Abstract Submitted
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Fractional quantum Hall effect and 5/2 state excitations in etch defined quantum point contacts MADHU THALAKULAM, WEI PAN, Sandia National Laboratories, Albuquerque, NM, K.W. BALDWIN, L.N. PFEIFFER, K.W. WEST, Princeton University, Princeton, NJ — v=5/2 fractional quantum Hall (FQH) excitations are believed to obey non-Abelian statistics and posses topological properties. Most of the existing experimental studies on v=5/2 state has been conducted on macroscopic geometries where theoretically proposed studies to characterize the topological properties of the 5/2 state are usually based on confined geometries such as quantum point contacts (QPC). We have successfully fabricated QPCs on a high mobility GaAs/AlGaAs heterostructure using photolithography followed by etching and evaporation of Cr/Au depletion gates. Our samples show very stable FQH plateaus at v = 7/3, 5/2 and 8/3 filling fractions. Tunneling experiments are performed in these QPCs at various temperatures and also at various pinch-off voltages to characterize the effective charge and Coulomb interaction parameters of the quasiparticles. (Sandia National Laboratories is a multi-program laboratory managed and operated by Sandia Corporation, a wholly owned subsidiary of Lockheed Martin Corporation, for the U.S. Department of Energy's National Nuclear Security Administration under contract DE-AC04-94AL85000.)

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