

## Title: Innovative FIFO for MCF amplifier: applications to telecommunications and sensors

Host institution: University of Limoges - XLIM, France

Supervisors: Prof. P. Roy

Very-high-speed fiber optic telecommunications are now entering the era of multicore fibers (MCF) to meet the world's ever-increasing demand for data transfer. Access components will be key to this type of network, and will have to combine performance, robustness and meet stringent economic constraints. These components, known as "FAN-IN/FAN-OUT", must enable lossless access to each core, and even to each mode of each core for the most advanced systems. Fully-fibered "photonic lantern" systems will therefore be designed, optimized and manufactured to meet the precise requirements of the networks and multicore fiber geometries selected by the project's industrial partners. In addition to telecoms networks, the control of intensity distribution in the near or far field via the phase of a set of single-mode signals is of great interest in many fields, including quantum sensors. The precision of such sensors can be increased tenfold by trapping a network of coupled nanoparticles, and for this, components very similar to those used in MCF telecommunications networks will be formidable tools.

### Secondment

- **HCT:** Dr. K. Schuster M21-22 (2 months duration) "Cylinder drilling, Preform and fiber fabrication, MCF modelling"
- **CNRS-PhLAM:** Prof. L. Bigot M29-32 (4 months duration) "MCVD/OVD core rod fabrication"

Application process DC5: <https://match.iscte-iul.pt/phd-candidates-profiles/apply-to-dc-positions/>

