

Abstract Submitted  
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**Magneto-Optical Kerr Spectra in (Ga, Mn)As<sup>1</sup>** YONG HEE CHO, ALEKSANDER WOJCIK, ALEXEY BELYANIN, Department of Physics, Texas A&M University, College Station, Texas 77843, USA, CHANJUAN SUN, JUNICHIRO KONO, Department of Electrical and Computer Engineering, Rice University, Houston, Texas 77005, USA, HIRO MUNEKATA, Imaging Science and Engineering Laboratory, Tokyo Institute of Technology, Yokohama, Kanagawa 226-8503, Japan — We theoretically and experimentally investigated the magneto-optical Kerr effect (MOKE) in ferromagnetic (Ga, Mn)As over a broad spectral range with varying Mn concentration and hole density. The full band structure was obtained with a 30 band k.p method with the exchange interaction between Mn spins and itinerant holes. The dielectric tensor and Kerr spectra were calculated for the interband transitions over the first Brillouin zone. Theoretical results show excellent agreement with experimental Kerr spectra. Our studies prove antiferromagnetic character of p-d exchange interaction between holes and Mn moments. They confirm that the Fermi level in our GaMnAs samples lies in the valence band and the Kerr rotation originates from the interband transitions, and not from the impurity band-related transitions. Also, the strain and the spin-orbit band effects on MOKE are discussed.

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