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A CONCEPTUAL DESIGN STUDY FOR THE PROSPECTIVE TURKISH LUNAR SOFT LANDING MISSION

Abstract

The Moon is commonly referred as the eighth continent which is to be exploited for its potential resources and its strategic importance as a stepping stone for both human and robotic exploration of Mars, asteroids and beyond. Today, many countries and international bodies are establishing capabilities, developing programs and support actors to explore the Moon and develop infrastructures on and around the Moon.

Recently, Turkish Space Agency (TUA) has announced the Turkish Space Program showing its particular interest on Lunar exploration missions. In this regard, hard and soft landing objectives have been announced for the years 2023 and 2028 respectively. In this paper, the outcomes of a preliminary conceptual design study for a Lunar soft landing mission are summarized. Firstly, mission architecture is proposed for an orbiter-lander-rover system. Secondly, mission analysis results are provided together with a summary of concept of operations. Thirdly, main functionalities of the orbiter, lander and rover system are defined. Then, several mission parameters are specified based on system analyses. Finally, a roadmap is proposed to realize this mission.