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Gamma-ray emission from the recently discovered dwarf galaxy Reticulum II

Tuesday, 27 October 2015 17:38 (17 minutes)

I will present results on the analysis of gamma-ray emission from the recently discovered dwarf galaxy Reticulum II. Using Fermi-LAT data and a suite of background models we quantify the probability that the observed gamma-ray emission is due to background. Taking into account trials factors, we find emission p-values in the range between 9.8x10ˆ-5 and 9.7x10ˆ-3 and conclude that Reticulum II has the most significant gamma-ray emission from any other known dwarf galaxy. I will also discuss the dark matter content of Reticulum II as derived from kinematic studies of its member stellar population and show that Reticulum II has a dark matter halo similar to other nearby dwarf galaxies. If the gamma ray emission is due to dark matter annihilation, the annihilation cross section is consistent with the s-wave relic abundance cross section. I will conclude by discussing further tests that are needed in order to ascertain the likelihood of this emission to be due to a conventional astrophysical interpretation.

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