

Abstract Submitted  
for the MAR05 Meeting of  
The American Physical Society

**Phonons and the metal-insulator transition in VO<sub>2</sub>** SUNG CHANG, Y. JANSSEN, P. C. CANFIELD, J. W. KIM, B. SIEVE, A. I. GOLDMAN, R. J. MCQUEENEY, Ames Laboratory and Department of Physics, Iowa State University, A. ALATAS, H. SINN, Advanced Photon Source, Argonne National Laboratory — VO<sub>2</sub> undergoes a metal-insulator transition (MIT) at  $T_C = 340$  K, which is accompanied by a structural phase transition from a high temperature rutile phase to a low temperature monoclinic phase. Although VO<sub>2</sub> has been studied extensively for over 40 years, a clear understanding of the origin of the phase transition has not been forthcoming. Still at issue is the relative importance of electron-lattice and electron-electron interactions as driving mechanisms for the MIT. Here, we report the phonon dispersion of VO<sub>2</sub>, measured along the rutile  $\Gamma$ -R direction using high resolution inelastic X-ray scattering. Unusual phonon behavior at the R point, as the MIT is approached, suggests significant electron-phonon coupling.

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Date submitted: 01 Dec 2004

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