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EUSO-Balloon: Observation and Measurement of Tracks from a Laser in a Helicopter

Tuesday 4 August 2015 16:00 (1 hour)

EUSO-Balloon is a prototype detector of the Extreme Universe Space Observatory on the Japanese Experiment Module (JEM-EUSO). EUSO-Balloon was flown successfully as a balloon payload from the Timmins Stratospheric Balloon Launch Facility in Ontario, Canada on 2014 August 24-25 at an altitude of 38 km. To simulate the optical signatures of UV fluorescence photons emitted from cosmic ray air showers generated in the atmosphere, a pulsed UV laser and two UV flashers (LED and Xe). These sources were fired in the instrument field of view for about 2 hours from a helicopter that circled at an altitude of 3 km under the balloon. UV signals were effectively detected, including 270 laser track events. We describe the helicopter laser system and the geometric reconstruction of the laser events that were generated by this system. We report here on the reconstruction of the laser events starting from the information contained in the observed tracks. We note that this work represents the first observation and measurement of aircraft based laser tracks by an optical fluorescence detector flown at near space altitudes.

Collaboration

JEM-EUSO

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