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Supervisor	Mathieu Mivelle
Supervisor page	https://www.researchgate.net/profile/Mathieu-Mivelle
Host Institution	Centre National de la Recherche Scientifique (CNRS) https://www.cnrs.fr/en
Research Lab	Institute of NanoSciences of Paris https://w3.insp.upmc.fr/en/insp-en/
Research Team	Nanophotonics and Quantum Optics https://w3.insp.upmc.fr/en/research/research-teams/nanophotonics-and-quantum-optics/

Project Title

Ultrafast Magnetism at the Nanoscale: Plasmonic Pathways for Femtosecond Magnetic Field Generation

Project Description

Magnetization spans from geologic timescales to femtosecond spin flips, yet conventional solenoids restrict ultrafast magnetism. Electronics keep shrinking, but magnetic storage lags, creating an “ultrafast gap.” This project employs inversely-designed plasmonic nanodevices to optically generate femtosecond, intense, and reversible magnetic fields—enabling breakthroughs in spin dynamics, data storage, and nanoscale MRI.

Keywords

ultra-short pulses of magnetic field, plasmonic and nanophotonic antennas, light-matter interactions

Description of the Host Research Lab

The Institute of NanoSciences of Paris (INSP) brings together teams from four condensed matter physics laboratories. Its scientific objectives are at the heart of fundamental research in nanosciences, but it also has a wide range of applications: optoelectronics and telecommunications, earth sciences and the environment, catalysis and medical diagnostics.

To submit your application, please send an email with the required documents to
msca-pf@sorbonne-universite.fr