ICRC'07

Mérida, Yucatán, Méx.

Contribution ID : **435**   Type : **Poster**

Optical and data acquisition system for the SPHERE-2 detector

Friday, 6 July 2007 14:45 (0:00)

Abstract content

A new method for high energy cosmic ray detection was suggested by A.E.Chudakov in 1972. According to this method a reflected from the snow surface Cherenkov light is observed by an optical camera lifted above the surface on the balloon.

Optical system of the SPHERE-2 detector consists of 1500mm diameter spherical mirror and has 1sr view angle. Shmidt aperture diaphragm allows to reach 109 pixel optical resolution on the focal surface of the mirror. Electronic part of the detector consists of 109 pulse shape acquisition FADC channels with 25 ns steps. The dynamic range in each channel is equal to 10000 due to using of two 10-order ADC. PMTs have 109 autoranging high-voltage power supplies that allow to set optimal PMT sensitivity according to the light conditions of measurements. Trigger system allows to separate on the PMTs mosaic light spot images of Cherenkov light reflected from the snow surface.

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. 5 (HE part 2), pages 941-944

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Session Classification :   Posters 2 + Coffee

Track Classification :   HE.1.5