

Abstract Submitted
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Probing magnetic inhomogeneity in La_{0.67}Ca_{0.33}MnO₃ by optical spin wave resonances YUHAN REN, Physics and Astronomy, Hunter College of the City University of New York, HAIBIN ZHAO, Optical Science and Engineering, Fudan University, China, YU GONG, Hunter College of the City University of New York, DAVID SCIENZO, YONATAN ABRANYOS, Physics and Astronomy, Hunter College of the City University of New York, GUNTER LUEPKE, Applied Science, the College of William and Mary, QI LI, Physics, Pennsylvania State University — We report on our recent study of spin wave resonances in ferromagnetic La_{0.67}Ca_{0.33}MnO₃ (LCMO) thin films by ultrafast Kerr-rotation experiments. Coherent magnetization precessions were generated and detected by subpicosecond laser pulses. Confined higher order spin wave modes are identified in addition to fundamental modes at 10 K. We determine spin stiffness, magnetic and surface anisotropy parameters for both 60-nm and 100-nm LCMO samples. Significant changes in anisotropy parameters are explained by the formation and extension of magnetic inhomogeneity in the 100-nm LCMO film. Our results show the new picosecond time-resolved magneto-optical method is a powerful tool for detecting magnetic inhomogeneity.

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