

Potential of topological materials for spintronic devices

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The new phenomena [1] revealed by the quantum states of topological materials - for example, the surface/interface states of topological insulators – open interesting perspectives for the conversion between charge and charge currents, which, parenthetically, is the basic function for the creation or detection of spin currents in any spintronic devices. The observation of such phenomena at room temperature has recently increased their potential for application in such devices.

After a presentation of experimental results on spin to charge conversion in spin pumping experiments at room temperature on thin films of the topological insulator α -Sn, Rashba interfaces (Bi/Ag) and 2DEGs at the interface between insulating oxides (LAO/STO), I will discuss the advantage of such 2D systems on the bulk materials with Spin Hall Effect that are generally used in memory or logic devices (SOT-RAMs, etc)

[1] Recent review by A. Soumyanarayanan, N. Reyren, A. Fert and C. Panagopoulos, Nature **539**, 509 (2016).