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Origin of the non-thermal photoresponse in thin films of two-phase manganites[1] ANTHONY DAVIDSON III, MASON OVERBY[2], RAJEH MUNDLE, GRACE YONG, DAVID COX, ELENA TALANOVA, VERA SMOLYANINOVA, DAVID SCHAEFER, RAJESWARI M. KOLAGANI[3], Towson University, TOWSON UNIVERSITY TEAM — Our studies of light-induced resistance changes (photoresponse) in thin films the colossal magnetoresistive manganite material $(La,Pr)_{0.67}Ca_{0.33}MnO_3$experiments have revealed a non-thermal component of the light-induced resistance change .This non-thermal component is also observed in thin films of oxygen deficient $La_{0.67}Ca_{0.33}MnO_{3.}$The common feature of both these material systems is the co-existence of metallic and insulating phases. Our results indicate that this component may be associated with the light-induced resistance decrease in the insulating regions through an electronic mechanism. Previous studies have shown insulator-metal transitions induced by magnetic fields as well as electric fields in these materials. We will present our studies of the correlation of the observed non-thermal photoresponse with magnetoresistance as well as current-voltage characteristics.

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