

Magnetization dynamics in chiral thin films probed by x-ray resonant magnetic resonant scattering

Cyril LEVEILLE

Ligne SEXTANTS, Synchrotron SOLEIL et UMPy CNRS/THALES

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In this PhD work, the study of different system ranging from Synthetic Antiferromagnets (SAF) and chiral skyrmions or DW in ferromagnetic (FM) multilayers has been performed by X-ray Resonant Magnetic Scattering (XRMS). A detailed description of the XRMS techniques on FM multilayers is given.

Secondly, time-resolved study on FM with chiral DWs is performed in pump and probe mode at FERMI free electron laser. We found that the DWs demagnetizes more and recovers faster than the domains. A hot electron induced torque model has been proposed to explain this time evolution. Then, a preliminary time-resolved experiments on a skyrmions lattice state in a FM sample has also been performed. Moreover, XRMS is a promising way to study SAF samples which are difficult to characterize with conventional techniques due to the antiferromagnetic coupling between adjacent FM layers. This type of material allows higher displacement velocities of magnetic textures than FM samples and their time-resolved study could give further hints on the torque model veracity.

Les membres du jury sont :

Alexandra MOUGIN - Directrice de recherche, LPS	Examinatrice
Thorsten HESJEDAL - Professeur, Oxford university	Rapporteur & Examineur
Christoforos MOUTAFIS - Professeur associé, Manchester	Rapporteur & Examineur
Christine BOEGLIN - Directrice de recherche, ICPMS CNRS	Examinatrice
Mathias KLÄUI - Professeur, JGU Mayence	Examineur
Grégory MALINOWSKI - Chargé de recherche, IJL CNRS	Examineur
Nicolas JAOUEN - Docteur, Synchrotron SOLEIL	Directeur de thèse
Nicolas Reyren - Chargé de recherche, CNRS/Thales	Co-encadrant de thèse



Vous êtes cordialement invités au pot qui suivra

THÈSE