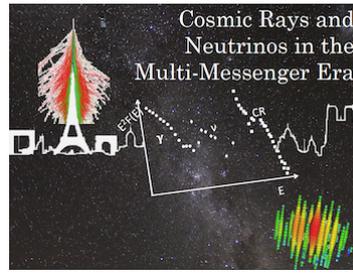


## Cosmic Rays and Neutrinos in the Multi-Messenger Era



ID de Contribution: 67

Type: Non spécifié

### Probing Cosmic-Ray Accelerated Light Dark Matter with IceCube

The direct detection of particle dark matter (DM) through its scattering with nucleons is of fundamental importance to understand the nature of DM. In this work, we propose that the high-energy neutrino detectors like IceCube can be used to uniquely probe the DM-nucleon cross-section for high-energy light DM with energy around PeV, up-scattered by the high-energy cosmic rays. We derive for the first time strong constraints on the DM-nucleon cross-section down to  $1E-32 \text{ cm}^2$  at this energy scale for sub-GeV DM candidates. Such independent probe at energy scale far exceeding other existing direct detection experiments can therefore provide useful insights complementary to other searches.

#### Related session

Particle physics with neutrinos

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