Observation of Plasma on the Lunar Surface Produced by Impacts

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Following the impact of the S-IVB stage of the Saturn rocket on the moon on April 15, 1970, large fluxes of plasma were detected by the Solar Wind Spectrometer for ten minutes. At least two separate plasma clouds were observed, approximately six minutes apart and differing in flow direction and in energy. Both ALSEP and the impact point were in the dark, about 277 km and 412 km beyond the morning terminator respectively. Thus the impact was west and down-wind (solar wind) of ALSEP. The plasma approached ALSEP from the north and northeast, the bulk of it moving within 45 degrees of horizontal.

Plasma from the impact of the lunar module was also observed, but barely above the threshold of detectability. These observations open up the possibility that plasma from meteorite impacts may be detected, and such events are being searched for.

Possible production mechanisms and motions of the plasma clouds will be discussed.