Tata Institute of Fundamental Research

Homi Bhabha Road, Colaba, Mumbai, INDIA, 400005

ASET Colloquium

Development of SiPM based imaging camera for a 4-m class telescope (Part 2)

A 256-pixel imaging camera for a 4 m class TACTIC atmospheric Cherenkov telescope is being indigenously developed by our team. The camera uses Silicon Photomultiplier (SiPM) as photo sensor. The camera pixels are grouped into 16 clusters with 16 pixels in each cluster. The camera's front-end electronics provide bias to the pixel sensors and pre-condition the pixel signals. The pixel signals are routed to modular back-end electronics for sampling, trigger generation, digitization, and data storage for offline analysis. The back-end electronics comprises of 16 number of Cluster Digitizer Modules, a Data Concentrator Module and a Control & Trigger Module. The analog sampler chip, DRS4, is used for ultra-fast sampling of pre-amplified pixel signals. Hardware for each back-end module makes use of at least one MAX10 series FPGA for control of on-board components. All the back-end modules are accommodated in a customized VME form factor crate. The camera's operation is handled by a set of firmware and software programs developed in-house. The talk will cover camera back-end electronics design, software scheme, and the current state of camera development.

Mr. Sandeep Duhan (DHEP, TIFR Mumbai)

Sandeep Duhan is working as the Scientific Officer at TIFR, Mumbai. He obtained his M.Sc. degree in Electronic Science from Kurukshetra University, Kurukshetra in 2003 and currently pursuing his PhD degree from Panjab University, Chandigarh. He joined TIFR in the year 2005 at HEGRO, Pachmarhi. He is also a member of HAGAR experiment (Hanle, Leh-Ladakh) team. He was transferred to TIFR, Mumbai in the year 2015. His research area is instrumentation development for high-energy physics experiments.

Date & Time: Friday, 6th October 2023, 4 pm (AG-66, TIFR Mumbai)

YT Live: https://youtube.com/live/xrGy4vuUq2Y?feature=share