

Measuring Spin Currents

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This lecture will deal with electronic spin currents, how to generate them, how to detect them and the different physical effects that arise when spin currents without charge currents are manipulated.

Lecture topics:

1. Reminders
 - a. Charge currents and electronics
 - b. Charge+Spin currents and Spin Electronics
 - c. Pure Spin currents
2. Spin current generation
 - a. Electrical (spin injection, spin-orbit)
 - b. Electromagnetic (spin pumping)
 - c. Thermal
3. Spin current detection
 - a. Electric detections (Spin Hall - SpinTorques)
 - b. Electromagnetic/Optical detections
4. Devices
 - a. 2-3-4 terminal devices
 - b. multilayers and spin valves

Recommended reading :

[1] A.P. Guimaraes, Principles of Nanomagnetism, Springer 2017