

AUFRANDE MSCA Horizon Europe : complex spatiotemporal dynamics from multimode fiber

The increasing traffic over optical networks, as well as innovative concepts applied to telecommunications such as spatial division multiplexing, have generated a renewed interest in multimode fiber optics.

Most interestingly, the inherent optical nonlinearity in multimode fiber combined with the random linear and the deterministic nonlinear mode coupling mechanisms is at the origin of newly observed dynamics such as multimode optical solitons and mode-locking of transverse modes. These dynamics offer innovative solutions for optical signal processing including the generation of ultrafast light pulses, optical sensing, neuro-inspired optical computing.

This thesis will benefit from the expertise of both groups, respectively in nonlinear photonics and in fiber optics technology and characterization, to revisit the earlier theories and experiments of nonlinear spatio-temporal dynamics of multimode fibers and to address new issues including the observation of chaotic spatio-temporal dynamics and their use for optical signal processing and information security: self-beam cleaning suppressing light speckle, super continuum generation with increasing bandwidth, or even the generation of unconventional light transverse profiles including optical vortices.

The project will benefit from interactions with several companies in the fields of optical materials and telecommunications, and in particular with the founding partners of the Chair in Photonics at CentraleSupélec.

Candidates must not have resided in France for more than 12 months during the past 3 years and must not have been awarded a PhD yet

DEADLINE FOR APPLICATION : JANUARY 24, 2024

More information and application on AUFRANDE website:

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