Contribution ID: **564** Type: **Parallel talk**

Towards Understanding the Origin of Cosmic-Ray Electrons

Friday 12 July 2019 12:10 (20 minutes)

Precision results on cosmic-ray electrons are presented in the energy range from 0.5 GeV to 1.4 TeV based on 28.1 million electrons collected by the Alpha Magnetic Spectrometer on the International Space Station. In the entire energy range the electron and positron spectra have distinctly different magnitudes and energy dependences. The electron flux exhibits a significant excess starting from 41.2 GeV compared to the lower energy trends, but the nature of this excess is different from the positron flux excess above 25.2 GeV. Contrary to the positron flux, which has an exponential energy cutoff of 810 GeV, at the 5σ level the electron flux does not have an energy cutoff below 1.9 TeV. In the entire energy range the electron flux is well described by the sum of two power law components. The different behavior of the cosmic-ray electrons and positrons measured by AMS is clear evidence that most high energy electrons originate from different sources than high energy positrons.

Authors: XU, Weiwei (Massachusetts Inst. of Technology (US)); ZIMMERMANN, Nikolas (Rheinisch Westfaelische Tech. Hoch. (DE)); ZHANG, Cheng (Chinese Academy of Sciences (CN)); WENG, Zhili (Massachusetts Inst. of Technology (US)); KOUNINE, Andrei (Massachusetts Inst. of Technology (US)); DURANTI, Matteo (Universita e INFN, Perugia (IT))

Presenter: ZHANG, Cheng (Chinese Academy of Sciences (CN))

Session Classification: Cosmology

Track Classification: Cosmology