

Atomic Disorder and Berry Phase Driven Anomalous Hall Effect in a Co-Based Heusler Compounds

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Abstract. Co-based Heusler compounds are promising materials for spintronics applications due to their high Curie temperature, large spin polarization, large magnetization density, and exotic transport properties. The crystal symmetry and atomic ordering of these alloys are deciding factors for the observed properties. Here, we present our recent results on the investigation of anomalous Hall effect (AHE) in a Co-based Heusler compounds using combined experimental and theoretical studies. We have used synchrotron x-ray diffraction to confirm the atomic ordering in these compounds and a detailed transport and magnetic measurements are done to understand the origin of AHE in these compounds. Our results show that the anti-site disorder plays a crucial role in the modification of momentum space Berry curvature and hence the intrinsic AHE in these compounds.

References:

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