

Abstract Submitted
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Proposal to stabilize and detect half-quantum vortices in strontium ruthenate thin films: Non-Abelian braiding statistics of vortex matter in a $p_x + ip_y$ superconductor¹ SUMANTA TEWARI, SANKAR DAS SARMA, Condensed Matter Theory Center, Department of Physics, University of Maryland, College Park, MD 20742, CHETAN NAYAK, Microsoft Research, Project Q, Kohn Hall, University of California, Santa Barbara, CA 93108 — We propose a simple way to stabilize half-quantum vortices in superconducting strontium ruthenate, assuming the order parameter is of chiral $p_x + ip_y$ symmetry, as is suggested by recent experiments. The method, first given by Salomaa and Volovik in the context of Helium-3, is very naturally suited for strontium ruthenate, which has a layered, quasi-two-dimensional, perovskite crystal structure. We propose possible experiments to detect their non-abelian braiding statistics. These experiments are of potential importance for topological quantum computation.

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