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Pattern recognition study for different levels of UV background in JEM-EUSO experiment

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JEM-EUSO experiment will observe UV light created by extensive air showers initiated by ultra high energy cosmic rays (UHECR). Reconstruction of UHECR particle direction from detected signal depends also on the level of signal background, which can vary in time and with location.

We developed an alternative pattern recognition (PR) method based on Hough transformation besides to existing PR methods in JEM-EUSO software framework. The results of them, namely of PWISE method and Hough method were compared for the nominal UV background 500 ph/(m2 ns sr). Hough method was used to evaluate UHECR direction reconstruction ability for higher level of the UV backgrounds on the Earth's night side. The study what impact on fake trigger events rate come from varying background levels was performed, too.

Collaboration

JEM-EUSO

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