Coherent Spin Waves in Thin-Film GaMnAs D. M. WANG, Y. H. REN, R. MERLIN, University of Michigan, K. DZIATKOWSKI, X. LIU, J. K. FURDYNA, University of Notre Dame, M. GRIMSDITCH, Argonne National Lab — We report on the observation of coherent oscillations associated with standing spin waves in thin films of the ferromagnetic semiconductor GaMnAs. The oscillations were observed in differential magnetic Kerr measurements using a standard pump-probe setup. Subpicosecond pump pulses from a Ti: sapphire laser induce a coherent precession of the magnetization which is detected by measuring the rotation of the polarization of the delayed probe pulses. The magnetic anisotropy and spin stiffness constants \( D \) were determined from the magnetic-field dependence of the spin-wave frequencies. We obtain \( D = 0.7 \pm 0.1 \times 10^{-13} \text{T} \cdot \text{cm}^2 \) for two as-grown samples \( T_C = 65 \text{ K} \) and \( D = 3.5 \pm 0.5 \times 10^{-13} \text{T} \cdot \text{cm}^2 \) for an annealed sample with \( T_C = 80 \text{ K} \).