
The naked Orion: a mysterious gamma-ray emission maybe due to Cosmic Ray acceleration

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Abstract

The Orion region is expected to emit a large amount of diffuse gamma-ray radiation because of the large amount of interstellar medium in its surroundings. We modelled the AGILE data from that region through a template that quantifies the gamma-ray diffuse emission expected from atomic and molecular hydrogen, together with an isotropic contribution. In the excess map, appears an "arc-like" gamma-ray emission with high significance in the high-longitude part of Orion A, confirming previous results from Fermi-LAT. However, we do not think that this emission is correlated with some inaccuracy in the relation between H₂ and CO fraction. We think that this emission could be due to Cosmic Ray acceleration in the Termination Shock of k-Orionis wind. Here we present a preliminary spectrum from the excess region and some preliminary attempts of CR acceleration models.

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