Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

Metal Insulator transition in Vanadium Dioxide AZITA JOVAINI, SHIGEJI FUJITA, AKIRA SUZUKI, SALVADOR GODOY, None, FUJITA AND ALL COLLABORATION, SUZUKI AND ALL COLLABORATION — MAR12-2011-000262 Abstract Submitted for the MAR12 Meeting of The American Physical Society Sorting Category: 03.9 (T) On the metal-insulator-transition in vanadium dioxide AZITA JOVAINI, SHIGEJI FUJITA, University at Buffalo, SALVADOR GODOY, UNAM, AKIRA SUZUKI, Tokyo University of Science — Vanadium dioxide (VO2) undergoes a metal-insulator transition (MIT) at 340 K with the structural change from tetragonal to monoclinic crystal. The conductivity _ drops at MIT by four orders of magnitude. The low temperature monoclinic phase is known to have a lower ground-state energy. The existence of the k-vector k is prerequisite for the conduction since the k appears in the semiclassical equation of motion for the conduction electron (wave packet). The tetragonal (VO2)3 unit is periodic along the crystal's x-, y-, and z-axes, and hence there is a three-dimensional k-vector. There is a one-dimensional k for a monoclinic crystal. We believe this difference in the dimensionality of the k-vector is the cause of the conductivity drop. Prefer Oral Session X Prefer .

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None

Date submitted: 18 Nov 2011 Electronic form version 1.4