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Probing the superconducting gap in two-dimensional NbSe2 EGON SOHN, XIAOXIANG XI[1], ZEFANG WANG, Department of Physics, Pennsylvania State University, JU-HYUN PARK, National High Magnetic Field Laboratory, HELMUTH BERGER, LSZL FORR, Institute of Condensed Matter Physics, Ecole Polytechnique Fdrale de Lausanne, JIE SHAN, KIN FAI MAK, Department of Physics, Pennsylvania State University — Recent experimental advances in atomically thin NbSe2 have unveiled a range of interesting collective phenomena. In particular, in monolayer NbSe2 where inversion symmetry is broken, strong spin-orbit coupling locks the spin to the out-of-plane direction, resulting in unconventional Ising pairing of Cooper pairs. The observation of an ultrahigh in-plane upper critical field from transport measurements has provided an experimental evidence of Ising superconductivity. However, direct measurements of the superconducting order parameter and its field dependence have not been explored. In this work, we develop the point contact Andreev reflection spectroscopy to measure the superconducting gap in atomically thin NbSe2. Differential conductance measurements of few-layer NbSe2 as a function of in-plane magnetic field at temperatures down to 0.3 K will be presented. These results will be discussed in relation with Ising superconductivity and spin paring symmetry in two-dimensional NbSe2.

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