

## PhLAM RESEARCH SEMINAR SERIES

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**Pierre GLORIEUX Amphitheater, CERLA Building**

# Guiding and shaping light with hollow-core fibres

by

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Over the past decade, impressive advances in the development and application of hollow-core fibres have transformed this once-niche technology, unlocking a broad spectrum of uses across various research fields and industrial sectors. The unique properties of these fibres allow for precise control of the propagation of light across a wide spectral range, from the vacuum ultraviolet to the mid-infrared, and guidance of extremely short and intense pulses. Moreover, filling the hollow core with liquids or gases enables enhanced and controlled light-matter interactions and allows for bringing together nonlinear fibre optics and high-field laser science. Thus, hollow-core fibres provide new powerful tools for studying the properties of matter, manipulating light pulses, access to novel nonlinear dynamics and enable the realisation of novel, extraordinarily bright light sources with bandwidths reaching up to a petahertz (PHz) in spectral regions that are otherwise difficult to access.

In this presentation, I will give a selective overview of hollow-core fibres and nonlinear dynamics in this platform, focusing on our research activity. I will then discuss soliton-based sources and conclude by exploring future directions.

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