Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

Quantum Hall plateau transition as a transition between Anderson and band insulators[1] DMITRI FELDMAN, Brown University — We consider a system of parallel quantum wires in a magnetic field. Noninteracting electrons can tunnel between neighboring wires and are backscattered by impurities in the wires. In an appropriate range of tunneling constants, an infinite array of such wires forms a band insulator at weak disorder and an Anderson insulator at strong disorder. In a finite 2D array, the band insulator state possesses two delocalized chiral edge modes and thus exhibits the quantum Hall effect. An exact solution for the second order phase transition between Anderson and band insulating states can be obtained for a system of wires arranged in a Bethe lattice with an infinite coordination number z. The quantum Hall transition in 2D can be accessed through a $1/z$-expansion with $z = 2$.

[1]This work was supported by NSF under Grant No. DMR-0544116.

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Date submitted: 17 Nov 2009 Electronic form version 1.4