

Abstract Submitted
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Tunable sign change of spin Hall magnetoresistance in Pt/NiO/YIG structures DAZHI HOU, ZHIYONG QIU, JOSEPH BARKER, KOJI SATO, KEI YAMAMOTO, Tohoku Univ., SAUL VELEZ, JUAN M. GOMEZ-PEREZ, LUIS E. HUESO, FELIX CASANOVA, CIC nanoGUNE, ELJI SAITOH, Tohoku Univ., SAITOH TEAM, CASANOVA TEAM — Spin Hall magnetoresistance (SMR) has been investigated in Pt/NiO/YIG structures in a wide temperature range. The SMR changes sign at a temperature which increases with the NiO thickness. This is contrary to a conventional SMR theory picture applied to Pt/YIG bilayer which always predicts a positive SMR. We explain the negative SMR at low temperatures by the NiO 'spin-flop' coupled with YIG, which is overridden at higher temperature by positive SMR contribution from YIG. This highlights the role of magnetic structure in antiferromagnets for transport of pure spin current in multilayers.

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