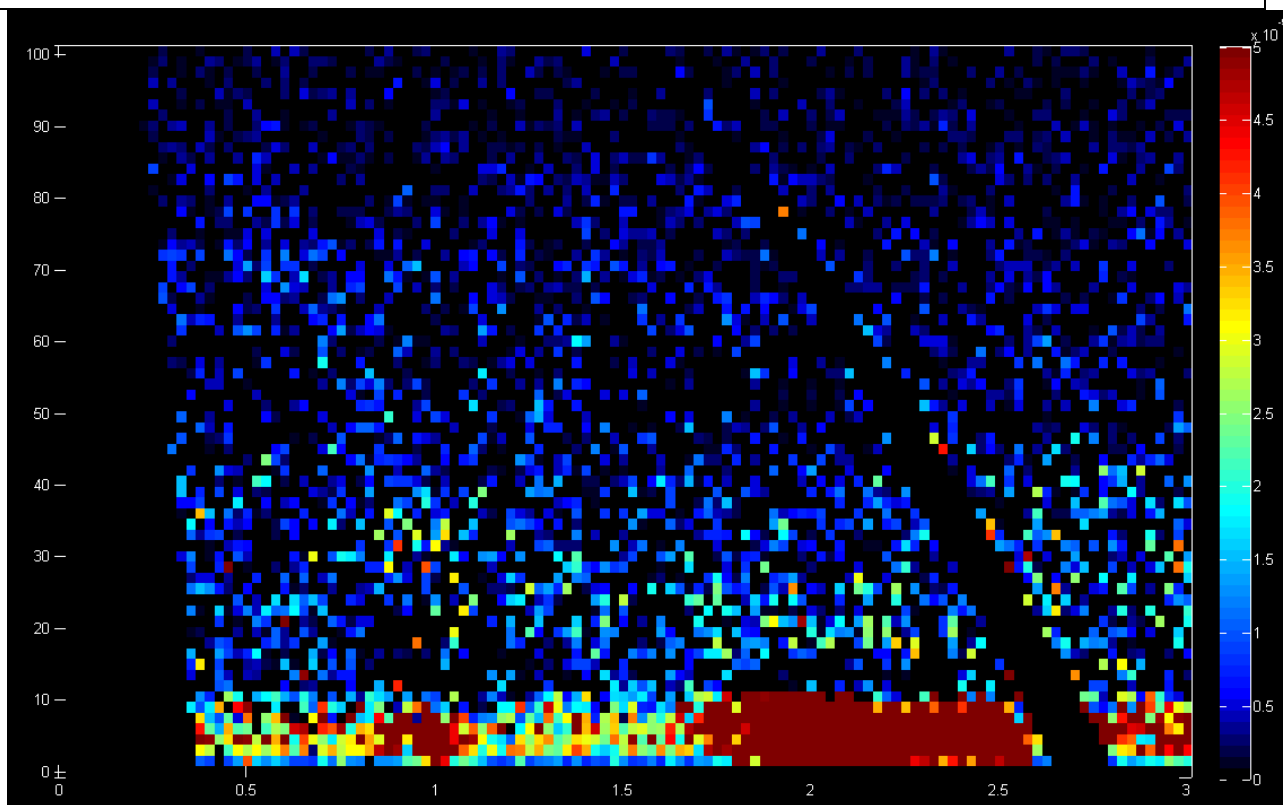
Please report your samples, experimental method and results, discussion and conclusions. Please add figures and tables for better explanation.

