Nonlinear fibre optics

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**Cursus**
Photonique

**Sem.**

**Type**
Obl.

**Language**
English

**Credits**
2

**Session**

**Semester**

**Exam**
Oral presentation

**Workload**
60h

**Weeks**

**Hours**

**Lecture**
28 weekly

**Number of positions**

**Frequency**
Every 2 years

**Remarque**
Next time Fall 2020 - To be confirmed

**Summary**
Presentation of the different sources of optical nonlinearities in an optical fibre

**Content**

- Presentation of the different sources of optical nonlinearities in an optical fibre.

- 3rd order optical nonlinearity: 4-wave mixing, optical Kerr effect, pulse compression and soliton propagation, parametric amplification, modulation instability.

- Inelastic scatterings: spontaneous Brillouin and Raman scatterings, stimulated scatterings, amplification and lasers, distributed fibre sensors.

- Advanced applications: supercontinuum generation, optical combs, optical clocks, slow and fast light.

**Keywords**
Optical fibres, nonlinear optics, 4-wave mixing, stimulated scattering, fibre optics sensors, slow and fast light.

**Learning Prerequisites**

**Recommended courses**
Solid knowledge in electromagnetics, in optics and waveguiding