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FMR study of magnetic anisotropy and interlayer exchange coupling in (Ga,Mn)As/GaAs/(Ga,Mn)As K. DZIATKOWSKI[1], University of Warsaw and University of Texas at Austin, Z. GE, X. LIU, J. K. FURDYNA, University of Notre Dame, B. CLERJAUD, Institute des NanoSciences de Paris and Universite Pierre et Marie Curie, R. JAKIELA, Polish Academy of Sciences, A. BARCZ, Institute of Electron Technology, A. TWARDOWSKI, University of Warsaw — An interplay between magnetic anisotropy and interlayer exchange coupling (IEC) in (Ga,Mn)As-based heterostructures was studied experimentally. Ferromagnetic resonance (FMR) measurements were performed on a series of (Ga,Mn)As/GaAs/(Ga,Mn)As trilayers with different thickness d_{GaAs} of nonmagnetic GaAs spacer. The manifestation of single- or double-resonance spectra was a foundation for determining d_{GaAs}-dependent regimes of strong ($d_{\mathrm{GaAs}} \leq 3$ nm) and weak ($d_{\mathrm{GaAs}} \geq 12$ nm) IEC. Under weak IEC conditions, two resonances of different intensity were consistently addressed by means of Landau- Lifshitz model of magnetization dynamics and recognized as the acoustic (strong) and optic (weak) modes of FMR. The unexpected change in the ordering of acoustic/optic modes in FMR spectra on the rotation of applied magnetic field was explained by detailed evaluation of Zeeman split energy levels of the magnetization.

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