

Impact of local density inhomogeneity on non-local resistance in 2DEG

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Abstract

Non-local (NL) resistance measurement has attracted much attention to find its origin in graphene and other two-dimensional electron system (2DES) [1-2]. Here, we present NL resistance measurement in a 2DES embedded in GaAs/AlGaAs heterostructures at mK temperatures. In the homogenous section of 2DES, nearly symmetric NL resistance, under reversal of magnetic field B , arises from the divergence of localization length (Fig.1) [3]. We find that NL resistance becomes strongly asymmetric upon reversal of magnetic field B (Fig. 2) due to local density inhomogeneity [4].

References

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- [2] Ribeiro, M., et al. *Nat Commun*, Issue 8 (2017), page 2198
- [3] A. M. M. Pruisken Phys. Rev. Lett. 61(1988), page1297
- [4] B. Karmakar et.al, Physica E, Issues 3–4, (September 2004) Pages 187-210

Figures

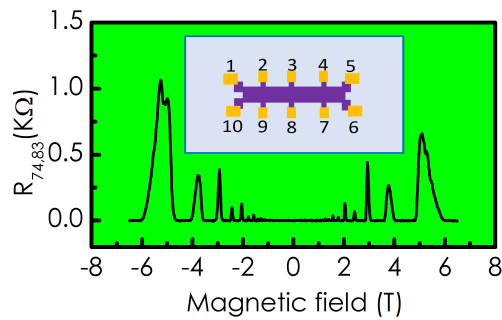


Figure 1: NL $R_{74,83}$ (current lead 8-3) shows nearly symmetric behaviour with magnetic field B reversal.

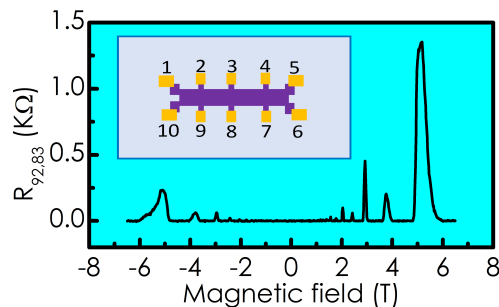


Figure 2: NL $R_{92,83}$ shows strong asymmetry upon reversal of B (T).