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Title: Direct evidence of the interstellar gas flow velocity in the pickup ion cut-off as observed with SOHO CELIAS CTOF

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Abstract: He/sup +/- pickup ions as observed with SOHO CELIAS CTOF have been analyzed for the time period DOY 160-190, 1996. During this time of the year the Earth is on the upwind side of the interstellar gas flow with respect to the Sun. The high-speed cut-off in the frame of the Sun is significantly higher $v/V_{sw} = 2$, predicted for pickup ions. The difference increases with lower solar wind speeds. This behavior is interpreted as an effect of the local interstellar gas flow velocity (inflow at large distances including gravitational acceleration by the Sun) on the pickup ion distribution. The neutral velocity is added to the solar wind velocity in the determination of the pickup ion cut-off on the upwind side and subtracted on the downwind side of the gas flow. This new observation will provide a valuable tool to determine the interstellar gas flow and will thus complement direct neutral gas measurements.

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