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**Ultrafast Photoinduced Demagnetization in Ferromagnetic In-MnAs** CHANJUAN SUN, JIGANG WANG, JUNICHIRO KONO, Rice University, AKIRA OIWA, HIROO MUNEKATA, Tokyo Institute of Technology — Mid-infrared pump-probe magneto-Kerr rotation measurements have been performed on ferromagnetic InMnAs in external magnetic fields. Systematic pump power and temperature dependent studies showed ultrafast demagnetization induced by the pump laser pulses. Complete magnetization quenching was observed at high pump powers, implying a photoinduced phase transition from the ferromagnetic state to the paramagnetic state on a femtosecond time scale. During the demagnetization process, three different time scales were revealed, indicating different mechanisms for magnetic order quenching. Interplay among different energy transfer channels will be discussed.

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