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The properties of the ion flow before the T32 flyby

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On 13 June 2007 (DOY 164) the Cassini spacecraft encountered Titan in the magnetosheath at about 17:45. The spacecraft arrived from the direction of Saturn. On this same day it crossed three times the magnetopause boundary. We present the properties of the ion flow on this day based on the measurements of the Cassini Plasma Spectrometer (CAPS) flying onboard Cassini. The composition of the magnetospheric plasma varied, there were segments along the orbit when CAPS encountered plasma regions dominated by light ions only, in other segments along the orbit the plasma composition was the usual one, composed from light and heavy ions. We study what are the speed directions of the plasma flow in the different regions, and how sharp the boundaries are both in the physical and chemical parameters.

The third magnetopause crossing before the Titan encounter was very special because the magnetic field changed very smoothly across the boundary. We present here the features of the ion flow across this boundary, and further on towards Titan.