

Ultra-high energy cosmic rays luminosity from multi-messenger analysis

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Ultrahigh energy cosmic rays (UHECRs) are probably originated from extragalactic sources as, e.g., Starburst, Radio Galaxies, and Active Galactic Nuclei (AGNs). In the present work, we obtain the upper limits of the cosmic-rays luminosity of Starburst galaxies. The method described in (Supanitsky 2013 and Anjos 2014) is a productive tool for the obtainment of the upper limits of the cosmic-rays luminosity and illustrates techniques to study the origin of UHECR from gamma-rays at GeV-TeV. The method has been used with the upper limit on the GeV-TeV gamma-ray flux measured by space and ground instruments, as FERMI-LAT, VERITAS, H.E.S.S, and MAGIC and connects a measured upper limit on the integral flux of GeV-TeV gamma-rays and the UHECR cosmic-ray luminosity of a point source.

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