Abstract Submitted
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Photoinduced phase-coexistence in $Bi_{0.4}Ca_{0.6}MnO_3$ thin films. VERA SMOLYANINOVA, R. KENNEDY, E. TALANOVA, L. ALDACO, R.M. KOLAGANI, M. OVERBY, Towson University — Doped manganites exhibit a wide variety of physical phenomena due to complex interplay of electronic, magnetic, orbital, and structural degrees of freedom. One of the most intriguing properties of manganites is coexistence of several distinct electronic phases. A photoinduced insulator to conductor transition in charge-ordered (CO) manganites is especially interesting from the point of view of creating photonic devices [1]. We have observed a photoinduced sub-micron phase coexistence of CO insulating phase and conducting phase via optical contrast in Near-field Scanning Optical Microscope images. Such phase coexistence is possible because of the presence of two local energy minima corresponding to CO insulating and charge-disordered conducting phases in the energy landscape [2]. To better understand the physics of phase coexistence in manganites we studied the dynamics of photoinduced conductivity changes. The temperature dependence of this process will be presented. The energy barrier separating the CO insulating and conducting states will be discussed. This work is supported by NSF grants DMR-0348939, DMR-04221141. [1] V. N. Smolyaninova at al., APL 86, 071922 (2005). [2] K. H. Ahn at el., Nature 428, 401 (2004).

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