

# Search for sub-GeV dark matter boosted by the cosmic rays using the full PandaX-II exposure data

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The PandaX-II experiment, located in the China Jinping Underground Laboratory(CJPL), operated with the dual phase xenon time projection chambers. Scintillation and ionization signals generated by the scattering between the incoming particle and xenon atoms are used for the dark matter(DM)-nucleus interactions study. Also, the DM-nucleus interactions will allow the cosmic rays, like protons or helium nuclei, to scatter with and boost the non-relativistic DM to higher energies. In this work, we apply the unique diurnal effect of the cosmic ray boosted dark matter(CRDM) signal and the reconstructed energy to search for the low mass dark matter, with the PandaX-II full exposure data. Local mountain structure and the earth form factor effect are considered for the signal performance in the detector. All the background and uncertainty are carefully studied with the calibration data. No significant excess is found and we conclude a strong constraint on the low mass range.

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