**Activation energies for the $\nu=5/2$ Fractional Quantum Hall Effect at 10 Tesla**

CHI ZHANG, R.R. DU, Rice University, L.N. PFEIFFER, K.W. WEST, Bell-Labs, Alcatel-Lucent, and Princeton University — We reported on the low-temperature magnetotransport in a high-purity (mobility $\sim 1 \times 10^7 \text{cm}^2/\text{Vs}$) modulation-doped GaAs/AlGaAs quantum well with a high electron density ($6 \times 10^{11} \text{cm}^{-2}$). A quantized $\nu=5/2$ Hall plateau is observed at $B \sim 10 \text{T}$, with an activation gap $\Delta_{5/2} \sim 125\pm10 \text{mK}$; the plateau can persist up to $25^\circ$ tilt-field. We determined the activation energies $\Delta$ and quasi-gap energies $\Delta_{\text{quasi}}$ for the $\nu=5/2, 7/3$, and $8/3$ fractional quantum Hall states in tilted-magnetic field ($\theta$). The $\Delta_{5/2}$, $\Delta_{7/3}$ and the $\Delta_{\text{quasi}}$ are found to decrease with tilt-field $\theta$. We will present the systematic data and discuss their implications on the spin-polarization of $\nu=5/2$ states observed at 10 T.


The work at Rice is supported by DOE Grant No. DE-FG02-06ER46274 and NSF Grant No. DMR-0706634.