Master 2 “Photonics, Complex and Quantum Systems (PhoCQS)”: Research Training 2025-2026

Appel à sujet de stage recherche / Call for research training subject

Laboratory: PhLAM

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Topic: Photonics (fiber laser systems)

Master 2:

x Master 2 PhoCQS (GP-IKS)	□ Master 2 MME (GP-SCP)
□ Option Complex and Quantum Systems	□ Option Condensed Matter
	□ Option Condensed Matter/Pharma
	□ Option Dilute Matter and Spectroscopy
	□ Option Atmospheric Sciences
	□ Option Modeling at the molecular & atomic scales
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Development of new fiber laser sources operating in pulsed regime

Fiber lasers are today extremely widespread systems providing access to robust, powerful and compact light sources covering a wide wavelength range, particularly in the near infrared. This success was made possible in particular thanks to the availability of a wide range of laser cavity architectures and gain media, making it possible to operate at different wavelengths, in different regimes from continuous mode to femtosecond pulse mode. The Photonics team of PhLAM laboratory is an expert in the design and implementation of specialty optical fibers and develops research aiming at demonstrating the exploration of new operating regimes or emission wavelengths. As part of the proposed internship, you will work on the development of fiber laser sources operating in mode-locked regime delivering ultra-short pulses (duration less than 10 ps). As part of the team's research activities, you will be more particularly responsible for testing different configurations (e.g. mode-locked oscillator) including specialty optical fibers manufactured in the laboratory (e.g. Bismuth-doped optical fibers). The internship also includes numerical work in order to understand the mechanism behind the dynamics of the laser cavity and then to guide the experimental work.

Key words: Fiber lasers, Mode-locked laser, Specialty optical fibers