

Voyager 1 and 2 measurements of the energy spectra of cosmic-ray C, N, O, Ne, Mg, Si and Fe nuclei in the outer heliosphere at the 1997-1998 solar minimum activity: Study of the primary-to-primary ratios

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Abstract. Data from the High-Energy Telescopes of the CRS experiments on Voyager 1 and 2 spacecraft at distances of 69 AU and 54 AU in 1997-98 have been used to measure the spectra and charge ratios of various primary nuclei such as C, O, Ne, Mg, Si, and Fe in galactic cosmic rays. This is a new measurement of the primary/primary ratios from Voy-

ager 1 and 2 in the extended energy range. The Voyager energy spectra in the new extended range are: for Carbon 17-230 MeV/n, for Silicon 20-350 MeV/n, and for Iron 50-1200 MeV/n. The solar modulation level relevant for this data is estimated to be ~ 300 MV.