

Abstract Submitted
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Transport and Magnetic Properties of Metal Nanowire under Finite Voltages¹ CHANG-HUA ZHANG, Indiana University — The electronic transport and magnetic properties of metallic nanocylinders have been studied under the finite bias in a generalized mean-field electron model. The electron-electron interaction is treated in the self-consistent Hartree approximation so that the calculated physical quantities are “gauge invariant.” The modulation of the cohesion force is a few nano-Newtons for a few Volts and is correlated to the jumps of the differential conductance. The screening of electron-electron interactions is also found to be very sensitive to the magnetic field, which leads to a high sensitivity of the magnetotension and magnetoconductance coefficients on a longitudinal magnetic field.

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