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TeV gamma-rays from photo-disintegration/de-excitation of nuclei in Westerlund 2

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Abstract content

TeV gamma-rays can result from the photo-de-excitation of PeV cosmic ray nuclei after their parents have undergone photo-disintegration in an environment of ultraviolet photons. This process is proposed as a candidate explanation of the recently discovered HESS source at the edge of Westerlund 2. The UV background is provided by Lyman-alpha emission within the rich O and B stellar environment. The HESS flux results if there is efficient acceleration at the source of lower energy nuclei. The requirement that the Lorentz-boosted ultraviolet photons reach the Giant Dipole resonant energy (~ 20 MeV) implies a strong suppression of the gamma-ray spectrum compared to an E_{γ}^{-2} behavior at energies ($\gtrsim 1$ TeV). This suppression will be probed by the upcoming GLAST mission.

If this papers is presented for a collaboration, please specify the collaboration

Summary

Reference

Proceedings of the 30th International Cosmic Ray Conference; Rogelio Caballero, Juan Carlos D'Olivo, Gustavo Medina-Tanco, Lukas Nellen, Federico A. Sánchez, José F. Valdés-Galicia (eds.); Universidad Nacional Autónoma de México, Mexico City, Mexico, 2008; Vol. 2 (OG part 1), pages 625-628

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