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Jahn-Teller contribution to the magneto-optical response of ferromagnetic manganite thin films GERVASI HERRANZ, DAVID HRABOVSKY, JOSE MANUEL CAICEDO, INGRID CANERO-INFANTE, FLORENCIO SANCHEZ, JOSEP FONTCUBERTA, Institut de Ciència de Materials de Barcelona, (ICMAB-CSIC) Bellaterra, Spain — We report on the temperature dependence of the magneto-optical response in the visible spectrum of ferromagnetic manganite thin films measured in transverse Kerr geometry. We show that this response is dominated by the usual magneto-optical Kerr effects for all temperatures except for a narrow window around the Curie temperature (T_C). Remarkably, the magneto-optical response of these manganite films does not die out near the ferromagnetic transition, in spite of the vanishing Kerr effect at those temperatures. On the contrary, the transverse Kerr response is hugely enhanced near T_C and follows the same temperature dependence as the colossal magnetoresistance. We attribute these remarkable phenomena to the magnetic field-induced suppression of Jahn-Teller dynamical charge localization around T_C . Thus, the peculiar optical response of manganite films comes from the intricate physics of these strongly correlated electronic systems. We argue that the methodology we use is demonstrated to be very useful to understand the nature of some structural and electronic transitions driven by magnetic/electric fields or by temperature in other complex oxides.

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