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Spin accumulation and resistance due to a moving domain wall J. IEDA, S. TAKAHASHI, CREST, Japan Science and Technology Agency; Institute for Materials Research, Tohoku University, S. E. BARNES, Physics Department, University of Miami, S. MAEKAWA, CREST, Japan Science and Technology Agency; Institute for Materials Research, Tohoku University — The resistance of magnetic nanowires containing a moving domain wall (DW) is studied. The excess resistance due to the DW has been shown in a number of transport experiments [1]. Theoretically, the DW resistance is investigated along with the concepts of the spin dependent scattering with spin mistracking and the spin accumulation, where the DW is assumed static just producing the exchange field to conduction electrons. For a moving DW, however, the angular momentum transfer effect [2] should be incorporated to those mechanisms. In this presentation, we discuss this effect along with the spin accumulation mechanism. The frequency dependence of the spin accumulation is also presented. [1] J. F. Gregg et al., PRL77, 1580 (1996); U. Ebels et al., PRL84, 983 (2000); E. Saitoh et al., Nature432, 203 (2004). [2] S. E. Barnes and S. Maekawa, PRL95, 107204 (2005); cond-mat/0410021.

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