Contribution ID: **58** Type: **not specified**

Cosmic Ray Electron Synchrotron Telescope (CREST) status report

Wednesday 28 August 2013 14:00 (24 minutes)

The CREST instrument aims to determine whether cosmic electrons are seen at Earth beyond a few TeV, from sources in the local Galactic neighborhood (a kpc or so). Only a few candidate astrophysical sites exist that meet the acceleration and propagation requirements, such as the Vela, Monogem, and Cygnus Loop remnants, and thus multi-TeV electrons are a useful marker of the nearby high energy universe. CREST is flown by high-altitude ballon in Antarctica and detects electrons through their geosynchrotron x-ray emissions in the South polar regions of the Earth. The signature is a stream of x-ray photons emitted in the plane of electron travel, intersecting the plane of a horizontal detector array; the net effect is a co-linear arrangement of x-ray hits coincident in time. CREST comprises an array of 1024 BaF2 crystal detectors, surrounded by veto plastic scintillators to guard against chance alignments of charged particles in air showers. This instrument was successfully launched from McMurdo Station in Antarctica on December 25, 2011, and flew for 10 days. Analysis of the flight data requires a comprehensive understanding of backgrounds from nuclear cosmic rays and atmospheric air shower particles, as well as the effect of the geomagnetic field throughout the circumpolar flight trajectory. To this end, detailed background simulations are carried out based on the GLAST/Fermi physics model, and a full GEANT4 simulation of the CREST payload. A status update of the analysis of the data from the maiden flight of the CREST instrument will be presented.

Presenter: COUTU, Stephane

Session Classification: High-energy cosmic rays and their propagation