Contribution ID: **270** Type: **Oral**

Measuring High-Energy Gamma-Ray Spectra with HAWC

Wednesday 9 August 2017 16:15 (15 minutes)

The High-Altitude Water-Cherenkov (HAWC) experiment is a TeV gamma-ray observatory located at 4100 m above sea level on the Sierra Negra mountain in Puebla, Mexico. Each of the detector's 300 water-filled tanks is instrumented with four photomultiplier tubes that detect the Cherenkov radiation produced by charged particles created in extensive air showers. With an instantaneous field of view of 2 sr and a duty cycle exceeding 95%, HAWC is a powerful survey instrument sensitive to pulsar wind nebulae, supernova remnants, active galactic nuclei, and other gamma-ray sources. The mechanisms of particle acceleration at these sites can be probed by measuring their emitted photon energy spectra. To this end, we have developed an event-by-event method for reconstructing the energies of HAWC gamma-ray events using an artificial neural network. We will show that this new technique greatly improves HAWC's energy resolution and enables it to precisely resolve energies as high as 100 TeV in Monte Carlo. We will also present the progress towards measuring high-energy spectra with the new energy-estimation method.

Author: Mr MARINELLI, Samuel (Michigan State University)

Presenter: Mr MARINELLI, Samuel (Michigan State University)

Session Classification: Gamma rays

Track Classification: Gamma rays