

Abstract Submitted  
for the MAR05 Meeting of  
The American Physical Society

**Quantum and transport mobilities in an AlGaAs/GaAs parabolic quantum well structure** GUOLIN YU, SERGEI STUDENIKIN, ANTHONY SPRINGTHORPE, GEOFFREY AERS, GUY AUSTING, National Research Council of Canada, NRC-IMS TEAM — We study quantum and transport mobilities in a parabolic quantum well structure when one or more subbands are occupied. We developed an original analytical method to extract the quantum mobility from the multiply-occupied subband transport characteristics at low temperature. We tune the carrier density and hence the subband structure of the parabolic quantum well over a wide range by illumination with a red light-emitting diode. In order to obtain the quantum mobilities, Fourier transforms of the first differential of the experimental magnetoresistance traces are taken, and fitted by a conductivity tensor model in the same magnetic field range. We find that both the quantum and transport mobilities increase non-linearly with increasing carrier density for both the first- and second- subbands, and conclude that the intersubband scattering is predominantly large-angle.

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Date submitted: 02 Dec 2004

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