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Effects of the fluorescence energy error distribution on the UHECR energy spectrum

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Abstract content

In order to investigate the effects of the fluorescence energy error distributions on the determination of the ultra high energy cosmic ray (UHECR) spectrum we developed a Monte Carlo simulation of fluorescence telescopes using the HiRes and Auger telescopes as examples. We show that the energy error distribution (EED) for this kind of detector cannot be adequately represented by Gaussian or Lognormal ditributions. We then compare the expected UHECR with one convolved using the determided EEDs. We conclude that the convolved energy spectrum will be smeared but not enough to affect the GZK cutoff detection. We also investigate the effects of possible systematic errors on Fluorescence yield (FY) mesurements on the UHECR spectrum and conclude that a FY error between 10% and 30% can match the flux measured by the HiRes and AGASA collaborations.

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. 4 (HE part 1), pages 543-546

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