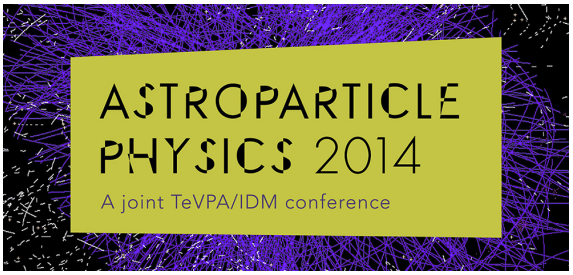

Contribution ID: **306** Type: **Presentation**

Cosmic Ray Energetics And Mass for the International Space Station (ISS-CREAM)

Tuesday, June 24, 2014 2:55 PM (25 minutes)

The balloon-borne Cosmic Ray Energetics And Mass (CREAM) experiment was flown for ~161 days in six flights over Antarctica. High energy cosmic-ray data were collected over a wide energy range from ~ 10^10 to > 10^14 eV at an average altitude of ~38.5 km with ~3.9 g/cm2 atmospheric overburden. Cosmic-ray elements from protons (Z = 1) to iron nuclei (Z = 26) are separated with excellent charge resolution. Building on success of the balloon flights, the payload is being reconfigured for exposure on the International Space Station (ISS). This ISS-CREAM instrument is configured with the CREAM calorimeter for energy measurements, and four finely segmented Silicon Charge Detector layers for precise charge measurements. In addition, the Top and Bottom Counting Detectors (TCD and BCD) and Boronated Scintillator Detector (BSD) have been newly developed. The TCD and BCD are scintillator based segmented detectors to separate electrons from nuclei using the shower profile differences, while BSD distinguishes electrons from nuclei by detecting thermal neutrons that are dominant in nuclei induced showers. An order of magnitude increase in data collecting power is possible by utilizing the ISS to reach the highest energies practical with direct measurements. The project status including results from on-going analysis of existing data and future plans will be discussed.

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Session Classification: Cosmic Rays

Track Classification: Cosmic Rays