SPACE DEBRIS SYMPOSIUM (A6)
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DESIGN AND FIRST PROTOTYPE OF AN ALT-AZ MOUNT FOR 1M CLASS TELESCOPE FOR SPACE DEBRIS TRACKING

Abstract

MORAL (MOunt Robotic ALtazimutal) is an Alt-Az mount dedicated to 1m class telescope designed to obtain high performances in terms of velocity and precision. The requirements have been defined in order to obtain a high quality solution for observation of really fast objects in LEO and specifically, the possibility to offer a valid instrument for space debris monitoring and tracking. To satisfy the requirements MORAL exploits direct drive motors and high precision components associated to a unique mechanical design made exploiting aerospace methodologies. MORAL can mount telescopes up to 1000Kg and 1.4m diameter. The handling of the system has been studied in order to realize a product that can be easily inspected and allows a replacement of the main components that do not require the full disassembly of the system. The controlling system is based on real time multi-axis control that can permit really accurate object following and easy interface with common astrometric software.MORAL design has been maintained parametric in order to permit easy updates through components replacement to obtain different performances if required. The first prototype is being manufactured and realized within facilities of the company NPC which can provide great expertise in terms of mechatronic and high precision mechanical components. The company Fullum Optiques Inc. is partner and responsible for the realization of 1 meter Ultra-Lightweight telescope compatible with MORAL mount in order to provide a complete package solution for low Earth orbit observation. The test campaign has been scheduled for summer 2015. Main results and more details concerning the design and the prototype will be presented in the paper.