

S05 Atelier ASHRA: Status & prospects in Optical Interferometry

Title:

The GRA4PIONIER project, aka PLANETES: High contrast dual beam spectro-interferometry in J-band at the VLT

Authors:

E. Huby, S. Lacour, et al.

Abstract:

The VLT has still potential to unlock, in particular to address exoplanet detection and characterization. With the GRA4PIONIER project, aka PLANETES, we propose to upgrade the PIONIER instrument at the VLT. Key enhancements include : (i) the extension of spectroscopic capabilities to J band with a medium resolution ($R=3000$) spectrograph based on the development of a high-performance 4-beam integrated optics chip, (ii) performance optimization by integrating it with GRAVITY as a fringe tracker, ensuring stable and accurate measurements, while also optimizing sensitivity thanks to AO control to minimize the stellar light coupling efficiency, and (iii) the implementation of dual-beam spectro-interferometry for deeper contrast, comprising a metrology system for accurate compensation of instrumental effects. These advancements will enable the observation of exoplanets at unprecedented angular resolution, allowing for the detection of exoplanets located near the snow line between 1 and 20 AU. By complementing GRAVITY K-band observations, and MATISSE L band observations, GRA4PIONIER will allow for more accurate and comprehensive studies of exoplanet's atmospheres by providing valuable information at a wavelength where it is possible to look deeper into the atmosphere. In addition, the measurement of Pa- β emission will enable the study of newly formed exoplanets by providing hints on the accretion processes and mechanisms.