**Chiral Superconductivity on a Silicon Surface**

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Chiral superconductors represent an exotic and heavily pursued state of matter where the angular momentum state of the Cooper pairs is ‘unconventional’ and time-reversal symmetry is broken. While there are several candidates for the realization of chiral superconductors, including e.g. NaxCoO2 [1] and hole-doped graphene [2], conclusive evidence for the existence of chiral superconductivity has yet to be established. Here, I present experimental and theoretical evidence indicating the presence of a chiral d-wave superconducting ground state in a dilute monatomic Sn layer on the Si(111) surface. This triangular single-band antiferromagnetic Mott insulator becomes superconducting upon hole doping [3], with a critical temperature reaching 9 K. With a coverage of only 1/3 monolayer of Sn, this represents the thinnest and most dilute superconductor known to date. Importantly, quasi-particle interference spectra below the superconducting Tc indicate that time-reversal symmetry is broken, while scanning tunneling spectroscopy data recorded along the edges of the superconductive domains are consistent with the calculated edge states for a chiral d-wave order parameter [4]. Whereas most candidates for chiral superconductivity are complex materials, the simplicity and experimental control of this (and related) surface-science platforms provides a powerful testbed for theoretical models and discovery of elusive phases of quantum matter.

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**References**

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