

Abstract Submitted  
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**Persistent Currents in Spinor Condensates** SCOTT BEATTIE,  
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HADZIBABIC, University of Cambridge — We create and study persistent currents  
in a toroidal two-component Bose gas, consisting of Rb-87 atoms in two different  
spin states. For a large spin-population imbalance we observe supercurrents persist-  
ing for over two minutes. However, we find that the supercurrent is unstable for spin  
polarization below a well-defined critical value. We also investigate the role of phase  
coherence between the two spin components and show that only the magnitude of  
the spin-polarization vector, rather than its orientation in spin space, is relevant for  
supercurrent stability [Phys. Rev. Lett. 110, 025301 (2013)].

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