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Spectra and composition of suprathermal ions associated with the November 4-6, 2003 interplanetary coronal mass ejection event: SOHO/CELIAS/HSTOF data

K. Bamert (1), R.F. Wimmer-Schweingruber (1), **R. Kallenbach** (2), M. Hilchenbach (3), and C.W. Smith (4)

(1) Institut für Experimentelle und Angewandte Physik, University of Kiel, Leibnizstrasse 19, D-24098 Kiel, Germany (bamert@physik.uni-kiel.de), (2) International Space Science Institute, Hallerstrasse 6, CH-3012 Bern, Switzerland (kallenbach@issi.unibe.ch), (3) Max-Planck-Institut für Sonnensystemforschung, Postfach 20, D-37191 Katlenburg-Lindau, Germany (hilchenbach@mps.mpg.de), (4) Dept. of Physics and Space Science Center, University of New Hampshire, Durham, NH 03824, USA (chuck@briaxa.sr.unh.edu)

At the end of October 2003 the unusually active region 10486 produced a few X-flares and coronal mass ejections. The huge X28 flare, blasted off on Nov. 4 at 19:29 UT, was accompanied by a coronal mass ejection which left the Sun at a speed of 2300 km/s as observed by SOHO/LASCO. It arrived at SOHO on Nov. 6. We analyze data of the CELIAS/HSTOF sensor associated with this CME. In particular, we focus our study on the upstream region of the interplanetary shock driven by this CME which passed SOHO on Nov. 6 at 18:56 UT. The spatial evolution of the spectra of H, He, CNO, and Fe in the energy range 80 keV/e to 40 MeV/e is resolved in steps of about 0.02 AU. The spectra are compared to those associated with the Bastille Day event in 2000. Conclusions are drawn on the validity of the quasi-linear theory by Lee (1983). Furthermore, we analyze the spectra and composition of ions which are directly accelerated at the X28 flare site.