Abstract Submitted
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Optically induced magnetization dynamics in manganite films studied by time-resolved magneto-optical Kerr effect 1. DIYAR TALBAYEV, HAIBIN ZHAO, GUNTER LUEPKE, The College of William and Mary, ADYAM VENIMADHAV, JUN CHEN, QI LI, Pennsylvania State University — Magnetization precession is the fastest way to switch magnetic memory elements. We studied optically-induced magnetization dynamics in epitaxial $La_{2/3}Sr_{1/3}MnO_3$ (LSMO) and $La_{2/3}Ca_{1/3}MnO_3$ (LCMO) films on different substrates. Both uniform precession of magnetization and spinwaves were observed. The precession frequency is governed by magnetic anisotropy that depends on the strain state of the films. In LSMO, compressive and tensile strain induces uniaxial normal-to-plane anisotropy. Similar behavior was observed in tensile-strained LCMO. However, a large in-plane anisotropy was discovered in LCMO on $NdGaO_3$. The field-dependent relaxation times of the decaying precession are in 100 – 1400 ps range. The corresponding Gilbert damping parameter is field-dependent and decreases sharply with increasing field in LSMO films. The research was supported in part by the National Science Foundation and the Department of Energy.

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