

Abstract Submitted
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Half-vortices in a Polariton Ring Condensate¹ GANGQIANG LIU, DAVID SNOKE, ANDREW DALEY, University of Pittsburgh, LOREN PFEIFFER, KEN WEST, Princeton University — We have observed a persistent current in a half-vortex state in a polariton ring condensate. The polaritons in our experiments are photons which are strongly renormalized as a result of a sharp electronic resonance in a medium embedded in a microcavity. These polaritons are approximately number conserved, and have a repulsive interaction and a small effective mass. Our method of trapping them in a ring is a new technique which combines a stress-induced harmonic potential and a laser-generated central barrier. This method enables fine control of the trap profile and as well as the properties of the polaritons in the trap. We directly observe the phase gradient of the persistent current of the condensate in the trap, and record the rotation of the superposition of the two spinor states around the vortex.

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Gangqiang Liu
University of Pittsburgh

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