



Postdoc position: Design of a communication chain on optical fiber based on filterbank modulations

Period: October 1, 2015 – September 30, 2017

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We are seeking an outstanding and highly motivated post-doctoral researcher to join our research program in the area of coherent communications on optical fiber. The researcher will be involved in the design of a filterbank communication chain, its numerical simulation and its experimental implementation. Experience in signal processing for digital coherent communication and/or in optical fiber communication is highly desirable, along with the ability to perform experiments. The candidate is expected to work with the other members of the OPERA department at the Université Libre de Bruxelles (ULB) and with our external collaborators, but is also expected to work independently and to be involved in the supervision of PhD students.

In wavelength-division multiplexing (WDM) optical fiber communications systems, increasing the spectral efficiency is a key target in order to respond to the new capacity requirements.

We have recently proposed to make use of the filterbank modulations in order to achieve the best spectral efficiency/complexity trade-off for WDM optical fiber communication systems. Compared to state-of-the-art alternatives, we have theoretically demonstrated that these modulations impose lower constraints on the design of the shaping pulses and are therefore more robust to implementation imperfections. They do not rely on the addition of any redundant information at the transmitter and deliver the highest possible spectral efficiency. The goal of the project is thus to design the filterbank transceiver based on accurate analytical models of the optical channel and to test its performances on a recently acquired setup that supports the digital modulation of two time/frequency synchronized optical carriers at the transmitter and the coherent demodulation followed by digital signal processing at the receiver.

To be successful in its application, the candidate will need to demonstrate:

- An awarded Ph.D. in Electrical Engineering, Physics Engineering or equivalent;
- An experience in signal processing for digital communication or optical fiber instrumentation;
- His/her ability to perform theoretical analysis and experimental work, with a good publication track record;
- To be in an international mobility situation (not have resided or carried out his/her main activity in Belgium for more than 24 months within the last 3 years).

Applicants should submit via e-mail a curriculum vitae, the contact information for two references, and a copy of two to three representative publications from previous research to: fhorlin@ulb.ac.be.