

## workshop\_OHP\_S4

Workshop at OHP

Contact: [Christophe Adami](#)

A workshop on the astronomical observation site of the Observatoire de Haute Provence ([OHP](#)) followed by computer modeling and/or analysis of these observations.

- Astronomical observations at the Observatoire de Haute Provence
  - Preparation and analysis of the observations
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## Modeling-S4 (Fusion track)

Contact: [G. Fuhr](#) & G.Renversez

### Program:

) Numerical resolution of partial differential equations (PDEs): Analysis of Numerical Schemes

- Classification of PDEs (parabolic, elliptic, hyperbolic)
- Consistency, Stability and Error Analysis, application to finite difference methods
- Symplectic & High Resolution Numerical Schemes (e.g. Lax, WENO)

II) Numerical resolution of PDEs : Finite Elements & Spectral Methods

- integral formulation and implementation
- spectral method and expansion functions

III) Applications and resolution of PDEs via finite differences, finite elements, spectral methods ; comparison of these methods :

- advection-diffusion equation
- wave propagation
- molecular dynamics
- charged particle's motion in a magnetic field
- Burger's equation
- Hasegawa-Mima equation / Navier Stokes equation
- Poisson equation
- solar system