

PbTe/SnTe heterostructures - candidate platform for studying spin-triplet superconductivity

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Today we witness an immense interest in the topological superconductivity, due to its potential in the field of spintronics and quantum computation. Recent findings in the twisted bi-layer graphene experiments identify signatures of spin-triplet superconductivity at specific magic angles, being due to strain-induced electron flatbands [1, 2].

This paper explores the flatbands regime in a yet different system: PbTe/SnTe semiconductor heterostructures, grown by molecular beam epitaxy. We present indications of spin-triplet pairing by soft point-contact spectroscopy experiments, using both spin-polarized and unpolarized electrons, and additionally, by a detailed analysis of the upper critical field as inferred from the four probe resistance measurements. The experimental data are described in terms of the Anderson-Brinkman-Morel model of p-wave electron pairing. Our results may be understood in terms of strain-induced topological superconductivity by Tang and Fu [3].

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References

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