
Simulating METIS' SCAO System

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Abstract

METIS, the Mid-Infrared ELT Imager and Spectrograph is one of the four first-generation ELT instruments scheduled to see first light in 2028. Its two main science modules are supported by an adaptive optics system featuring a pyramid sensor with 90x90 subapertures working in H and K-band. During the PDR and FDR phases, extensive simulations were carried out to support the sensing, reconstruction, and control concept of METIS SCAO.

We will present details on the implementation of the COMPASS-based environment used for the simulations, the metrics used for analysing our performance expectations, an overview of the main results, and some details on special cases like NCPA and water vapor seeing, the low-wind-effect, the impact of METIS' CFO apodizer, and residual dispersion stemming from METIS' static ADCs.

Keywords: METIS, SCAO, PWFS, Simulation, COMPASS, Low, wind effect, NCPA, MMSE, Virtual DM

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