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Galactic dust measurements with DuneXpress

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DuneXpress is developed to perform in-situ characterisation of galactic interstellar dust and provides crucial information not achievable with astronomical methods. Galactic dust constitutes the solid phase of interstellar matter, from which stars and planetary systems form. Following the discovery by the Ulysses spacecraft of micron-sized interstellar dust (ISD) grains passing trough the solar system, the analysis of Helios, Galileo and Cassini data within and beyond the Earth orbit showed that a significant amount of interstellar partciles. The flux of ISD at Earth distance was determined to $2 \cdot 10^{-5} m^{-2} s^{-1}$.

DuneXpress is an in-situ mission to investigate the directionality, mass distribution and composition of cosmic dust. A dust telescope measures the grain properties for individual particles entering the aperture. DuneXpress is developed by Dutch Space on the basis of the ConeXpress platform. DuneXpress benefits of launch opportunities as secondary payload on-board an Ariane 5 rocket and is injected into a classical geostationary transfer orbit (GTO). Starting from this parking orbit, electric propulsion raises the apocentre beyond moons distance for an injection into the lagrangian point L2. The DuneXpress mission was proposed in the Cosmic Vision frame of ESA in 2007.