



Contribution ID: 2

Type: **not specified**

# Is the FERMI GeV Excess a Dark Matter Signal?

*Monday 22 October 2018 10:30 (30 minutes)*

The Fermi GeV excess of diffuse gamma-rays is observed as a shift in the maximum in the spectrum (weighted by the energy squared) from below 1 GeV to about 2 GeV and can be explained either by a new source with a spectrum peaking at 2 GeV or a suppression of gamma-rays below 2 GeV. As new sources dark matter annihilation or millisecond pulsars have been proposed. In this paper we compare these hypotheses with the alternative of a suppression of gamma-rays below 2 GeV, as has been observed in molecular clouds. The different hypotheses can be distinguished by the gamma-ray spectrum and the morphology of the excess. We find that the suppression of gamma-rays below 2 GeV in molecular clouds is the clear winner. The origin of the apparent suppression of low energy gamma-rays in molecular clouds is not clear, but most likely a combination of energy losses, suppressed propagation of cosmic rays into molecular clouds and detector effects related to the limited angular resolution below a few GeV.

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**Session Classification:** Opening and Morning session