

PARTICLE ACCELERATION AT THE INTERPLANETARY SHOCK ON 15 JULY 2000

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Physical properties of the interplanetary shock ejected from the sun on the Bastille day, 14 July 2001, will be discussed. This shock had fairly high propagation velocity of ~ 1500 km/s and provided the strongest solar proton event (>10 MeV) in the 8-year interval between 1992 and 2000. Firstly we note that there was a clear enhancement of magnetic fluctuation of the periods of several tens to 10^2 sec about two hours before the arrival of the shock (or ~ 0.05 AU). This enhancement is explicable in terms of wave self-excitation by shock-accelerated protons of $\sim (1-3) \times 10^2$ keV. Although these wave properties are similar to the previous observation at a strong quasi-parallel interplanetary shock on 12 Nov 1978, a unique feature is that this Bastille shock belonged to the quasi-perpendicular shock category. Secondly, ahead of the shock front, there was an enhancement of electrons of several keV lasting for ~ 10 hours. This enhancement is likely attributed to the diffusive shock acceleration of electrons. Since the observational evidence of such electron acceleration is quite limited, the analysis of this event will provide important information about it.