Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

Dynamics of $Sr_{14}Cu_{24}O_{41}$ in a transient high intensity THz field ELSA ABREU, Boston University, Department of Physics, 590 Commonwealth Avenue, Boston MA, USA, RAVI SINGH, University of Warwick, Department of Physics, Coventry CV4 7AL, UK, VERNER THORSMOLLE, Departement de Physique de la matiere condensee, Universite de Geneve, CH-1211 Geneve 4, Switzerland, GEETHA BALAKRISHNAN, University of Warwick, Department of Physics, Coventry CV4 7AL, UK, RICHARD AVERITT, Boston University, Department of Physics, 590 Commonwealth Avenue, Boston MA, USA — Over the past few years new techniques have become available to generate electromagnetic radiation with high electric field values in the THz range [1], allowing the dynamic study of materials whose excitations lie in the far infrared frequency range. This is the case of many charge density wave compounds, which exhibit a collective response due to pinning. $Sr_{14}Cu_{24}O_{41}$ is a charge density wave compound of particular interest, given its quasi one-dimensional structure consisting of alternating layers of Cu_2O_3 chains and CuO_2 ladders [2]. Understanding the dynamics of $Sr_{14}Cu_{24}O_{41}$ excitations in the far infrared has the potential not only to shed light onto the complex nature of charge ordering in this material, but also to help provide a better understanding of the nature of superconducting behavior in two-dimensional high temperature superconducting cuprates. In our work, THz pulses generated using a $LiNbO_3$ crystal interact with single crystal $Sr_{14}Cu_{24}O_{41}$ samples grown by the traveling solvent floating zone method. We will present preliminary results of a high field THz study of the dynamics of $Sr_{14}Cu_{24}O_{41}$.
[1] Jepsen et al., Laser Phot Rev 5 124 (2011) [2] Gorshunov et al., Phys Rev B 66 060508 (2002)

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Date submitted: 28 Nov 2011 Electronic form version 1.4