

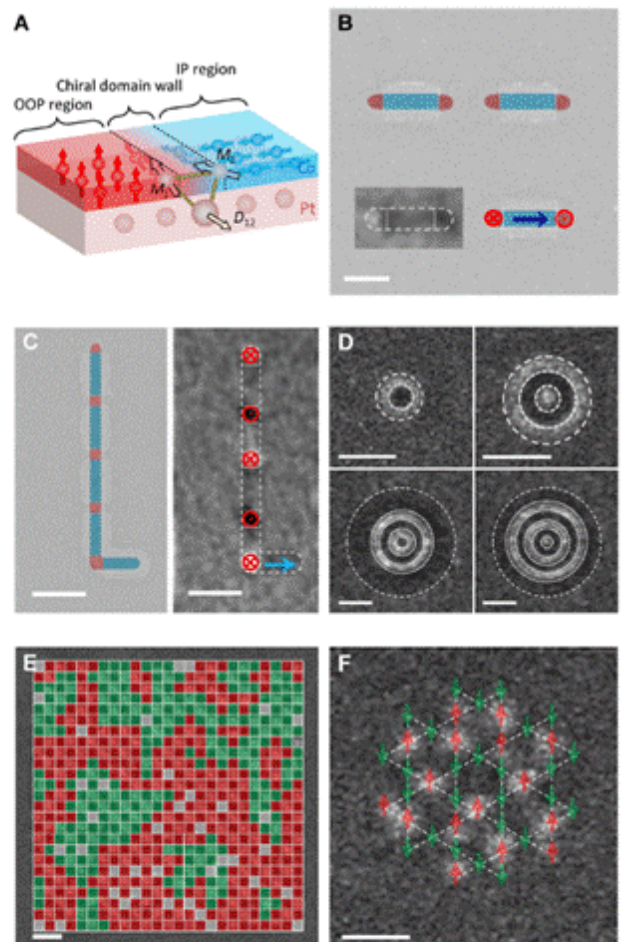
2 luglio 2019
Ore 15:00 - Aula B

Pietro Gambardella

Department of Materials, ETH Zurich, CH - 8093 Zürich, Switzerland

The new spintronics: switching, sensing, and coupling nanomagnets enabled by the spin-orbit interaction

The spintronics landscape has changed dramatically over the last ten years. Much of this change is due to a deeper understanding of the interactions and charge-spin conversion processes mediated by spin-orbit coupling in different classes of materials. In this talk, I will discuss new opportunities to sense and manipulate the magnetization of metallic and insulating nanomagnets. Illustrative examples will focus on unusual magnetoresistance effects [1-3], ultrafast switching of magnetic dots and tunnel junctions [4-7], as well as chirally coupled spin lattices, synthetic skyrmions, and antiferromagnets [8].



- [1] C.O. Avci, J. Mendil, G.S.D. Beach, and P. Gambardella, *Phys. Rev. Lett.* 121, 087207 (2018). [2] C.O. Avci et al., *Appl. Phys. Lett.* 110, 203506 (2017).
[3] C.O. Avci et al., *Nat. Phys.* 11, 570 (2015).
[4] A. Manchon et al., *Rev. Mod. Phys.* (in press, arXiv:1801.09636).
[5] M. Cubukcu et al., *IEEE Trans. Magn.* 54, 9300204 (2018).
[6] M. Baumgartner et al., *Nat. Nanotech* 12, 980 (2017).
[7] M. Miron et al., *Nature* 476, 189 (2011).
[8] Z. Luo et al., *Science* 363, 1435 (2019).

Dipartimento di Matematica e Fisica, Via della Vasca Navale 84