

Numerical simulations of light propagation in multimode non-uniform optical fibers

Starting date : before 01/09/2018

Duration : 18 months

Research team : Photonic team of the PhLAM laboratory, Lille, France. This team is based in the IRCICA institute.

<http://phlam.univ-lille1.fr>

<http://www.ircica.univ-lille1.fr/>

Mission : The drawing tower facility *FibertechLille* of the PhLAM laboratory allows the fabrication of optical fibers whose diameter varies with the propagation distance in a controlled manner. The core of these fibers can be passive or active (Yb or Er doping) and the fiber can also be twisted. Different aspects of light propagation in these multimode and non-uniform fibers still have to be numerically studied both in the non-linear (short pulse) and in the linear (continuous wave) regime. According to his experience, the candidate will have to realize a numerical model in order to simulate the light propagation in one of these regimes in the aim to explain or to predict phenomena that can be experimentally observed. The model must take into account the specific features of the fiber: evolution of the longitudinal profile, SPM/XPM between the different modes, heat generation in active fibers for laser amplifiers, bending radius, twist rate, etc. When possible, an analytical model allowing an easier interpretation of the studied phenomena will also have to be developed.

Candidate skills :

- Experience in numerical simulations in guided optics
- Intermediate knowledge of Matlab or C++

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Candidates are requested to send by email :

- *A curriculum vitae*
- A list of publications
- A short description of PhD thesis and other research experience
- Name and contact of professional references