

Dynamics of orbital and spin ordering in manganites –A direct view from time-resolved resonant soft x-ray scattering

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Charge, orbital and spin orderings play an important role in transition metal oxides. In colossal magnetoresistance (CMR) manganites, the melting of the CE-type charge, orbital and spin ordering is believed to be directly relevant to the colossal change in resistance which can be induced by various external perturbations. Here I will present our recent results on the spin and orbital ordering dynamics in $\text{Pr}_{1-x}\text{Ca}_x\text{MnO}_3$ (PCMO) both at 50% ($x=0.5$) and 30% ($x=0.3$) doping using laser pump Ultrafast X-ray probe time-resolved resonant soft x-ray scattering. Our studies reveal the different response of the ordering under laser excitation for these two dopings, as well as new ordering states which can't be accessed by heating or photo doping.

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