

平成 30 年度共同利用研究・研究成果報告書

研究課題名 和文：CTA 大口径望遠鏡初号基の設置建設と初期運用
英文：Installation and commissioning of the first Large Size Telescope of CTA in La Palma, Canary Islands, Spain

研究代表者 Daniel MAZIN

参加研究者 Daniel Mazin, Masahiro Teshima, Daniela Hadasch, Koji Noda, Juan Cortina, Carlos Diaz, Thomas Schweizer, Holger Wetteskind, Michele Doro, Carlos Delgado, Takayuki Saito

研究成果概要



Figure 1: Completed LST1 in La Palma in October 2018.

The purpose of the project was to commission the first Large Size Telescope (LST-1) of the CTA project in La Palma, Canary Islands, Spain (see Figure 1).

The installation of the LST-1 began in FY2017 and was continued in the beginning of FY2018. Most of the mirrors were installed in April/May 2018 (Figure 2). In June 2018 the telescope was turned to the zenith position and the camera

support structure was installed (Figure 3), including 28 tension ropes, both the support arc and the ropes made by carbon fibers. In July very first drive tests were performed to validate the mechanical designs of the structure and the drive control electronics. In August 2018 the rest of the mirrors were installed and in September 2018 the camera was inserted in the camera frame (see Figure 4) and connected to power and data finalizing the construction stage. The inauguration of the telescope took place on October 10, 2018 (see Figure 5).

The commissioning of the telescope began in October 2018 and is still ongoing. So far the following milestones have been achieved:

1. The telescope tracking software has been validated for 30" precision
2. The fast rotation of the LST-1 has been confirmed to work fine, achieving less

than 20sec for a 180deg rotation and 32sec for a full turn of 360deg.

3. All mirrors have been pre-aligned on the white target in front of the camera plane using tracking of some bright stars
4. Cherenkov camera took first data validating the trigger and the readout system.

In the next months we foresee to finalize the commissioning validating telescope specifications and finetuning the physics performance. We also plan to take first joint data with the MAGIC telescopes, which will help understanding of the performance and fixing the operation parameters. Engineering runs are planned to be taken until 2022.

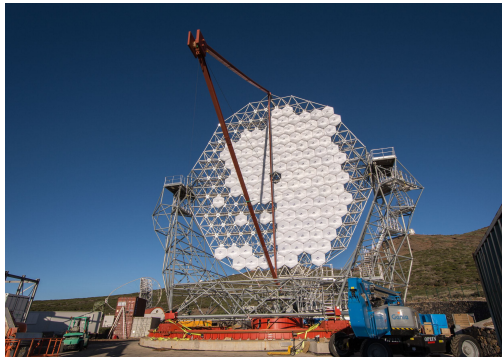


Figure 2: During the mirror installation in May 2018

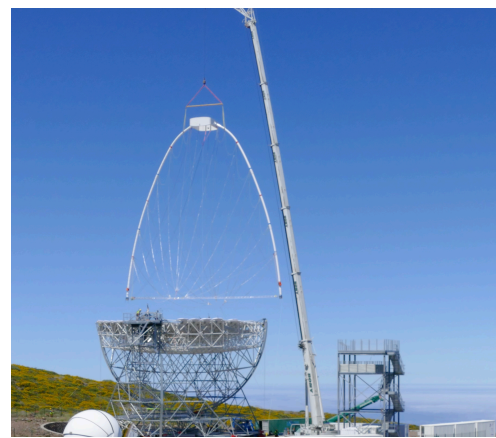


Figure 3: During the Installation of the CSS in June 2018



Figure 4: During the camera installation in September 2018



Figure 5: During the LST-1 inauguration in October 2018