Abstract Submitted
for the MAR06 Meeting of
The American Physical Society

Electron Transport through curved and rolled Two Dimensional Electron Gas NAKUL SHAJI, Univeristy of Wisconsin-Madison, HUA QIN, LEVENTE KLIEN, MARK ERIKSSON, ROBERT BLICK, CHRISTOPHER DENEKE, Max-Plank-Institut für Festkörperforschung, OLIVER SCHMIDT — We report on topology dependent electron transport in tubular shaped two-dimensional electron gases. These micron-sized tubes are realized in a strained InGaAs quantum well. This is the first step towards investigating geometric potentials in low dimensional quantum systems. We investigate magneto-resistance of the tubular systems in a perpendicularly applied magnetic field. At low magnetic field, an increased zero field magneto resistance followed by a negative magneto resistance is observed. We ascribe this effect to an increase in electron scattering along the curved regions due to newly formed dangling bonds. At high magnetic fields we observe a linear increase in resistance of the curved region as compared to planar regions.

Nakul Shaji
Univeristy of Wisconsin-Madison

Date submitted: 06 Dec 2005 Electronic form version 1.4