

IAF SPACE SYSTEMS SYMPOSIUM (D1)
Innovative and Visionary Space Systems (1)

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LTA VEHICLES FOR EXPLORATION OF MARTIAN CAVES

Abstract

Interplanetary missions are necessary for the advancement of human civilization, in recent decades we have witnessed a number of uncrewed missions to Mars. Mars being the closest to our planets is a possible outpost for us humans and before any crewed mission is planned, it is necessary to map the terrain. The reason behind mapping the terrain is said to design the mission parameters in such a way that future astronauts are well aware of the resources and potential exploration sites within their landing range. Contemporary satellites provide us a resolution of only 6m per pixel and due to this geological feature like caves which are said to be potential hotspots of resources are left unrecognized. have significant potential as remote sensing and scientific instrument deployment platforms for planetary science and exploration missions. In comparison with different aero vehicles proposed, VLAV systems promise unique convergence because of extended mission durations and long-range capabilities. This study gives outlines for future steps of designing fixed-wing hybrid-LTA system for Mars exploration. In this paper, VTOL Unmanned Aerial Vehicle (UAV) is studied and analysed under Martian constraints and depending up-to mission requirements. The objective of this study is the first step to explore technologies to support Mars exploration missions.