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THE RESEARCH FOR TEST ENVIRONMENT WITH A LARGE-SCALE INDOOR SOLAR ILLUMINATION SIMULATING SYSTEM

Abstract

A large-scale indoor solar illumination simulating system was developed to build a uniform area with variable incident angles. The system was composed with 147 metallic halide lamps which can change the incident angle between 15 to 45 with the motor, the uniformity were better than 15 in all angles. Using the high-accuracy reflector which had a small collimating angle, to ensure the shadow profile of the obstacle was clearly enough to meet the demands of payload on spacecraft detecting. When the incident angle was 30, the vertical incident intensity was bigger than one fifth solar constant in 20m20m . With other angles, because of the limit of the size of test field, the illumination would reduce and the intensity would change. The system had successfully finished the indoor illumination tests for lunar exploration project. As an important ground test facility, it would do further tests for deep space exploration in the future.