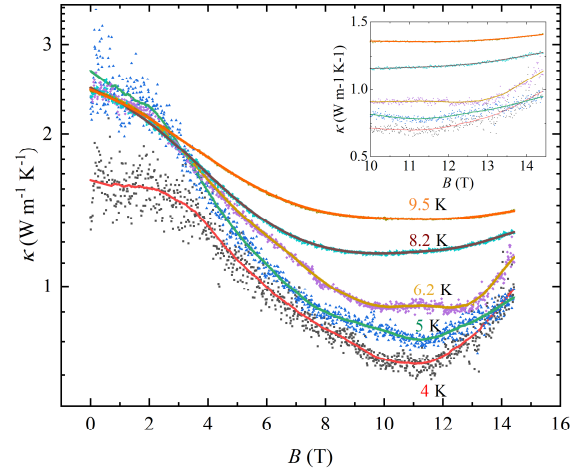




1. Introduction

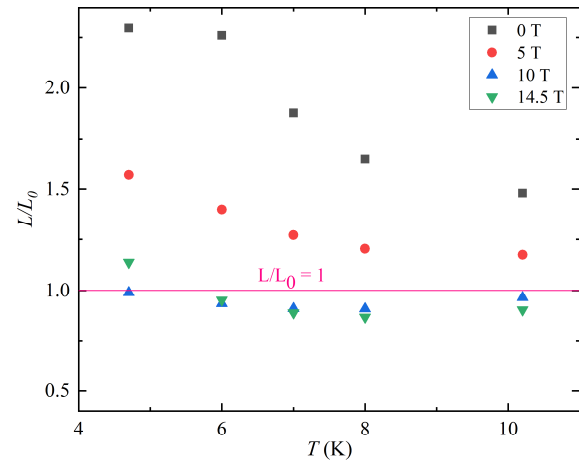
- **Chiral anomaly:** violation of the chiral current conservation when an electric field (thermal gradient) is applied parallel to a magnetic field. Consequently, charge (energy [1]) pumping occurs between Weyl points of opposite chirality.
- This phenomenon has been intensively explored through electrical transport, however, less by thermal measurements.
- In our study, we measured the electrical (thermal) conductivity of NdAlSi. At low temperature, σ increases with the magnetic field, likely as a result of the chiral anomaly, the corresponding $\kappa(B)$ dependences are also similar.
- The finding suggests an unambiguous experimental signature for chiral anomaly through thermal conductivity measurement in antiferromagnetic Weyl semimetal NdAlSi.

5. Thermal chiral anomaly



6. Validation of Wiedemann-Franz law

$$\frac{\kappa}{\sigma T} \left(\frac{e}{k_B} \right)^2 = L; \quad FL \rightarrow L = \pi^2/3 \quad WSM \rightarrow L = 7\pi^2/5 [1]$$



7. Conclusion

- Thermal and electrical conductivity measured of NdAlSi for $\nabla T(J)$ and magnetic field applied along [100] direction.
- $\kappa(B)$ and $\kappa_{WF}(B)$, increase at low temperature and in high field in such a way that Wiedemann – Franz law is obeyed.
- An increase of both thermal conductivities emerges due to microscopic manifestation of chiral anomaly.

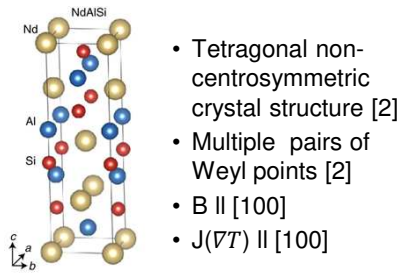
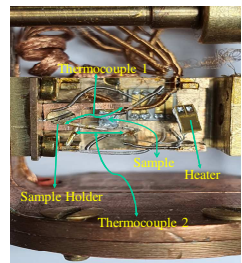
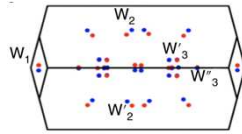
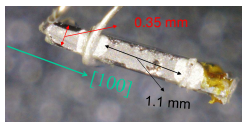
References

- [1]. Vu, D., Zhang, W., Şahin, C. *et al.* Thermal chiral anomaly in the magnetic-field-induced ideal Weyl phase of $\text{Bi}_{1-x}\text{Sb}_x$. *Nat. Mater.* **20**, 1531 (2021)
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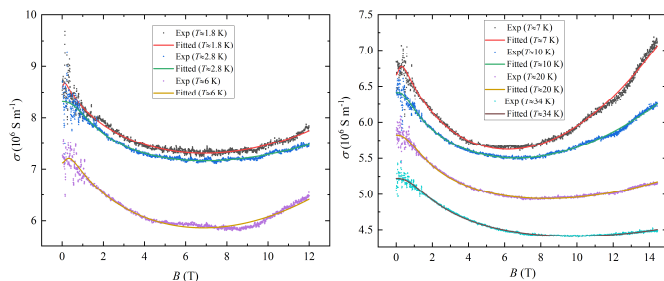
Acknowledgement

This work was partially supported by the Foundation for Polish Science through the IRA Programme co-financed by EU within SG OP(Grant No. MAB/2017/1).

2. Experiment rig and material



3. Electrical transport: Chiral anomaly



$\sigma(B)$ is fitted by equation given in [3]

4. Thermal Transport

