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Constraints on Galactic Cosmic-Ray Origins from Elemental Composition Measurements[1] W.R. BINNS, Washington University, E.R. CHRISTIAN, NASA/Goddard Space Flight Center, A.C. CUMMINGS, California Institute of Technology, G.A. DENOLFO, 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 abundances of ultra-heavy (Z>29) cosmic rays made by the CRIS instrument on NASA's Advanced Composition Explorer satellite. The data set corresponds to 6413 days of data collection between December 4, 1997 and May 31, 2016. The charge resolution that we obtain is excellent, exhibiting essentially complete separation of adjacent charges in the Z>28 range. We detected 196 events over the charge range of Z=30-40. Our measured abundances show that the ordering of refractory and volatile elements with atomic mass is greatly improved when compared to a mix of massive star outflow and SN ejecta with normal ISM, rather than pure ISM. Additionally, the refractory and volatile elements have similar slopes and refractory elements are preferentially accelerated by a factor of ˜4. The measured abundances support a model in which ˜20% of cosmic ray source material is from massive star outflow and ejecta and ˜80% is from normal ISM. Our abundances show generally good agreement with the TIGER and SuperTIGER results.

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