1. Name of sample(s) and chemical formula, or compositions including physical form.
Barium Iron Sulfur BaFe ₂ S ₃

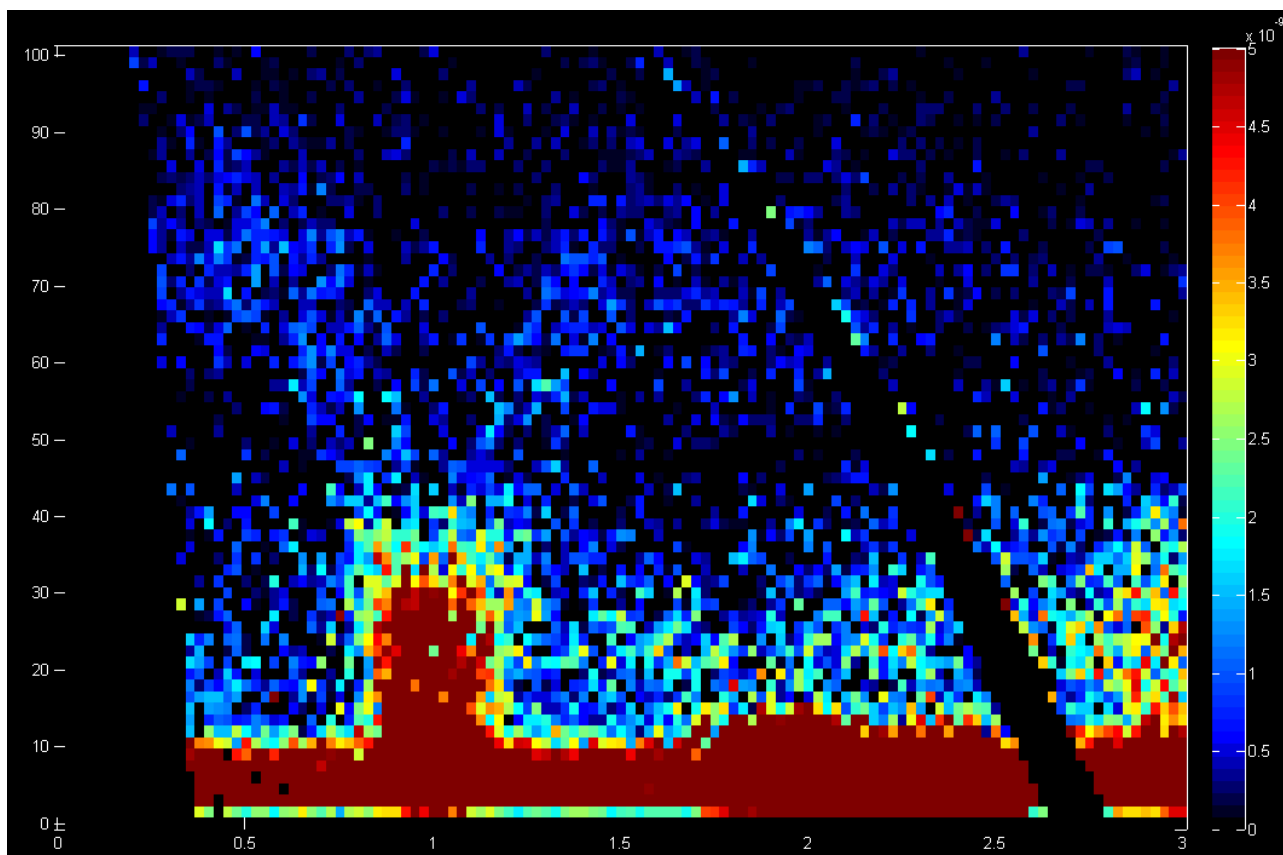
2. Experimental method and results. If you failed to conduct experiment as planned, please describe reasons.
Magnetic excitation measurement at base temperature. Dispersion of antiferromagnetic excitation along Q=(00L) direction has been found. E _i =70meV at T=100K 125K 200K 300K has been used to map out the gap structure and zone boundary. It is the first paramagnetic excitation measurement of this single crystal. And also we find a structure transition above 200K. This result should be important to prove the relationship between spin ladder material and high temperature superconductor.

2. Experimental method and results (continued)

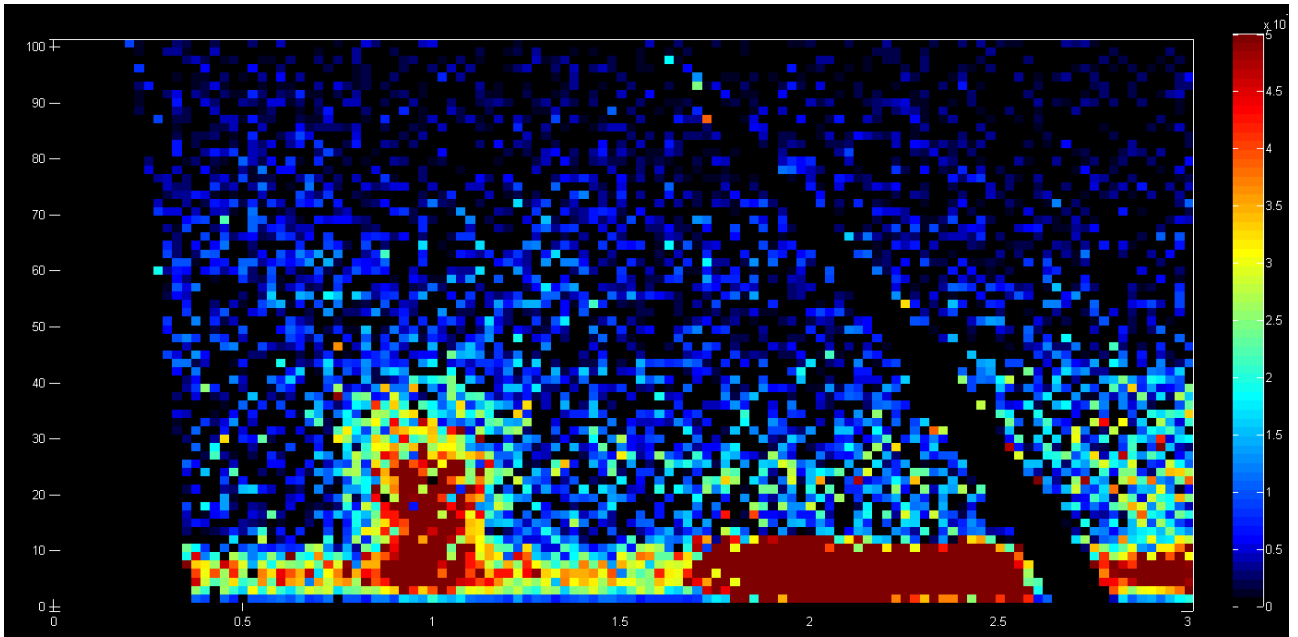
The result is shown as follow:



100K-125K data



100K-300K data



200K-300K data