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DIMS Experiment for Macroscopic Dark Matter and Interstellar Meteoroid Study

The DIMS (Dark matter and Interstellar Meteoroid Study) experiment aims to search for macroscopic dark matter and interstellar meteoroids by detecting moving light-spot events using a multiple high-sensitivity video camera system. The former, including nuclearites, are expected to be observed with a typical velocity of around 220 km/s in our galaxy. The latter are observed with velocities slightly exceeding the Earth's escape velocity of 42 km/s. At the initial stage, we operated three camera stations with a separation distance of approximately 100 km in central Japan. Subsequently, we deployed four cameras across two stations with a separation distance of 17 km at the Telescope Array UHECR experiment site in Utah, USA, operating them remotely over the past two years. In this contribution, we discuss scientific objectives of the project and evaluate experiment39;s observable mass ranges and sensitivities to the nuclearites and the interstellar meteoroids. This evaluation is based on the results of a large number of observed ordinary meteors originating from the Solar System.

Collaboration(s)

DIMS

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