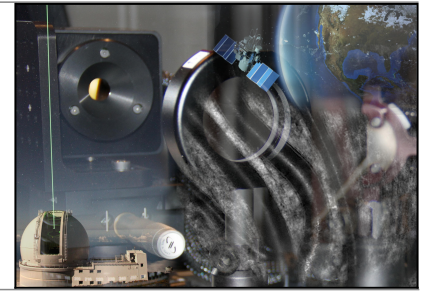


## SC21 | Adaptive optics in practice: from principle to applications



### Nouvelle Formation

NIVEAU : BASIC

**Publics :** Technicians, engineers, designers, end users, project managers

**Prérequis :** Some basic knowledge on coherent optical propagation would be preferable

**Responsable(s) pédagogique(s) :** Jean-Marc Conan - Ingénieur expert Onera, Caroline Kulcsár - Enseignante-chercheuse à l'Institut d'Optique

**Langue de la formation :** French

**Capacité maximum :** 12

**Prix :** 1100€ HT - **Durée :** 2 days - 14 h

### Objectifs

- ▶ Understand adaptive optics principle and dimensioning
- ▶ Know the current applications and understand their stakes
- ▶ Appreciate effective and potential performance in different applicative fields
- ▶ Be able to appreciate the relevance of adaptive optics for new applications

### Thèmes abordés

Propagation through turbulence

Wavefront sensing

Servoing

- ▶ Control loop, performance criterion

Performance indexes

- ▶ MTF, Strehl ratio, flux coupled in a monomodal fiber...

Adaptive optics applications

- ▶ High angular resolution in astronomy, eye imaging and surgery, optical links for telecommunications, beam shaping of power lasers

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### Le programme

#### Adaptive optics principle

- ▶ Performance limitation due to aberrations
- ▶ Real-time correction of aberrations with adaptive optics
- ▶ Current applications

#### Analysis and wavefront correction

- ▶ Shack-Hartmann or pyramid wavefront sensors...
- ▶ Sensorless approaches
- ▶ Deformable mirrors, spatial light modulators (SLM)
- ▶ Servoing control

#### Specification and dimensioning of adaptative optics systems

#### Issues and applications

- ▶ Astronomy, telecommunication
- ▶ Eye imaging and surgery
- ▶ ...

### Méthodologie et évaluation

#### Courses and exercises

#### Interactive experimental demonstrations

#### Practical hands-on on instruments