Master position: Light induced control of spin in insulators

Project background

In technology magnetization can be used to encode information, in this context the spin direction up or down corresponds to a bit of information 0 or 1. Therefor an efficient and fast control of the spin is crucial to write the information.

Femtosecond laser pulses appear as a promising alternative as they can switch the spin in magnetic metals at the ps timescale. However, due to incoherent relaxation of conduction electrons this excitation leads to a large increase of heat in the material (>100 K). Dissipation of this heat takes hundreds of ps and is detrimental for devices operations.

At IMMM we explore an alternative way to control the spin in magnetic materials with minimal heat dissipation exciting insulating materials. Exploiting the possibility to select the energy of excitation and the coupling between the spin and the structure. In this master project we aim at to use selective excitation in well-designed insulator for a fast and heat free control of spin

Job description

The master thesis will be focused on using all optical pump probe set up (already developed) to study light induced control of spin in magnetic insulator. The master student will benefit from the expertise of the NOVA and NMM team for the field of light induced modification of structure and spin as well as the experimental support of the laser platform (PERP LUMMA).

Your profile

We are looking for a motivated master's student in condensed matter physics or material science. Good knowledge of English required. Previous experience in optical pump probe set up and/or magnetism is a plus. **Possibility to continue in a PhD.**

Interested?

We look forward to receiving your application via email (lucile.soumah@univ-lemans.fr) with a cover letter, detailed CV and diplomas. Visit the website: https://immm.univ-lemans.fr/fr/recherche/thematique-pumma-physique-ultra-rapide-et-spectroscopie-des-materiaux-magnetiques-ferroiques-et-topologiques.html