NIRVANA-VIS, an AO-assisted speckle holography add-on for visible wavelengths

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Abstract

Nirvana-Vis project proposes a visible-wavelength imaging channel upgrade for LINC-NIRVANA (LN), the Italian-German high angular resolution imager installed on the Large Binocular Telescope (LBT). LN is a near-infrared imager operating in the JHK photometric bands, equipped with a multiple-FoV MCAO system to deliver a near diffraction-limited two arcminutes FoV. The instrument has demonstrated on-sky consistent and stable Ground Layer Adaptive Optics (GLAO) correction, improving the FWHM of the PSF up to a factor 3. We plan to exploit in such a wide corrected field, the technique of AO-assisted speckle holography, in which images are reconstructed from a long series of short exposure frames whose image quality has been sharpened by adaptive optics for the visible regime. We will present the opto-mechanical upgrade allowing this additional mode (under italian PNRR STILES project financement) while keeping all functionalities of the NIRVANA instrument.

Keywords: WFS, NIRVANA, LBT, Visible, Speckle

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