

Magnetism catches the wave: manipulating magnetization with surface acoustic waves

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Amphithéâtre SOLEIL

The magneto-elastic effect, i.e., the change of magnetic properties caused by an elastic deformation, has been proposed as an alternative to magnetic fields for the low power control of magnetization states of nanoelements, since it avoids charge currents and thus ohmic losses. Multiferroic heterostructures and nanocomposites have exploited this effect in search of electric control of magnetic states, mostly in static regimes. We have developed an experimental technique based on stroboscopic X-ray Photoemission electron microscopy (XPEEM) that provides a pathway to the quantitative study of strain waves and magnetization at the nanoscale. We have simultaneously imaged the temporal evolution of both strain waves and magnetization dynamics of nanostructures at the picosecond timescale and found that magnetization modes have a delayed response to the strain modes, adjustable by the magnetic domain configuration. Our results provide fundamental insight into magnetoelastic coupling in nanostructures having implications in the design of strain-controlled magnetostrictive nano-devices.



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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