



Merac Prize NT: PANIC, a wide-field infrared camera for the Calar Alto Observatory (No 37)

📅 02.07.2020 ⌚ 12:00 - 12:30 🏆 Prize winner
🔄 Thursday Plenary

M. Concepción Cárdenas Vázquez¹

¹ Max-planck-institut Für Astronomie

MERAC Prize for Best Doctoral Thesis Prize 2020 in New Technology (Instrumental).

PANIC, the Panoramic Near-Infrared Camera, can operate on the 2.2 m or 3.5 m telescopes of the Calar Alto Observatory, covering a field of view of 31.65x31.65 arcmin at the 2.2 m and 15.9x15.9 arcmin at the 3.5 m, with a sampling of 4096x4096 pixels of 18 μm . The spectral range is near infrared, spectral bands from Z to Ks (0.8 to 2.5 microns). It is a cryogenic instrument which operates at 95 K working attached to the telescope's Cassegrain focus.

The Doctoral Thesis of M. Concepcion Cardenas focuses on this PANIC instrument. The work encompasses the requirements collection and their translation to optical parameters, the theoretical study of the optical solution for PANIC and the development of optical design from the beginning of the project to the final design and the as-built system. It also describes the process of assembly, integration and verification of the instrument in the laboratory and the adjustment and its verification once installed at both telescopes. In addition, the design features are compared with those obtained at the telescopes after the first results achieved during the commissioning phase of the instrument.

PANIC belongs to the new generation of wide-field infrared cameras for ground-based telescopes and it is located in the northern hemisphere. It incorporates its own specific characteristics, which are: it has the largest field of view of this type of instruments; it includes the Z band; it has a very high signal-to-noise ratio in the K band; it can properly operate with narrow filters; and it provides the possibility of working at the 3.5 m telescope, with a pixel scale that doubles its spatial resolution within a large field of view (for this pixel scale it is the only instrument that currently exists).

Many science cases benefit from its wide field of view and from the filters it includes, from extragalactic astronomy to the study of the Solar System, and it is an ideal instrument to perform large survey-type observations. PANIC can contribute as well to the study of star formation, gamma ray bursts or the search for quasars with high redshift.

M. Concepcion Cardenas will give an overview of her thesis work, the optical design and the development of this camera. She will also present the latest news of the instrument: the upgrade of the original mosaic of four 2Kx2K detectors by a better quality monolithic 4Kx4K detector.