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Terahertz spectroscopy of the metal insulator transition in vanadium dioxide DAVID HILTON, Los Alamos National Laboratory, ROHIT PRASANKUMAR, Los Alamos National Laboratory, ANDREA CAVALLERI, Oxford University, SYLVAIN FOURMAUX, Universite du Quebec, JEAN-CLAUDE KIEFFER, Universite du Quebec, ANTOINETTE TAYLOR, Los Alamos National Laboratory, RICHARD AVERITT, Los Alamos National Laboratory — We employ terahertz spectroscopy to study the metal-insulator phase transition in vanadium dioxide (VO_2). We measure the terahertz frequency conductivity in the metallic phase that has a real conductivity of 1000 Ω^{-1} cm^{-1} and a negligible imaginary conductivity. The observed conductivity dynamics are consistent with a photoinduced transition in spatially inhomogeneous regions of the film, followed by a thermally driven transition to the maximum conductivity.

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