

# Curriculum Vitae

## Sylvestre Lacour

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– French National

### Career Track

- **Laboratory of Space Studies and Instrumentation in Astrophysics, France** *Since October 2008*
  - Tenured researcher / “Chargé de recherche” at CNRS
- **Laboratoire d’Astrophysique de Grenoble, Grenoble, France** *November 2007 - October 2008*
  - Postdoct (ANR fellowship): “Design and charecterization of integrated optics devices for VLTI’s second generation instruments”
- **Sydney University, Sydney, Australie** *February 2007 - October 2007*
  - Postdoc (Lavoisier fellowship): “Aperture masking and single-mode fiber filtering”
- **Observatoire de Paris, Meudon, France** *September 2002 - January 2007*
  - PhD: “Imaging the stellar surface of evolved stars. Pupil rearrangement”
  - Master “Astrophysics and instrumentation”
- **The Johns Hopkins University, Baltimore, USA** *November 2000 - August 2002*
  - Ph.D. classes: “Galactic Structure and Stellar Dynamics” and “Interstellar Medium and Astrophysical Fluid Dynamics”
- **École Normale Supérieure, Cachan, France** *September 1996 - August 2000*
  - Agrégation of electrical engineering. Rank #8
  - Bachelor degree in Electronics, Electrotechnics and Automatism

### Research / Astrophysics

- **Planetary formation** *Observatoire de Paris, Meudon, France (2008-2012)*  
Differential Imaging, Pupil masking (*NACO/VLT*) *University of Sydney, Australie (2008)*
  - Detection, using pupil masking, of planet formation signposts around transition disks (e.g. Huelamo et al., A&A 2011; Biller et al., ApJ, 2012)
  - Observation, using pupil masking, of the inner region of debris disks (A&A 2011)
  - Detection, using differential imaging, of the planet Beta Pictoris b (Lagrange et al., Science, 2010)
- **Stellar physics** *Observatoire de Paris, Meudon, France (2003-2010)*  
Infrared interferometry (*IOTA, VLTI*) *University of Sydney, Australie (2007)*
  - Images of the stellar surface of giant, supergiant, and Mira type stars. Acquisition, reduction and exploitation of long baseline spectro-interferometric dataset. Publication on Arcturus (A&A 2008), Betelgeuse (Haubois et al., A&A 2009),  $\chi$  Cygni (ApJ 2009), CH Cyg (Pedretti et al., MNRAS 2009) and VX Sagittarii (Chiavassa et al., A&A 2010)
  - First multi-wavelength image reconstruction of a stellar surface: T Lep (Le Bouquin et al., A&A, 2009).
- **Planetology**  
Near-infrared photometry (*OCN, Rozhen*) *Observatoire de Paris, Meudon, France (2002-2005)*
  - Study of the atmospheric conditions over Titan, Charon and Pluton. Acquisition and reduction of planetary occultations in band K. Density profiles of Charon’s atmosphere published in Nature, January 2006.
- **Interstellar Medium** *Johns Hopkins University, Baltimore, USA (2000-2002)*  
UV & FUV spectroscopy (*FUSE, HST*) *Institut d’Astrophysique de Paris, France (2000-2002)*
  - Survey of molecular deuterium’s density in the local instestellar medium (A&A 2005)
  - Study of rotational excitation of di-hydrogen, bringing new proof of a warm component in diffuse clouds (ApJ 2005)

## Research / Engineering

- **SAM / NACO - SPHERE - MICADO** *Sydney University*  
Pupil masking Available on NACO to the scientific community: October 2008
  - Installation of several pupil mask on instruments NACO and SPHERE at VLT
  - Commissioning of mode SAM in July 2007, accepted and open to community for ESO's period P82
  - Commissioning of mode SAM differential polarimetry in March 2009, accepted and open for period P85
  - Pre-design of the SAM masks to equip the MICADO instrument for the E-ELT in 2020
- **FIRST - DRAGONFLY / SUBARU Telescope** *Observatoire de Paris / Sydney University*  
Pupil re-arrangement with single mode fibers First light in July 2010
  - Simulation and design of an imaging instrument using single mode fibers. Scientific objective: upgrade by a factor a hundred pupil masking's performances (principe published in January 2007)
  - First light obtained in July 2010 on the 3m diameter Shane telescope (Lick Observatory).
- **GRAVITY / VLTI** *Max Planck Institut fur Astrophysics*  
Long baseline interferometry First light in June 2015
  - Leader of the work package "Astrometric error budget" for FDR and PAE
  - Leader of the work package "Calibration system" for FDR and PAE
  - Definition of the Kalman algorithm for atmosphere and vibrations correction
  - Programmation of the real time control loop of the fringe tracker
- **PICSAT / CubeSat project** *Laboratoire d'études spatiales et d'instrumentation en astrophysique*  
Space Mission To be launched January 2018
  - Principal investigator of a CubeSat mission dedicated to the observation of Beta Pictoris b transit
  - Field testing of astrophotonics components for future space application (interferometry)

## Teaching activities

2012-: Master "Sciences de l'Univers et Technologies Spatiales", Paris Observatory. Class on "Fourier Optics".

## Supervision of PhD Students

2010-2013: Topic: "The FIRST fibered interferometer"

2013-2017: Topic: "Aperture masking and fibered interferometry"

2015-: Topic: "PICSAT: a space mission for Beta Pictoris"

## Awards & Grants

ANR - Starting Grant "*SAM: Sparse Aperture Masking*" (2014-2018): ANR-13-JS05-0005

ERC - Starting Grant "*LITHIUM : From planetary birth with aperture masking interferometry to nulling with Lithium Niobate technology*" (2015-2020) : ERC-STG-639248

MERAC 2015 prize from the European Astronomical Society "*Best Early Career Researcher in New Technologies*"

## Others

Referee for A&A, ApJ, MNRAS, Optics Express, JOSA ...

Expert in the field of astronomical instrumentation for the French ministerial bureau DGRI "Direction Général pour la Recherche et l'Innovation"

75 rank A publications. 3000+ citations. H-index 32.