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Splitting the pupil plane for large WF sensors

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The 4-m class European Solar Telescope (EST) shall be provided with powerful MCAO to achieve the required > 80 arcsec corrected FoV. The EST MCAO system shall use large format high speed WFS detectors running at up to 2 kHz. We present a possible solution for multiplexing the wavefront sensing by splitting the pupil plane on two or more detectors that sample different regions of the pupil plane. We report on the results of laboratory tests of a multiplexed SH-WFS demonstrator realized at the Optical Laboratory of the INAF-OAR for the H2020 SOLARNET project. We describe its optical layout, based on two CMOS EoSens 3CXP cameras with a "true"Thorlabs SH-WFS, and a possible evolution of this concept based on the latest CMOS technology.

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