The Interplanetary Medium and the Jovian dust Streams

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Between November 2002 and August 2005, the Ulysses spacecraft approached Jupiter ($\sim$0.8 AU at its closest distance) and detected 28 new dust particle streams. The tiny positively charged dust grains ($\sim$10 nm) in the streams are accelerated away from Jupiter by its co-rotational electric field to very high speeds ($>$200 km s^{-1}). Data indicate that, once outside the Jovian magnetosphere, the Corotating interaction Regions (CIRs) –and possibly, to a minor extent, the Coronal mass ejections (CMEs)- collimate the Jovian dust grain flux in the well known Jovian dust streams. On the whole, there seems to be a previous CIR for every set of streams and the duration of the set of steams matches roughly the duration of the CIR indicating a confinement of the dust stream particles in the compressed regions of the interplanetary plasma. Besides, most dust stream peaks and the precedent CIR peaks seem to be separated by an interval roughly similar to the time needed by a dust particle to travel from the source to the spacecraft's detector.