

Abstract Submitted
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X-ray Absorption Spectroscopy studies of photo-induced and magnetic-field-induced phase transitions in $\text{Pr}_{0.7}\text{Ca}_{0.3}\text{MnO}_3$ YI ZHU, MATTEO RINI, Materials Sciences Division, Lawrence Berkeley National Laboratory, Berkeley, California, 94720, USA, JOHN FREELAND, Advanced Photon Source, Argonne National Laboratory, Argonne, Illinois, 60439, USA, ROBERT SCHOENLEIN, Materials Sciences Division, Lawrence Berkeley National Laboratory, Berkeley, California, 94720, USA — Changes in the electronic structure underpinning the ultrafast photo- and magnetic-field-induced insulator to metal phase transition in $\text{Pr}_{0.7}\text{Ca}_{0.3}\text{MnO}_3$ are compared directly via x-ray absorption near edge spectroscopy (XANES). Static and time-resolved XANES at the O K-edge and Mn L-edge directly monitor the evolution of the density of Mn-3d/O-2p electronic states as the system is driven across phase boundaries. Our results reveal the non-thermal nature of the photoinduced phase transition and show that the CMR magnetic-field-induced and the photoinduced phase-transitions rely on identical rearrangements of the electronic structure.

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