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Measurements of the Elemental Abundances of GCRs from Carbon through Zirconium by the CRIS Instrument on the ACE Spacecraft[1]
W.R. BINNS, Washington University, E.R. CHRISTIAN, NASA/Goddard Space Flight Center, A.C. CUMMINGS, A.J. DAVIS, California Institute of Technology, G.A. DE NOLFO, NASA/Goddard Space Flight Center, M.H. ISRAEL, K.A. LAVE, Washington University, R.A. LESKE, R.A. MEWALDT, E.C. STONE, California Institute of Technology, T.T. VON ROSENVINGE, NASA/Goddard Space Flight Center, M.E. WIEDENBECK, Jet Propulsion Laboratory, Pasadena, California Institute of Technology — We present measurements of the elements from carbon to zirconium obtained by the CRIS instrument on NASA's ACE satellite. The data for nuclei in the charge range Z=29-40 corresponds to 6413 days of data collection beginning December 4, 1997 through May 24, 2016, while the data for the charge range Z=6-28 were taken during the solar minimum periods in solar cycles 23 and 24. The energy range of these measurements is approximately 50-600 MeV/nucleon, depending upon the atomic number of the element. Source abundances relative to iron were derived from these data and are compared to SuperTIGER and Voyager results. We find that the ordering of refractory and volatile elements is greatly improved if we compare them to a mix of massive star outflow and supernova ejecta with normal ISM, rather than pure normal ISM, and that the refractory elements are preferentially accelerated by about x4 compared to volatile elements.

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