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VESPER: MULTI-SMALL SATELLITE MISSION ARCHITECTURE FOR VENUS EXPLORATION

Abstract

This study presents a multi-objective Venusian mission architecture. Its aim is to offer multiple “customers” (research institute, university, private company) a service to transport their payload to a study target located on Venus without having to design a complete space mission. In order to facilitate the interfacing, the payloads respond to the cubesat format from 1U to 12U. Compared to a traditional mission centered on a certain experience, a multi-client transport mission allows the researcher to directly propose the experiences answering his questions. This would allow a single mission to generate many publications in a variety of fields. The targets proposed by the mission are a heliocentric orbit, a high Venusian orbit, a low Venusian orbit, an atmospheric entry near Phoebe Regio or an atmospheric entry on a point chosen by the customer. payloads may be orbital cubsats similar to those used around the Earth, atmospheric balloons, or surface payloads. Atmospheric balloon and lander proposals in cubesat format are presented in this study. This study presents the design of the transport platform, the distribution of the cubesat unit costs according to the target chosen by the customer, the management of communications according to the position of the payload.