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**The 0.7 structure in undoped quantum wires** J. A. SEAMONS, E. BIELEJEC, J. L. RENO, M. P. LILLY, Sandia National Laboratories — We report transport measurements for quantum wires formed in undoped GaAs/AlGaAs heterostructures. The density of the 2D electrons, induced with an external gate, can be varied from $2 \times 10^{10}$ to over $3 \times 10^{11}$ cm$^{-2}$. Quantum wires are patterned using wet or dry etching that creates split gates and a central top gate. When a single 1D subband is occupied, some wires exhibit dramatic oscillations and multiple structures that strongly depend on the 2D density. Other wires show a more typical 0.7 structure and no additional oscillatory features. Measurements of the 1D density using magnetic depopulation find a weak change in 1D density as the 2D density is changed by an order of magnitude. We will compare the conductance value of the 0.7 structure, the presence of additional oscillations and the values of the main conductance plateaus for wires with widths varying from 400 to 800 nm. The role of 1D subband spacing and disorder will be discussed. Sandia is a multiprogram laboratory operated by Sandia Corporation, a Lockheed Martin Company, for the United States Department of Energy under contract DE-AC04-94AL85000.

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