

Séminaire SOLEIL

Magnetic domain structure and dynamics in thin films and nanostructures

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Invitée par la Nicolas JAOUEN

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Séminaires

Magnetic domains are the constitutive elements of magnetic materials which link the basic physical phenomena of a material with the macroscopic properties that lead to the potential technological applications. During the last years there has been an increasing interest in domain analysis due to the improvements in sample fabrication and patterning techniques, which makes it possible to fabricate micro and nano sized samples, comparable to the characteristic magnetic domain length scale, where measurable domain effects can appear. It is absolutely necessary to understand the different size effects involved in view of the further miniaturization required for devices and several technological applications.

In this talk some results in size effects in micro and nano structured MnAs/GaAs(100) ribbons studied by Magnetic Force Microscopy will be presented. The magnetostructural phase coexistence reported in MnAs thin films is also observed in the microribbons, even in the smallest ones. However, the stripe array of MnAs films is only preserved in the ribbons confined along the (0001) direction. Nevertheless, the configuration of the magnetoelastic domains is altered in the ribbons confined along the (11-20) direction. In this last case, the micrometric ribbons exhibit a redistribution of the magnetoelastic phases owed to the relaxation of the epitaxial strains. The results are understood in terms of the anisotropic change in the lattice parameters at the magnetostructural transition.

I will also introduce the project I am actually involved, concerning to the study of magnetization dynamics on the picosecond time scale by time resolved x-ray fourier transform holography. The goal is to achieve picosecond temporal resolution and nanometer spatial resolution, in order to study the magnetization dynamics in hard magnetic materials, particularly in nanostructured magnetic layers showing flux closure via Landau pattern formation.



Ce séminaire sera suivi d'une pause-Café



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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