

Abstract Submitted
for the MAR17 Meeting of
The American Physical Society

Symmetry-protected superconductivity in ultrathin layered transition metal dichalcogenides SERGIO DE LA BARRERA, MICHAEL SINKO, DEVASHISH GOPALAN, BENJAMIN HUNT, Carnegie Mellon University — Recent studies of few-layer NbSe₂ and MoS₂ have resulted in reports of a robust two-dimensional superconducting states at low temperature. Notably, in both cases the superconductivity persists in the presence of external in-plane magnetic fields significantly larger than the Pauli paramagnetic limit. Following this work, we investigate related phenomena in ultrathin 2H-TaS₂ using low-temperature, high-field magnetotransport to probe the associated superconducting critical behavior. We discuss the connection between the observed transport, spin-orbit coupling, and Ising superconductivity resulting from dimensional and symmetry considerations.

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Date submitted: 11 Nov 2016

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