

Abstract Submitted
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Spin-mixing effects on magnetic switching, probed by thermoelectric measurements¹ JEAN-PHILIPPE ANSERMET, LAURENT GRAVIER, MOHAMED ABID, SANTIAGO SERRANO-GUISAN, IPN, EPFL, Station 3, CH-1015 Lausanne, Switzerland — Current-Induced Magnetization switching has been observed in single nanowires of Co, Ni, Co-Cu and Ni-Cu multilayers. A novel thermoelectric measurement under high DC current is presented. It features a field dependence stronger than GMR. Its dependence on field orientation shows that it provides information complementary to GMR or magneto-thermoelectric power measurements. It is argued with a simple model that this measurement depends strongly on the difference of spin mixing rates of spin conversions going from “up” to “down” and conversely. Thus, this novel transport measurement provides information on electron-magnon collisions in magnetic nanostructures. The field dependence of this signal is about 10 times larger than the magnetoresistance of the same sample, be it AMR or GMR. In multilayers, the field dependence is shown to decay away when the thickness of the layers is larger than the spin-diffusion length.

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Jean-Philippe Ansermet
IPN, EPFL, Station 3, CH-1015 Lausanne, Switzerland

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