Abstract Submitted
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Origin of the Au/Ge(001) metallic state[1] RENÉ HEIMBUCH, MESA,+ Institute for Nanotechnology, University of Twente, MIKHAIL KUZMIN, Ioffe Physical- Technical Institute, Russian Academy of Sciences, NICK DE JONG, MARK GOLDEN, Van der Waals-Zeeman Institute for Experimental Physics, University of Amsterdam, HAROLD J.W. ZANDVLIET, MESA,+ Institute for Nanotechnology, University of Twente — Electronic transport in one-dimensional systems is a highly investigated topic, as electronic devices continue to shrink in size further and further. To understand the exotic behavior of electrons in structures of atomic length scales is crucial for future technological advances in electronics. We studied the spatial variation of the metallic state of the Au-induced nanowires on Ge(001). Spatial maps of the differential conductivity of the metallic state, which has its energy minimum at 0.1-0.15 eV below the Fermi level, are recorded with a low-temperature scanning tunneling microscope. The metallic state is not located on the ridges of the nanowires, but in the troughs between the nanowires. Electronic end effects were investigated and spatial profiling of the density of states, as a function of temperature reveal great inside into Tomonaga-Luttinger liquid in 1D electron systems.

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