
Preliminary results of Pyramide Piston Sensor calibration

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Abstract

Measurement of a phase difference between the mirror segments is a crucial task that we face nowadays when it comes to telescopes with segmented mirrors. From different perspectives, we need to be able to obtain the phase difference in a precise way. We don't need the phase measurement only for the adaptive optics, but the measurement can be used for the initial co-alignment of the mirror after the maintenance, for example. At ESO, we built a Pyramid Piston Sensor test bench for testing methods of discontinuous phase measurements. The original research based on the experience with the GHOST bench was applied to the Pyramid Piston Sensor. The bench is equipped with a pyramid wavefront sensor with four facet pyramid and two different telescope simulators. The first telescope simulator emulates a segmented mirror using a Spatial Light Modulator. This telescope simulator is used for the calibration of the system. The other telescope simulator can host physical phase plates with known phase steps and is used for an actual measurement with the calibrated pyramid wavefront sensor. In this paper, we present the test bench and results of the calibration campaign along with the description of findings noted during the calibration of the pyramid wavefront sensor.

Keywords: pyramid, wavefront, sensor, phase

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