



MEGARA: the new generation integral field unit and multiobject spectrograph for GTC

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ABSTRACT

MEGARA is the next optical Integral-Field Unit and Multi-Object Spectrograph (MOS) for Gran Telescopio Canarias –the largest optical telescope worldwide. The instrument offers a compact bundle covering $12.5 \text{ arcsec} \times 11.3 \text{ arcsec}$ on sky with $100 \mu\text{m}$ fiber-core and a fiber MOS positioner that allows to place up to 100 mini-robots with 7 fibers each, within a $3.5 \text{ arcmin} \times 3.5 \text{ arcmin}$ field of view, around the IFU. The fibers, organized in bundles, end in the pseudo-slit plate, which will be placed at the entrance focal plane of the MEGARA spectrograph. Both modes will provide intermediate to high spectral resolutions, $R=6000-18700$. All these resolutions are possible thanks to a spectrograph design based in the used of volume phase holographic gratings in combination with prisms to keep fixed the collimator and camera angle. MEGARA passed the Reviews of the Conceptual Design (CDR), the Preliminary Design (PDR) and the Detailed Design (DDR) and it is now under construction. It will be commissioned at the telescope in early 2017. Except for the optical fibers and microlenses, the complete MEGARA optical system will be manufactured in Mexico, shared between the workshops of INAOE and CIO. This includes a field lens, a 5-lenses collimator, a 7-lenses camera and a complete set of volume phase holographic gratings with 36 flat windows and 24 prisms, being all these elements very large and complex. Additionally, the optical tests and the complete assembly of the camera and collimator subsystems will be carried out in Mexico. I will describe the current status of the project with special emphasis in the optics manufacturing process.