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Non-equilibrium transport in VO₂ nanoparticles B. WU, A. ZIMMERS, H. AUBIN, LPEM, Ecole Superieure de Physique et de Chimie Industrielles de la ville de Paris (ESPCI), Paris, France, R. GHOSH, Y. LIU, R. LOPEZ, Department of Physics and Astronomy, University of North Carolina at Chapel Hill, Chapel Hill, North Carolina 27599, USA — Over recent years, the insulator to metal transition of the vanadium dioxide (VO₂) Mott insulator has been revisited revealing surprising new features: (i) electronic inhomogeneities were mapped out by local infrared spectroscopy near the transition temperature T_{IM} ; (ii) electric-field-induced resistance switching has been found in this material. To further investigate the insulator/metal transition, we have performed non-equilibrium transport measurements on 200nm VO₂ dots using a variable temperature/magnetic field conducting AFM setup. I(V) spectra of numerous VO₂ dots as a function of temperature have enabled us to determine the voltage threshold, the current jump and the the noise spectrum as voltage is swept across the electric-field-induced transition.

Alexandre Zimmers
LPEM, Ecole Superieure de Physique et de Chimie Industrielles
de la ville de Paris (ESPCI), Paris, France

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