

AtmoHEAD 2014:
 Atmospheric Monitoring for High Energy AstroParticle Detectors



Contribution ID: 42

Type: **Oral**

FRAM for CTA

Wednesday, 21 May 2014 12:15 (20 minutes)

The Cherenkov Telescope Array (CTA) is a project to build a new generation ground-based gamma-ray observatory. Among other goals, the project aims to achieve high precision measurements of gamma-ray properties while maximizing the use of observation time. These objectives require detailed and fast information about atmospheric conditions, particularly the transparency (varying mostly with aerosol content) and cloud cover (including thin high-altitude clouds). This knowledge is required not only to select and calibrate data after observation, but also to make on-the-fly scheduling decisions. To provide such data without interfering with the observation (as would be the case when using laser-based methods), we propose to use the FRAM (F/(Ph)otometric Robotic Atmospheric Monitor) device, which is a small robotic astronomical telescope with a large field of view and a sensitive CCD camera. FRAM will use stellar photometry to measure atmospheric extinction across the field of view of the CTA. The fast robotic mount of the telescope allows quick observation of multiple fields, when the array is split, and even a check of the conditions in the directions of upcoming observations. The FRAM concept is built upon an experience gained with a similar device operated at the Pierre Auger Observatory.

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Session Classification: Instruments and Techniques Developments