

Abstract Submitted  
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**Voyager 1 Observations of Galactic Cosmic Rays in the Local Interstellar Medium**<sup>1</sup> A. C. CUMMINGS, E. C. STONE, California Institute of Technology, B. C. HEIKKILA, N. LAL, Goddard Space Flight Center, W. R. WEBBER, New Mexico State University, G. JÓHANNESSON, University of Iceland, I. V. MOSKALENKO, E. ORLANDO, T. A. PORTER, Stanford University — Voyager 1 crossed into the local interstellar medium in August 2012. The low-energy part of the energy spectra of Galactic cosmic rays (GCRs) was revealed for the first time, previously having been excluded from observation by the effects of solar modulation. We present the GCR energy spectra of most elements from H through Ni from  $\sim 3$  to a few hundred MeV  $\text{nuc}^{-1}$ , and also of electrons from 2.7 to 74 MeV, for a period exceeding two years. We find that the H and He spectra have the same energy dependence between 3 and 346 MeV  $\text{nuc}^{-1}$ , with a broad maximum in the 10-50 MeV  $\text{nuc}^{-1}$  range and a H/He ratio of  $12.2 \pm 0.9$ . The observed local interstellar gradient of 3–346 MeV H is  $-0.009 \pm 0.055$  %/AU. The energy spectrum of electrons ( $e^- + e^+$ ) is consistent with  $E^{-1.30 \pm 0.05}$ . Propagation model fits to the observed spectra allow estimates of the energy density of GCRs and the ionization rates of atomic H, which will be presented and discussed. The propagation model fits also provide improved estimates of the elemental abundances in the source of Galactic cosmic rays.

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