Abstract Submitted
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Observation of ^{60}Fe in the Galactic Cosmic Rays[1] M.H. ISRAEL, W.R. BINNS, Washington University, E.R. CHRISTIAN, NASA/GSFC, A.C. CUMMINGS, Caltech, G.A. DENOLFO, NASA/GSFC, K.A. LAVE, Washington University, R.A. LESKE, R.A. MEWALDT, E.C. STONE, Caltech, T.T. VON-ROSENVINGE, NASA/GSFC, M.E. WIEDENBECK, JPL/Caltech — The Cosmic Ray Isotope Spectrometer (CRIS) on the ACE spacecraft has been measuring the isotopic composition of Galactic Cosmic Rays (GCRs) since August 1997. Using selected data from the past seventeen years, we have a set of 2.95 x 10^5 ^{56}Fe nuclei in the energy interval 240 to 470 MeV/nucleon with excellent mass resolution characterized by $\sigma = 0.24$ amu. In this data set we have detected fifteen well resolved ^{60}Fe nuclei. ^{60}Fe is β^- unstable with a half-life of 2.6 million years. The detection of these radioactive nuclei permits us to set an upper limit of a few million years on the time between nucleosynthesis of these nuclei and their acceleration to cosmic-ray energies. A lower limit of 10^5 years was established by the CRIS observation that the electron-capture isotope ^{59}Ni is essentially absent in the GCRs. These two limits bracket the nucleosynthesis-to-acceleration time to a range that is consistent with the emerging evidence that the bulk of GCRs are accelerated in associations of massive stars (OB associations).

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