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CREAM BALLOON FLIGHTS IN ANTARCTICA

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The Cosmic Ray Energetics And Mass (CREAM) balloon-borne experiment has had two successful flights from Antarctica. The first flight set a flight duration record by making three circumnavigations around the South Pole in 42-days from 16 December 2004 to 27 January 2005. With the second flight for 28 days from December 16, 2005 to January 13, 2006, a cumulative exposure of 70 days was achieved. The 40 million cubic ft balloon stayed at an altitude between 125,000 ft and 130,000 ft throughout both flights. The instrument has redundant charge identification and energy measurement systems capable of precise measurements of elemental spectra for Z = 1 - 26 nuclei over the energy range ~10^{11} – 10^{15} eV to explore a possible limit to the acceleration of cosmic rays in supernovae. The flight data show clear charge separation for all elements with excellent charge resolution. Measurements of the relative abundances of secondary to primary cosmic rays (e.g., B/C) in addition to the energy spectra of primary nuclei (e.g., p, He, C, N. O, Fe) will allow determination of cosmic-ray source spectra at very high energies.