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Performance of the EUSO-BALLOON optics

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EUSO-BALLOON is a prototype of the JEM-EUSO detector, to perform an end-to-end test of the subsystems and components, and to prove the entire detection chain and measure the atmospheric and terrestrial UV background. In August 2014, the instrument was launched in collaboration with the French Space Agency CNES for its maiden flight.

This article describes the optics of EUSO-BALLOON, consisted of two large (1 m²) Fresnel lenses made from PMMA. We also present the methods used for the alignment and characterization of the optics. The alignment of the optics was obtained with the use of a laser tracker and the tests were performed using a one-meter collimator and UV light sources. We present the performance of the optical system, i.e the point spread function, and the global efficiency as a function of UV wavelength and incidence angle.

Collaboration

JEM-EUSO

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