

ENTRYSAT: A 3U CUBESAT TO STUDY THE RE-ENTRY ATMOSPHERIC ENVIRONMENT

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Abstract

The EntrySat is a 3U CubeSat designed to study the uncontrolled atmospheric re-entry. The project, developed by ISAE in collaboration with ONERA, is funded by CNES and is intended to be launched in January 2016, in the context of the QB50 network. The scientific goal is to relate the kinematics of the satellite with the aerothermodynamic environment during re-entry. In particular, data will be compared with the computations of MUSIC/FAST, a new 6-degree of freedom code developed by ONERA to predict the trajectory of space debris. According to these requirements, the satellite will measure the temperature, pressure, heat flux, and drag force during re-entry, as well as the trajectory and attitude of the satellite. One of the major technological challenges is the retrieval of data during the re-entry phase, which will be based on the Iridium satellite network. The system design is based on the use of commercial COTS components, and is mostly developed by students from ISAE. As such, the EntrySat has an important educational value in the formation of young engineers.

References

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