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Infrared Faraday measurements on $Ba(Fe_{1-x}Co_x)_2As_2$ superconductors ALOK MUKHERJEE, CHASE T. ELLIS, M. MURAT ARIK, JOHN CERNE, Dept. of Physics, University at Buffalo, The State University of New York, Buffalo, NY, HIKARU SATO, HIDENORI HIRAMATSU, HIDEO HOSONO, Materials and Structures Laboratory, Tokyo Institute of Technology, Tokyo, Japan — We report infrared Faraday measurements on electron-doped $Ba(Fe_{1-x}Co_x)_2As_2$ superconducting films, which are grown by pulsed laser deposition. The complex Faraday angle θ_F is proportional to the difference of the sample's response to right and left circularly polarized light, making it a highly sensitive tool to probe electronic structure, electron-electron correlations, and magnetic ordering. We measure θ_F for normal and superconducting states in the 110-1400 meV range at temperatures down to 10K and magnetic fields up to 7T. This work is supported by NSF-DMR1006078.

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