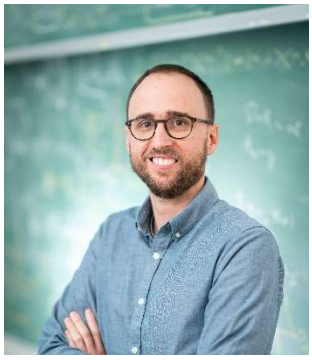
Temporal patterns and solitons in optical parametric oscillators

Abstract: Temporal patterns and dissipative solitons in Kerr resonators have attracted considerable attention in recent years, both from a fundamental and an applied perspective. In this talk, I will discuss analogous nonlinear dynamics in degenerate optical parametric oscillators (OPOs), highlighting both the similarities and the important differences with Kerr systems. While OPOs are widely used as versatile sources in many areas of optics and photonics, their potential for pattern formation and localized structures remains comparatively less explored. I will review recent developments and discuss the opportunities offered by these systems for nonlinear dynamics and frequency conversion



Lecturer: François Leo is a research associate at the University of Brussels. He received his PhD in 2010 from the University of Brussels, with a thesis entitled “Experimental and theoretical study of dissipative structures in optical resonators.” From 2011 to 2014, he worked at Ghent University on nonlinear silicon photonics, before moving to Auckland in 2015 to study nonlinear fiber resonators. Since 2017, he has been leading a research team focused on understanding and harnessing the dynamics of nonlinear resonators. His work combines experimental and theoretical approaches, with interests spanning both fundamental aspects and applications.