PHYS-607 **Nonlinear fibre optics**

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Cursus	Sem.	Type
Photonics		Opt.

Language of teaching	English
Credits	2
Session	
Semester	
Exam	Oral presentation
Workload	60h
Weeks	
Hours	**28 weekly**
Lecture	28 weekly
Number of positions	

Frequency

Every 2 years

Remark

Next time : Fall 2022 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