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## The trigger system of the JEM-EUSO Project

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### Abstract content

The trigger system of JEM-EUSO should face different major challenging points: a) cope with the limited down-link transmission rate from the ISS to Earth, by operating a severe on-board and on-time data reduction; b) use very fast, low power consuming and radiation hard electronics; c) have a high signal-over-noise performance and flexibility in order to lower as much as possible the energy threshold of the detector, adjust the system to a variable nightglow background, and trigger on different categories of events (images insisting on the same pixels or crossing huge portions of the entire focal surface). Based on the above stringent requirements, the main ingredients for the trigger logic are: the Gate Time Unit (GTU); the minimum number  $N_{thresh}$  of photo-electrons piling up in a GTU in a pixel to be fired; the persistency level  $N_{pers}$ , in which fired pixels are over threshold; the localization and correlation in space and time of the fired pixels, that distinguish a real EAS from an accidental background enhancement. The core of the trigger logic is the Track Trigger Algorithm that has been specifically developed for this purpose. Its characteristics, preliminary performance and its possible implementation on FPGA or DSP will be discussed together with a general overview of the architecture of the triggering system of JEM-EUSO.

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

JEM-EUSO 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. 5 (HE part 2), pages 1049-1052

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