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A Nanosecond Real Time Pattern Recognition System for Imaging Atmospheric Cherenkov Telescope Systems

Abstract content

The application of fast real-time imaging and pattern recognition to the imaging atmospheric Cherenkov technique has the potential to improve the sensitivity and versatility of stereoscopic arrays. The recently available fast FPGA technology with clock frequencies of 400 MHz allows the rapid pattern recognition of air shower Cherenkov light images from several telescopes for making a trigger decision. Monte Carlo simulations of a 4 telescope array are used to study the potential for lowering the energy threshold and to improve the background rejection of cosmic rays and night sky fluctuations. Such topological array trigger might also find application in next generation arrays of air Cherenkov detectors made from a large number of telescopes.

A demonstrator board using a 400 MHz FPGA board is being designed and simulated. This prototype could be the basis of a full topological array trigger system.

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

Summary

Reference

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