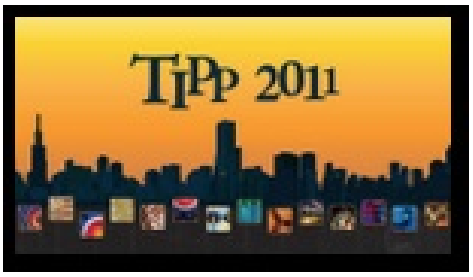

Contribution ID: **192** Type: **Oral Presentation**

Status and Plans for the Cherenkov Telescope Array

Saturday 11 June 2011 12:00 (30 minutes)

The last few years have seen stunning results both from ground-based gamma-ray astronomy from H.E.S.S., MAGIC, and VERITAS as the imaging atmospheric Cherenkov technique has matured, and from space since the 2008 launch of the Fermi Gamma-ray Space Telescope. The Cherenkov Telescope Array (CTA) is a global collaboration formed to develop a next-generation ground-based array of imaging atmospheric Cherenkov telescopes with a significant advance in capabilities over current ground- and space-based telescopes. In particular, CTA aims to have a factor of 10 improvement in sensitivity in the core energy range of 100 GeV to some 10's TeV, a threshold energy well below 100 GeV, a factor of 3-5 improvement in angular resolution, and an effective area of at least several square kilometers for energies above 10 TeV. This talk describes the science drivers that motivate CTA, and the technical challenges and advances required to achieve these goals. Giga-sample-per-second front-end electronics based on custom ASICs and a highly integrated modular camera design are under development. Three sizes of telescopes (large, medium, and small, with diameters of roughly 24 m, 9-12 m, and 4-7 m) will be needed to cover this broad energy range. Several designs for the telescopes within CTA are under consideration, including a novel design utilizing Schwarzschild-Couder (SC) optics. The SC design presents challenges in mirror fabrication and alignment, but would allow simultaneously a large field of view (8-10 degrees in diameter) and a small plate scale for the camera, making a fine pixelization (˜0.05 degrees/pixel) possible by use of multi-anode photomultiplier tubes.

Author: Dr HUMENSKY, Brian (University of Chicago / Columbia University)

Presenter: Dr HUMENSKY, Brian (University of Chicago / Columbia University)

Session Classification: Astrophysics and Space Instr.

Track Classification: Experimental Detector Systems