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REALIZATION AND TEST CAMPAIGN OF MORAL FIRST PROTOTYPE: AN INNOVATIVE
ALTAZ MOUNT FOR FAST AND PRECISE POINTING FOR ONE METER CLASS TELESCOPE

Abstract

MORAL, MOunt Robotic ALTazmuth, is a project started in 2014 whose target was the realization of an innovative altaz standalone mount for large telescope with a level of performances adequate for spacedebris tracking. The assembly of first prototype has been accomplished and tests have been performed in order to qualify the system. The drives of the project were the possibility to reach highest level of performances with respect to the current state-of-the-art mounts and a flexible and accessible solution. MORAL in fact can orient a telescope with a proper weight of more than 500 Kg at slew rate beyond 30/sec with a mechanical precision of 2arcsec, having a proper weight below 700 Kg. These results have been obtained exploiting on one hand high standard industrial components borrowed each one from industrial fields of excellence, and on the other hand, adopting aerospace design methodology for structural optimization and weight reduction. The concept of accessible and flexible mount has been crucial in order to design a lightweight system that could offer the possibility to be installed in multiple environments increasing the range of possible observatories location. The system is designed to be exploited for applications in which fast and precise tracking is crucial such as Satellite Laser Ranging application and space debris tracking. Coudè path installation compatibility has been introduced in order to increase the possibilities of the product. The first prototype has been fully assembled and tested within NPC facilities evaluating the mechanical performances through industrial measurements and performing then an observation campaign studying the satisfaction of the requirements in front of multiple load conditions. Results and data of the product will be reported in paper.