

Experimental report

15/09/2019

Proposal: 5-54-281

Council: 10/2018

Title: Coupled structural and magnetic chirality in MnSb₂O₆ - Measurement of structural chirality

Research area: Physics

This proposal is a new proposal

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Samples: MnSb₂O₆

Instrument	Requested days	Allocated days	From	To
D3	5	0		
IN20	0	5	04/09/2019	09/09/2019

Abstract:

The proposal aims to measure the structural chirality in MnSb₂O₅ with the aim of relating it to the magnetic structure previously measured on D3. We aim to accomplish this through larger single crystal than previously measured (for the magnetic structure). The proposal requests 5 days to measure the structural chirality with Schwinger scattering at low temperatures in the Neel state.

The goal of the experiment was to establish whether a single or dominant structural chirality exists in our single crystals of MnSb_2O_6 . We were able to make larger crystals for this experiment and we also aligned the crystal in the $(\text{HK}0)$ scattering plane where the Schwinger cross section was expected to be strong. We found no evidence for a dominant structural chirality. We are now proposing to check the nuclear structure given the sensitivity of the calculated Schwinger scattering cross section with the nuclear structure factors.