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Spin to charge conversion using Rashba coupling at the interface between non-magnetic materials[1] J.C. ROJAS SANCHEZ, UJF, CEA-Grenoble and UMP CNRS-Thales, Palaiseau, France, L. VILA, G. DESFONDS, S. GAMBARELLI, J.P. ATTANE, UJF and CEA Grenoble, France, J.M. DE TERESA, C. MAGEN, ICMA, LMA, INA and U. Zaragoza-CSIC, Spain, A. FERT, UMP CNRS-Thales, Palaiseau, and U. Paris-Sud, Orsay, France — The Rashba effect is an interaction between the spin and the momentum of electrons induced by the spin-orbit coupling (SOC) in surface or interface states. Its potential for conversion between charge and spin currents has been theoretically predicted but never clearly demonstrated for surfaces or interfaces of metals. Here we present experiments evidencing a large spin-charge conversion by the Bi/Ag Rashba interface. We use spin pumping to inject a spin current from a NiFe layer into a Bi/Ag bilayer and we detect the resulting charge current. As the charge signal is much smaller (negligible) with only Bi (only Ag), the spin to charge conversion can be unambiguously ascribed to the Rashba coupling at the Bi/Ag interface. This result demonstrates that the Rashba effect at interfaces can be used for efficient charge-spin conversion in spintronics

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