



Contribution ID : 84

Type : **Short communications**

Production and conversion of orbital polarization

Tuesday, 16 December 2025 11:30 (15)

There is an active debate regarding the relaxation mechanism of orbital angular momentum (OAM) accumulation. Some experimental and theoretical results point out a large orbital relaxation length and a new recent theories indicate that OAM accumulation relaxes in a few atomic layers, attributed to an interfacial effect [1-2]. This work demonstrates the spin-orbital conversion mechanism, specifically the inverse Orbital Edelstein Effect (IOEE), using spin/orbital pumping and Seebeck effect results on //Ni/Ti/Au system. The experiments show that the IOEE conversion is a weak effect and, crucially, independent of the Ti layer thickness. This suggest the absence of Orbital Hall Effect and it is ascribed as an interfacial conversion in sharp contrast to others results on Ti [3]. We propose a double interconversion scenario at interfaces that reconcile the different results.

This project received funding from the European Research Council (ERC) under the European Union's Horizon Europe research and innovation program (ID 101086807 - ERC MAGNETALLIEN), and M. Yactayo was supported by MSCA RISE Ultimate-i from the European Union's Horizon 2020.

[1] M. Rang and P.J. Kelly, PRB 109, 214427 (2024)

[2] N. Kumar et. al. PRB 111, 094410 (2025)

[3] H. Hayashi, Nat. Electronics 7, 646 (2024)

Primary author(s) : Ms YACTAYO YARANGA, Melissa (Université de Lorraine, CNRS, Institut Jean Lamour – CNRS:UMR7198, France, Universidad Nacional Mayor de San Marcos – Peru)

Co-author(s) : Dr PEZO, A. (Laboratoire Albert Fert, CNRS, Thales, Université Paris-Saclay, France); Dr TIAN, M. (Southeast University, Nanjing, China); Dr BADIE, L. (Université de Lorraine, CNRS, Institut Jean Lamour – CNRS:UMR7198, France); Dr QUISPE-MARCATOMA, J. (Universidad Nacional Mayor de San Marcos – Peru); Dr LANDAURO, C. V. (Universidad Nacional Mayor de San Marcos – Peru); Dr XU, Y. (MIIT Key Laboratory of Spintronics, School of Integrated Circuit Science and Engineering, Beihang University, China); Dr PETIT-WATELOT, S. (Université de Lorraine, CNRS, Institut Jean Lamour – CNRS:UMR7198, France); Dr HEHN, M. (Université de Lorraine, CNRS, Institut Jean Lamour – CNRS:UMR7198, France); Dr FERT, A. (Laboratoire Albert Fert, CNRS, Thales, Université Paris-Saclay, France); Dr ROJAS-SÁNCHEZ, J. -C. (Université de Lorraine, CNRS, Institut Jean Lamour – CNRS:UMR7198, France); Dr AMPUERO, J. L. (Université de Lorraine, CNRS, Institut Jean Lamour – CNRS:UMR7198, France)

Presenter(s) : Ms YACTAYO YARANGA, Melissa (Université de Lorraine, CNRS, Institut Jean Lamour – CNRS:UMR7198, France, Universidad Nacional Mayor de San Marcos – Peru)

Session Classification : FISICA DEL ESTADO SOLIDO