

Abstract Submitted
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Extrinsic Spin Hall effect of AuW alloys PIOTR LACZKOWSKI, JUAN CARLOS ROJAS-SNCHEZ, UMPhy CNRS-Thales - 1-Avenue Augustin Fresnel - 91767 PALAISEAU, WILLIAMS SAVERO-TORRES, INAC-SP2M, CEA-Universit Joseph Fourier, F-38054 Grenoble, France, NICOLAS REYREN, CYRIL DERANLOT, JEAN-MARIE GEORGE, HENRI JAFFRES, UMPhy CNRS-Thales - 1-Avenue Augustin Fresnel - 91767 PALAISEAU, CYRIL BEIGN, LUCIEN NOTIN, INAC-SP2M, CEA-Universit Joseph Fourier, F-38054 Grenoble, France, SOPHIE COLLIN, UMPhy CNRS-Thales - 1-Avenue Augustin Fresnel - 91767 PALAISEAU, ALAIN MARTY, JEAN-PHILIPPE ATTAN, LAURENT VILA, INAC-SP2M, CEA-Universit Joseph Fourier, F-38054 Grenoble, France, FREDERIC PETROFF, ALBERT FERT, UMPhy CNRS-Thales - 1-Avenue Augustin Fresnel - 91767 PALAISEAU, UMPHY CNRS-THALES PALAISEAU TEAM, CEA-SP2M-INAC GRENOBLE TEAM — The spin Hall effect (SHE) allows a reciprocal conversion between charge and spin currents using spin orbit interactions. Large Spin Hall angle have been reported in transition metals (Pt, W, Beta-Ta) and in alloys made of heavy metals [1]. We will report on SHA in AuW alloys [2] exhibiting a non-monotonic relation with W content. In this regime, it suggests a skew-scattering to side-jump dominant contribution to the spin Hall resistivity, thus allowing precise tuning of SHA vs. W content. We will present experiments by using Lateral Spin Valves with refined spin-absorption model adapted to strong spin-orbit interactions. By using complementary FMR/Spin-Pumping techniques, we demonstrate very large SHA of the order of 15 % at rather high W concentration in rather good agreement with the previous method. [1] *PRL* **109**, 156602 (2012), *PRB* **89**, 054401 (2014), [2] P. Laczkowski *et al.*, *APL* **104**, 142403 (2014) .

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