

# First Electric Field Conjugation wavefront control on the THD2 bench

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## Summary

Direct imaging is crucial to increase our knowledge on extrasolar planetary systems. Yet, as exoplanets are  $10^3$  to  $10^{10}$  fainter than their host star in visible and near-infrared wavelengths, direct imaging requires extremely high contrast imaging techniques. First, a coronagraph is used to reject the diffracted light of an observed star and to obtain images of its circumstellar environment. Second, a wavefront control system is mandatory because coronagraphs are efficient only if the wavefront is flat. Yet, an adaptive optic setup is insufficient because it does not correct non common path aberration and the wavefront sensor has to be settled directly in the science camera. To study and compare different focal plane wavefront sensor, we developed a high contrast imaging bench at LESIA - the THD2 bench. We recently started a complete study of the practical implementation of the Electric Field Conjugation to estimate and control the phase and amplitude aberrations on the THD2 bench. We will present the first results in this presentation.

**Auteur principal:** M. POTIER, Axel (LESIA)

**Co-auteurs:** Dr BAUDOZ, Pierre (LESIA); Dr GALICHER, Raphaël (LESIA)

**Orateur:** M. POTIER, Axel (LESIA)

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