

31st International Symposium on Lepton Photon Interactions at High Energies



Contribution ID: 105

Type: **Talk**

Search for dark matter induced event rate modulation in DarkSide-50 ionization signal

Wednesday, 19 July 2023 09:30 (15 minutes)

DarkSide-50 is a direct dark matter search experiment using a dual phase argon time projection chamber at LNGS in Italy. Based solely on the ionization spectrum, it has set the most stringent exclusion limits for several low-mass dark matter candidates. Owing to its peculiar behaviour, dark matter can be searched in a model-independent way exploiting the expected fluctuation of the relative velocity between dark matter and the Earth. In this talk, we present the first search of such an event rate modulation with argon using the DarkSide-50 ionization signal. Stable operation of the detector over years, as well as a good understanding of the detector response, allowed us to achieve the lowest energy threshold ever achieved in this kind of experiments of the order of sub-keV. Comparison with the other results from xenon or NaI based experiments will be also discussed.

Primary author: KIMURA, Masato (AstroCeNT, CAMK/PAN)

Presenter: KIMURA, Masato (AstroCeNT, CAMK/PAN)

Session Classification: Dark Matter

Track Classification: Dark Matter