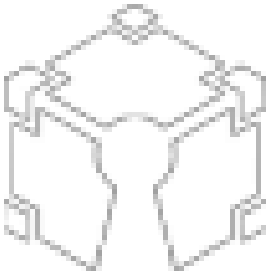

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The Earth's micro-meteoroid environment observed by a dust sensor on-board a CubeSat operated by students

We propose to explore the near Earth micro-meteoroid environment from a CubeSat platform, using a ‚Dust Telescope' (DT) operated by students as science payload.

The DT, developped by the Aerospace Enginneering Department of the University of Stuttgart is an in-situ dust sensor aiming at retrieving simultaneously the orbital elements and chemical composition of particles in the sub-micrometer to sub-millimeter size range. The DT is made of two main sub-systems: an electrostatic charge sensor at the instrument entrance, able to determine the impact velocity vector of the particles entering the instrument; and an impact time-of-flight mass spectrometer, able to constrain the particles elemental composition. This type of in-situ instrument, combining the dynamical and compositional information of the same particle, has never been flown thus far, but ready-to-fly versions, scalable for different mission concepts, have been built and tested at the University of Stuttgart. The CubeSat platform to host the science payload, is design and developed by the Universidad Europea de Madrid.

This mission would build up on collaborations with various european universities and on the education and outreach activities performed at ESAC in recent years, which have led to the design and set-up, by students, of an antenna and an operation room taylored for CubeSat operations.

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