

# Experimental report

15/09/2023

**Proposal:** 5-31-2982

**Council:** 4/2023

**Title:** Investigation of magnetic structure of hexagonal MnSb compound

**Research area:** Physics

**This proposal is a new proposal**

**Main proposer:** Sanjay SINGH

**Experimental team:** Sunil Wilfred D'SOUZA  
Parul DEVI

**Local contacts:** Maria Teresa FERNANDEZ DIAZ

**Samples:** MnSb  
Co<sub>2</sub>VSn and Mn<sub>2.14</sub>Co<sub>0.94</sub>Ge<sub>0.908</sub>

Instrument	Requested days	Allocated days	From	To
D2B	4	2	28/08/2023	31/08/2023

## Abstract:

In the present work our aim is to investigate the magnetic structure of hexagonal MnSb compound to understand the change in the sign of anomalous Hall signal across 120 K, where a spin reorientation transition is expected. The high resolution neutron diffraction data will provide the ground state magnetic structure and its relation to the unusual behavior of anomalous Hall across spin reorientation transition in MnSb.

**Preliminary report:** Study of Magnetic Spin Structure in the MnSb Ferromagnetic Binary Compound.

We collected neutron diffraction data for the MnSb at some temperatures to see change in the spin configuration above and below 120 K. In the obtained data, a clear occurrence of peak at low  $2\theta$  ( $\sim 18^\circ$ ) for temperatures below 120 K was observed, which got vanished at higher temperatures (shown in figure below). However, due to low intensity of peaks and unavailability of neutron diffraction patterns in closer temperature intervals, we were unable to capture the actual spin configuration below spin reorientation. However, these measurements helped to see that there is a magnetic configuration change below spin reorientation temperature.

