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Identifying Read/Write Speeds for Field-Induced Interfacial Resistive Switching. STEPHEN TSUI, NILANJAN DAS, YAQI WANG, YUYI XUE, Texas Center for Superconductivity at the University of Houston, C.W. CHU, Hong Kong University of Science and Technology; Texas Center for Superconductivity at the University of Houston; Lawrence Berkeley National Laboratory — Efforts continue to explore new phenomena that may allow for next generation nonvolatile memory technology. Much attention has been drawn to the field-induced resistive switch occurring at the interface between a metal electrode and perovskite oxide. The switch between high (off) and low (on) resistance states is controlled by the polarity of applied voltage pulsing. Characterization of Ag-$Pr_{0.7}Ca_{0.3}MnO_3$ interfaces via impedance spectroscopy shows that the resistances above 10^6 Hz are the same at the on and off states, which limits the reading speed to far slower than the applied switching pulses, or device write speed at the order of 10^7 Hz. We deduce that the switching interface is percolative in nature and that small local rearrangement of defect structures may play a major role.

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