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**Photo-induced precession of magnetization in ferromagnetic GaMnAs** YUSUKE HASHIMOTO, HIRO MUNEKATA, Imaging Science and Engineering Laboratory, Tokyo Institute of Technology — Precession of magnetization induced by the pure optical excitation with femto-second light pulses has been reported recently through the study of time-resolved magneto-optical (TRMO) signal in ferromagnetic GaMnAs layers [1]. The present work reports newer TRMO data which were obtained very recently with much precise experimental setups and wider time windows. Three different dynamic behaviors have been found in different time windows; (i) a relatively large TRMO oscillation within 300 ps which shows a strong excitation wavelength dependence, (ii) subsequent oscillatory behavior which lasts up to 1 ns with much weaker excitation wavelength dependence, and (iii) rather long TRMO decay signal in 3 ns without spin precession. Temperature and magnetic-field dependences of the signals indicate that these phenomena are associated with ferromagnetism of the sample. The modeling based on Landau-Lifshitz-Gilbert equation with three different magnetization components suggests that a change in magnetic anisotropy occurs immediately after the optical excitation and decays within 100ps, to which magnetization follows with the precessional motion in the sample plane. [1] H. Takechi et al., presented in PASPS-IV (2006); pss-c in print.

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