641st ASRC Seminar

Date：13:30 ～ Thursday, July 7

Location： Meeting Room 103, ASRC bldg.

Speaker： Professor Manuel Ricardo Ibarra (University of Zaragoza)

Title：Relevance of the surfaces in thermospin and spintronics effects

•Abstract: This talk covers the role of the surfaces in relevant effects discovered in the field of spintronics: On one hand, the role of Non-Magnetic metal/Ferromagnet interfaces, that give rise to a strong enhancement of the spin Seebeck effect in Fe_3O_4/Pt multilayer due to the magnon spin currents conversion in electron spin currents and vice versa through the heterostructure. *[1]* On the other hand, the relevance of the surface states in Bi and Bi based compounds. Thin films of Bi provide a nice scenario for the observation of WAL effect in magnetotransport properties. *[2]* Time reversal symmetry (TRS) protection of surface states (SS) gives rise to the absence of backscattering in topological insulator (TI) as Bi_2Te_3, giving rise to spin-polarized and dissipation-less charge currents. The presence of magnetic adatoms, as Co, at the surface of a TI, can destroy the TR symmetry; this is the case of Bi_2Se_3. However, we have found that in Bi_2Te_2Se, the surface chemical inhomogeneity (Te/Se) preserves the TRS of the topological SS.*[3]*

[1] "Unconventional scaling and significant enhancement of the spin Seebeck effect in multilayers" R. Ramos et al. Phys. Rev. B Rapid Comm 92, 220407(R) (2015)

[2] "Role of the surface states in the magnetotransport properties of ultrathin bismuth films"

N. Marcano et al. Phys Rev. B 82, 125326 (2010). "Quantitative analysis of the weak anti-localization effect in ultrathin bismuth films" S. Sangiao et al. EPL, 95 (2011) 37002

[3] "Time reversal symmetry protected by chemical disorder in the surface of topological insulator" M.C. Martinez-Velarte et al. under review (2016)

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