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**Tunneling and nonlinear transport in a vertically coupled GaAs/AlGaAs double quantum wire system** EDWARD BIELEJEC, S. LYO, J. SEAMONS, J. RENO, M. LILLY, Sandia National Laboratories — We report low-dimensional tunneling and nonlinear transport in a vertically coupled quantum wire system. The nanostructure is fabricated in a high quality parallel double quantum well heterostructure. Using a novel flip chip technique developed at Sandia to align top and bottom split gates to form low-dimensional constrictions in each of the independently contacted quantum wells we explicitly control the subband occupation of the individual wires. This configuration allows for the study of 2D-2D, 2D-1D and 1D-1D behaviors. In addition to the expected 2D-2D tunneling results, we have found additional tunneling features that are related to the 1D quantum wires. 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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