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**Asymmetric Planar Hall Effect in (Ga,Mn)As/MnO Exchange-Biased Structures** ZHIGUO GE, W. L. LIM, S. SHEN, Y. Y. ZHOU, X. LIU, J. K. FURDYNA, M. DOBROWOLSKA, Department of Physics, University of Notre Dame, Notre Dame, IN 46556 — We report the observation of asymmetric Planar Hall Effect (PHE) in a series of exchange-biased (EB) (Ga,Mn)As/MnO ferromagnetic(FM)/antiferromagnetic(AF) bilayer structures after field cooling. The process of magnetization reversal was systematically studied by PHE measurements by varying the direction of the in-plane applied magnetic field. The analysis of experiment results based on the Stoner-Wohlfarth model (including domain nucleation and expansion in the FM layer) revealed that two magnetization reversal mechanisms are present in these EB systems due to the exchange coupling between MnO and (Ga,Mn)As: the magnetization reversal undergoes either a full circle or a half circle, depending on the direction of the applied field relative to the cooling field. Our model is confirmed by the close agreement between experimental data and theoretical predictions for the angular dependence of the exchange bias and of the coercive field. Supported by NSF Grant DMR02-45227.

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