LLRRA-21, an uncoated lunar CCR

FFDP measurements performed with green laser (\(\lambda = 532\) nm), with \(\varnothing = 38\) mm

MoonLIGHT/LLRRA-21 flight CCR housing held inside the SCF-Test and FFDP-Test of Flight-quality Uncoated Cube Corner Laser Retroreflectors

Average intensity of simulated FFDP vs velocity

Average intensity comparison sim/meas

OSU-2009-012. Before Christmas 2008, this work was completely successful and approved by ASI, with ASI reference document: DC-OSU-2009-012. This work, requested by ASI to INFN-LNF, was performed in 3 working weeks manufactured by ZEISS for the LARES satellite, in order to assess the compliance of the CCRs with the following optical specifications: DAOs = 1.5 \(\pm\) 0.5 arcsec. This work, requested by ASI to INFN-LNF, was performed in 3 working weeks before Christmas 2008. This work was completely successful and approved by ASI with ASI reference document: DC-OSU-2009-012.

LARES flight CCRs (FFDP test in air, by INFN-LNF authors only)

- Industrial ACCEPTANCE tests in air at \(\lambda = 632.8\) nm were performed by INFN-LNF on all of the 110 flight CCRs manufactured by ZEISS for the LARES satellite, in order to assess the compliance of the CCRs with the following optical specifications: DAOs = 1.5 \(\pm\) 0.5 arcsec. This work, requested by ASI to INFN-LNF, was performed in 3 working weeks before Christmas 2008. This work was completely successful and approved by ASI with ASI reference document: DC-OSU-2009-012.

- Definition of an acceptance band (using CODE V software simulations) for FFDP measurements. Priority for the acceptance given to peaks distances.

- Test and analysis procedures developed in the framework of the ETRUSCO INFN-LNF experiment (PI S. Dell'Agnello of INFN-LNF).

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Abstract

Using dedicated facilities of INFN-LNF in Frascati, Italy, including the “Satellite/lunar laser ranging Characterization Facility” (MoonLIGHT), we characterized the detailed thermal behavior and the optical performance of many flight units of coated and uncoated cube corner laser retroreflectors (CCRs). As a reference for the ILRS user community, with this poster we provide a compilation of the many tests carried out in the last years on uncoated CCRs (tests on coated CCR are reported in detail in the Adv. Space Res. 47 (2011) 822-842).