

Thermoelectric current in a graphene Cooper pair splitter

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Thermoelectric effect converting temperature difference into electricity and vice versa has a multitude of practical applications. Recent theoretical studies [1-3] predict that thermoelectricity may appear in hybrid normal metal-superconductor-normal metal (NSN) structures due to the nonlocal Cooper pair splitting (CPS) and elastic co-tunneling processes. In our experiment [4] we observe such a nonlocal thermoelectric effect in a graphene-based CPS device including two quantum dots and an aluminum superconductor. We further validate our observations with theory. The effect enables to generate entangled electrons from the temperature difference.

References

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