

PROJECT / OSP-HNLF - Optical Signal Processing Using Highly Nonlinear Fibers

OSP-HNLF

Main Objective:

We will fabricate and characterize highly nonlinear fibers obtained by tapering standard optical fibers. Highly nonlinear fibers will be used to produce a super-continuum and to implement two all-optical signal processing devices: i) an all-optical signal regenerator for intensity modulated signals based on self-phase modulation (SPM) and ii) an all-optical signal processing regenerator for nonlinear phase noise reduction based on four-wave mixing (FWM) suitable to be used in phase modulated signals. An accurate numerical modelling and the design optimization of both tapered fibers (TFs) and microstructured fibers (MFs) will be realized, in the perspective of their use to generate a wide and flat super-continuum, as well as some nonlinearity-based optical signal processing functions, namely the wavelength conversion, all-optical switching and 2R regeneration.

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Team: [Armando Humberto Moreira Nolasco Pinto](#), [Manfred Niehus](#), [Nelson de Jesus Cordeiro Muga](#), [Nuno Alexandre Peixoto Silva](#)

Groups: [Optical Communications Systems – Av](#)

Partners: Faculdade de Engenharia da Universidade do Porto, Fundação da Universidade de Lisboa, Universidade de Aveiro

Local Coordinator: [Armando Humberto Moreira Nolasco Pinto](#)
