

Master M2MCN

Année universitaire 2016/2017

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Titre : Ultrafast demagnetization of ferrimagnetic alloys by using time resolved x ray magnetic circular dichroism.

The Master work focuses on time resolved pump-probe experiments using femtoseconde laser pulses as a pump and quantitative X-ray circular dichroism as a probe. The project proposes to measure the ultrafast dynamics of the magnetic Spin and Orbital moments in magnetic films. It is part of the project which aims at understanding the fundamental mechanisms at the origin of laser induced modifications of the magnetization in magnetic nanostructures. Those experiments are performed at synchrotron storage rings: at BESSY-BERLIN, using the “femtosing” operation mode with a time resolution ~ 100 fs and at synchrotron SOLEIL-PARIS, using the “low-alpha” operation mode with a time-resolution ~ 10 ps.

The candidate will participate to the elaboration and the characterization of the thin ferrimagnetic layers by means of SQUID, Magneto-Optical Kerr effect and Auger spectroscopy at IPCMS. The candidate will also participate to the synchrotron sessions at BESSY and SOLEIL.