



Contribution ID : 1287

Type : **Poster**

A 2 GHz Sampling Readout for the Magic-II experiment

Abstract content

MAGIC-II is the upgrade project of the Magic telescope, consisting of a twin telescope frame with innovative features to lower the threshold energy further. An ultrafast signal sampling was developed to reduce the effect of the diffuse night sky background. The new acquisition system is based upon a low power analog sampler (Domino Ring Sampler) with a frequency of 2 GHz while data are digitized with a 12-bit resolution ADC. Data management is performed by 9U VME digital boards which handle the data compression and reformatting as well. Every board hosts 64 analog channels plus auxiliary digital signals for trigger and monitor purposes. For a 1 kHz trigger rate and a 2 GHz frequency sampling, the data throughput can be as high as 100 MBytes/s, thus being a challenge for modern data transmission and storage solutions. The data are transferred to PCI memory via Gbit optical links using the CERN S-link protocol and to the mass storage system consisting of a RAID system and tape minilibraries. The data acquisition system design and performance will be described in detail.

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

On behalf of the MAGIC collaboration

Summary

Reference

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Session Classification : Posters 1 + Coffee

Track Classification : OG.1.5