

A Shack-Hartmann based setup to study deformable mirrors dynamics at very high framerates

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Summary

The Extremely Large Telescope (ELT), will play an important role in the direct imaging and characterization of habitable exoplanets. Xtreme adaptive optics (XAO) is one of the key driving technique for enabling high-contrast imaging from ground-based telescopes. The accuracy of the wavefront correction in the regime of XAO is limited by poor understanding of the deformable mirrors (DM) surface response in the temporal domain.

As a part of technology development for ELT Planetary Camera and Spectrograph instrument and to make further advances in the field of XAO, we plan to study the dynamical behavior of the DM surface in the regime of several kHz. We present a setup based on Shack-Hartmann sensor and a high-speed visible camera, and progress on the characterization of surface profiles of a high-speed DM.

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