
The Ingot Wavefront Sensor: Updates from the laboratory test bench

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Abstract

Sodium Laser Guide Stars (LGS) let Adaptive Optics systems to dramatically increase the sky coverage, but at the same time, they suffer from some limitations imposed by their natural geometry, which differently from NGSs, are not point-like sources but more elongated objects in the sky. The Ingot-WFS (Ragazzoni 2017) is a possible solution to overcome these limitations increasing the performance of the AO system.

In this work, we report the status of the laboratory activities performed at the INAF – Astronomical Observatory of Padua, in which we have developed a test bench, that in an open loop scenario, aims to investigate the behavior of the I-WFS both in terms of the LGS variation in the sky, and on the sensitivity.

In this framework, we show the results obtained with a robust and automatic Python-code alignment procedure of the I-WFS with respect to the movements and density profile variations of the simulated LGS source. In addition, we also report the preliminary analysis of the response of the I-WFS to known low-order aberrations introduced with a deformable lens positioned in the pupil plane.

Keywords: laser guide star, LGS, adaptive optics, wavefront sensing, ingot, ELT

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