

Ulysses jovian latitude scan of high-velocity dust streams originating from the jovian system

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In February 2004 the Ulysses spacecraft had its second flyby at Jupiter at 0.8 AU distance from the planet. 28 dust streams emanating from the jovian system were measured between November 2002 and August 2005 while the spacecraft was within 4 AU of the planet, scanning jovigraphic latitudes from $+75^\circ$ to -25° . The highest dust fluxes were measured in mid 2004 at the passage of the equatorial plane of the planet when more than 2000 impacts per day were measured. The grain impact direction is correlated with the polarity and strength of the interplanetary magnetic field. At high jovigraphic latitudes, the impact rates show a periodicity of 26 days, closely matching the solar rotation period, while at the jovian equator the streams fluctuate with twice this period. The 14-day subharmonic streams alternate in arrival direction and are correlated with the pointing of the interplanetary magnetic field. Dust fluxes measured above and below the equatorial plane roughly decrease with the inverse square of the distance from the planet while along the equatorial plane dust fluxes are enhanced by up to 2 orders of magnitude.