PhD Position Offer

Nonlinear fiber-based optical frequency combs

Deadline for applications: 29 May 2020

Laboratory: ICB Laboratory - Department of Photonics (Dijon - France)
https://icb.u-bourgogne.fr/en/home-page/
https://icb.u-bourgogne.fr/en/solitons-lasers-and-optical-communications/

Receiving Institution: University of Bourgogne Franche-Comté (UBFC)
https://www.ubfc.fr/en/

Time span: 3 years starting from October 2020
Field of research: Nonlinear Optics / Photonics / Optical Fibers

Contact:
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Salary: 1 400 – 1 500 euros net/month (grant from EIPHI-BFC) https://gradschool.eiphi.ubfc.fr/

Context & Work Description

The project aims to control and optimize nonlinear dynamics and polarization in fiber ring resonators to generate new broadband optical frequency combs in the infrared. This work will benefit from the recent optical workbench developed at ICB (PICASSO platform) for investigating the rich variety of optical frequency combs in fiber resonators. A large range of nonlinear processes have been already demonstrated such as Turing and Faraday instabilities, multiple four-wave mixings, cavity solitons, polarization domain walls, spatiotemporal chaos and rogue waves. The project also aims at combining four-wave mixing processes induced by Kerr effect and Brillouin scattering to design and deliver frequency combs operating at wavelengths from 1 to 2 µm and using very simple optical cavities. The resulting systems will provide an alternative approach to conventional mode-locked lasers, electro-optic modulators or recent microresonators. We are seeking a candidate for a PhD scholarship in nonlinear photonics. The successful applicant will take part to various research activities related to nonlinear light-wave propagation in optical fibers and its applications including generation of arbitrary waveforms, optical spectroscopy and telecommunications.

Qualifications

Candidates should have a Master's degree in Photonics or Physics. Experience in experimental optics, nonlinear optics and laser physics will be appreciated. Only candidates with very good grades from bachelor and master studies will be considered. Rigorous and motivated, candidates must have good skills in modeling and numerical simulation, as well as a strong taste for experiment.

Application procedure

Applications must be sent to B. Kibler as one PDF file containing all materials to be given consideration. The file must include: a letter motivating the application (cover letter), curriculum vitae, one/two reference letters, grade transcripts and BSc/MSc diploma. Candidates may apply prior to obtaining their MSc degree, but cannot begin before having received it. The deadline for applications is 29 May 2020.