INTERNATIONAL IBERIAN NANOTECHNOLOGY LABORATORY

Project Title:	**Software development for measurement control and data analysis of electrical characterization of magnetic tunnel junction devices.**
Project Short description	Spintronics is a research field that explores the ability to control and manipulate the spin of electrons, instead of their charges, in very thin film in order to develop novel functionalities for future Information and Communication Technology (ICT) applications. Magnetic Tunnel Junctions (MTJs) are promising structures for such applications as they are suitable for: a.) magnetic sensor, b.) magnetic random access memory devices, c.) spin torque oscillators and d.) thermoelectric applications. **All these fields are explored in the Spintronics group of the International Iberian Nanotechnology Laboratory (**INL**)* at Braga (Portugal).** For this, magneto-transport measurements are carried out in such MTJ devices. However, in order to optimize the MTJ stack configuration for each suitable functionality a detailed analysis of experimental data is required. This analysis can be however, very different for every MTJ structure, leading, sometimes, to a large time consuming process. Therefore, in order to improve the overall MTJ optimization procedure, the Spintronics Group of INL **is seeking for a highly motivated Master Student to improve the software measurement control and the development of a general and flexible data analysis tool.** The development of such software analysis tools may include: Parameter determination by fitting analysis, Statistical analysis, analysis of resonance spectra, circuit analysis, …
Expected Start/end date	December 31th 2014/Mai 31th 2015
Required degree and Background knowledge of students, minimum gradepoint average, etc…	The candidate should have an Engineering degree or BSc degree with knowledge in different computer skills like: • LabView • Visual C++ • Matlab • COMSOL (finite element simulation tool) as well as background in statistical analysis.

Supervisor at INL

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