(Ultra)-fast magnetization dynamics in chiral magnetic heterostructures

The objective of the postdoctoral candidate will be to take charge of the installation of a femto second laser coupled to the SEXTANTS beam line of the SOLEIL synchrotron. During the first phase of the project, he/she will participate in the installation and commissioning of this new device. In a second phase, he/she will participate in the joint research program dedicated to the study of the ultrafast dynamics of magnetic chirality between the "spinorbitronics" team of the CNRS/Thales Joint Physics Unit (UMPhy) and the team of the SEXTANTS line at the SOLEIL synchrotron. These studies will be carried out at SOLEIL for the 50 ps-1 ns time range and on a free electron laser (XFEL) for the 100 fs-50 ps ultrafast range. The candidate will be in charge at UMPhy of the elaboration by sputtering of the studied magnetic heterostructures or multilayers and their characterization by magnetometry and magnetic microscopy (MFM, Kerr), and of course by static magnetic X-ray scattering on the SEXTANTS line. In parallel to this specific scientific project, the candidate will be in charge of welcoming external users of the line. This requires experience in the operation of a soft X-ray light beamline and skills in the field of soft X-ray spectroscopy and resonant scattering. In addition, experience in soft X-ray instrumental developments will be a definite advantage that will be taken into account in the choice of the candidate.

Main activity

- Installation of a femtosecond laser on the SEXTANTS line
- Participation to the reception of external users on SEXTANTS
- Growth (by PVD) and characterization of static magnetic properties of multilayers by laboratory techniques of magnetometry and magnetic imaging (SQUID, AGFM, Kerr, MFM, NV microscopy, etc.)
- Characterization of ultrafast dynamics in chiral multilayers by magnetic diffusion after femtosecond laser pumping

Skills:

The candidate must:

- have a thorough knowledge in the field of X-ray spectroscopy and scattering.
- have a thorough knowledge of nanomagnetism and spintronics,
- have knowledge in magnetic imaging e.g. MFM or Kerr microscopy
- have skills in soft X-ray experimental developments.
- have a very good written/spoken English level
- be able to synthesize results and present them in public at conferences and symposiums.
- be able to work in a team

Context :

The project will take place on the SEXTANTS line at the SOLEIL synchrotron (Gif-sur-Yvette), in close collaboration with the CNRS/Thales Joint Physics Unit (UMPhy) in Palaiseau.

Contact :

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