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DIAGNOSIS OF A LAMBERTIAN TARGET IN SOLAR CONTEXT

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Abstract

The use of Lambertian targets is usually required in many measurement procedures of great importance in solar concentration field. Activities such as flux measurement, heliostats characterization and solar extinction measurement in tower plants, among others, require a Lambertian target. In these measurement techniques, the target is expected to reflect solar radiation isotropically while it is recorded as an image by a digital camera and analyzed afterwards. The fact that the target is a perfect diffuser allows neglecting the directional influence of the reflected radiation with respect to the position of the camera. However, in the information available of these measurement techniques there are no published descriptions of methods that demonstrate whether the used target is Lambertian or not. If this point is not verified it could result in a lack of confidence in the measurement performed using the methodology described above. This work presents a simple method to characterize a large outdoor target and allows quantifying its degree of homogeneity and diffusivity. As an example, the characterization of a real target is presented for later use. Currently this procedure is being used at Plataforma Solar de Almería.

Keywords: Diffusivity; homogeneity; directionality; solar radiation.

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