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Detection of EMF induced by domain wall motion GEOFFREY BEACH, MIT, Dept. of Materials Science and Engineering, SHENGYUAN YANG, CARL KNUTSON, DI XIAO, QIAN NIU, MAXIM TSOI, JAMES ERSKINE, UT Austin Dept of Physics — It is now well established that an electric current can drive magnetic domain wall (DW) motion via coupling between conduction electrons and local magnetic moments. The reverse of this effect, i.e., an emf induced by a DW moving through a stationary electron gas, has also been predicted [1]. DW-induced emf has been explored in more detail in recent theoretical work [2,3], but has yet to be observed. In this talk, we describe the experimental detection of an emf induced by a field-driven DW in a Permalloy nanowire [4]. This DW-driven emf is discussed in terms of a generalized two-dimensional theoretical framework [4] capable of treating vortex DWs. Supported by NSF DMR-0404252, NSF DMR-0606485, DOE DE-FG03-02ER45958, and the Welch Foundation. [1] L. Berger, Phys. Rev. B 33, 1572 (1986). [2] S. E. Barnes et al., arXiv:cond-mat/0410021 (2004); Appl. Phys. Lett. 89, 122507 (2006) [3] R. A. Duine, Phys. Rev. B 77, 014409 (2008). [4] S. Yang, et al., submitted (2008).

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