Réunions scientifiques

Séminaires

Séminaire SOLEIL

Probing and imaging magnetotransport in thin film magnetic materials using infra red spectroscopy

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Invitée par Paul DUMAS

Lundi 13 décembre à 14h00
Grand Amphi SOLEIL

The 2007 Nobel Prize winning discovery of Giant Magnetoresistance created the field of spintronics in which the consequences of the electron spin on the electrical conductivity are explored and exploited. At infrared wavelengths the dielectric response of a metal is directly related to the d.c. electrical conductivity of the material with the result that the refractive index is sensitive to the electrical resistivity, known as the magnetorefractive effect [1]. This has enabled the development of a series of related techniques for the remote sensing and 2D imaging [2] of magnetotransport based on this phenomenon. These techniques variously measure the change in reflected, transmitted or emitted intensity as a function of magnetic field and offer contactless and non-destructive probes of magnetotransport which are shown to correlate directly with magnetoresistance in a wide range of materials including giant magnetoresistive thin films [3] and multilayers [4], tunnelling nanocomposites, colossal magnetoresistive manganites and magnetic oxides such as magnetite [5].

[1] J.C. Jacquet, T. Valet, Magnetic Ultrathin Films, Multilayer and Surfaces, edited by E. Marinero, Materials Research Society, Pittsburg (1995)
[2] S.M. Stirk, S. M. Thompson, R.T. Mennicke, A.F. Lee, and J.A.D. Matthew Appl. Phys. Lett. 88, 2 (2006) 022502
[3] R.T. Mennicke, D. Bozec, V.G. Kravets, M. Vopsaroiu, J.A.D. Matthew, S.M. Thompson, J. Magn. Magn. Mater. 92-110, 303 (2006)
[4] M. Vopsaroiu, D. Bozec, J. A. D. Matthew, S. M. Thompson, Phys. Rev. B 70, 214423 (2004)
[5] S. M Thompson, V. K Lazarov, R. C Bradley, T. Deakin, B. Kaeswurm, G. E. Sterbinsky, J. Cheng and B.W. Wessels, J. Appl. Phys. 107 09B102

Formalités d'entrée *: accès libre dans l'amphi du Pavillon d'Accueil. Si la manifestation a lieu dans le Grand Amphi Soleil du Bâtiment Central, merci de vous munir d'une pièce d'identité (à échanger à l'accueil contre un badge d'accès).*

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