

Abstract Submitted
for the MAR11 Meeting of
The American Physical Society

Superconducting Transport Mediated by Quantum Hall Edge Modes STEPHANIE LAW, University of Illinois at Urbana-Champaign, MICHAEL VISSERS, ALLISON DOVE, NADYA MASON, JAMES ECKSTEIN — We report transport measurements between superconducting leads separated by a small gap consisting of quantum Hall edge modes. The NbTi superconducting layer is grown in-situ on top of the semiconducting heterostructure to allow good contact. The samples are then fabricated into Hall bars with narrow gaps between the superconducting leads. Differential resistance and IV characteristics are measured in two and four terminal setups at 300mK both on and off quantum Hall plateaus. We will show that in the smallest gaps when we are on a plateau, we see a chiral supercurrent the direction of which is controlled by the field. With larger gaps we see either a zero bias resistance minimum or maximum. Data taken on and off plateaus show marked differences, indicating that quantum Hall modes are crucial. Results for samples with different heterostructures will also be shown.

Stephanie Law
University of Illinois at Urbana-Champaign

Date submitted: 19 Nov 2010

Electronic form version 1.4