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**Anyons in a weakly interacting system** CONAN WEEKS, BABAK SERADJEH, MARCEL FRANZ, University of British Columbia — Anyons – particles with fractional exchange statistics – are known to emerge as excitations in certain strongly correlated two dimensional systems such as the fractional quantum Hall liquids. Here we describe a theoretical proposal for a system whose excitations are anyons with the exchange phase  $\pi/4$ , but, remarkably, can be thought of as a composite of essentially noninteracting electrons. The system consists of an artificially structured type-II superconducting film adjacent to a 2D electron gas in the integer quantum Hall regime with filling fraction 1. The proposal is based on the observation that a vacancy in an otherwise periodic vortex lattice creates a bound state in 2DEG with total charge  $-e/2$ .

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