

Solar modulation of GCRs from the Balloon-Borne Experiment with a Superconducting Spectrometer (BESS)

Tuesday 20 October 2015 09:35 (50 minutes)

The spectra of low-energy cosmic-ray protons, helium nuclei and antiprotons have been measured by BESS in 11 high-latitude balloon flights between 1993 and 2007. The original BESS experiment flew 8 times over Lynn Lake, Canada and once from Fort Sumner, USA during the period of 1993 through 2002. The long duration balloon (LDB) flights over Antarctica were carried out in 2004 and 2007 with BESS-Polar instrument. These measurements span a range of Solar activity from before the previous Solar minimum through Solar maximum (Cycle 23) and the latest Solar minimum, as well as a Solar magnetic field reversal from positive to negative in 2000. Since the low-energy region of the cosmic radiation is most intensively affected by solar modulation, the absolute fluxes and spectral shapes of primary protons and helium obtained with BESS are essential probes. These are combined with the simultaneous BESS antiproton measurements to probe the effect of charge-sign dependent drift on the entering cosmic rays.

Summary

The BESS measurements are presented and compared to simple models of Solar modulation.

Author: SAKAI, Kenichi (NASA/GSFC/CRESST/UMBC)

Co-authors: ITAZAKI, Akira (Kobe University); KUSUMOTO, Akira (Kobe University); YAMAMOTO, Akira (High Energy Accelerator Research Organization (JP)); HORIKOSHI, Atsushi (KEK); SEO, Eun Suk (University of Maryland (US)); FUKE, Hideyuki (ISAS/JAXA); MITCHELL, John; ORMES, Jonathan (University of Denver); NISHIMURA, Jun; SUZUKI, Junichi (KEK); TAKEUCHI, Kazuma (Kobe University); TANAKA, Ken-ichi (KEK); MATSUMOTO, Kenji (KEK); KIM, Ki-Chun (University of Maryland); ABE, Ko (University of Tokyo); YOSHIMURA, Koji (Okayama University); HASEGAWA, MASAYA (KEK); SASAKI, Makoto (NASA-Natl. Aeronaut. & Space Admin. (US)); NOZAKI, Mitsuaki (Kobe University (JP)); LEE, Moohyung (University of Maryland); THAKUR, Neeharika (NASA); PICOT-CLEMENTE, Nicolas (University of Maryland (US)); ORITO, Reiko (Tokushima University); STREITMATTER, Robert (NASA); SHINODA, Ryoko (The University of Tokyo); HAINO, Sadakazu (Academia Sinica (TW)); MATSUDA, Shinya (KEK); YAMAGAMI, Takamasa (ISAS/JAXA); KUMAZAWA, Teruyuki (KEK); YOSHIDA, Tetsuya (ISAS/JAXA); HAMS, Thomas; MAKIDA, Yasuhiro (High Energy Accelerator Research Organization (JP)); SHIKAZE, Yoshiaki (Kobe University); TAKASUGI, Yoshiyuki (Kobe University); MATSUKAWA, Yosuke (Kobe University); MYERS, Zachary (University of Maryland)

Presenter: SAKAI, Kenichi (NASA/GSFC/CRESST/UMBC)

Session Classification: Tuesday Morning 1