Paper ID: 61371
oral

IAF SPACE EXPLORATION SYMPOSIUM (A3)
Mars Exploration – missions current and future (3A)

Author: Mr. Mohamed Alameri
UAE Space Agency, United Arab Emirates

Mr. Abdulla Alshehhi
UAE Space Agency, United Arab Emirates

MARS MOTHER GLIDER & CHILD DRONES

Abstract

UAE sat up long-term vision to colonize Mars and is entrusting the new generation led by passion to overcome current challenges in Martian atmosphere and accelerate advancements in technology and science. With the current mission to Mars, the Emirates Mars Mission (EMM) the UAE's 100 years plan to colonize Mars and build the first inhabitable human settlement. In response to this, a team from UAE Space Agency initiated research and development activities to study the next possible mission after EMM. In 2017, the team has submitted a proposal on the design and performance of gliding an airplane on Mars. With further research applied, a new concept mission is being developed under the name of "Mars Mother Glider Child Drones" project. This project focuses on optimizing the design to act as mother glider that hosts multi-detachable drones to lift-off the surface and glide in Martian atmosphere. The mother glider acts as mobile base that can travel/land on different location by utilizing the drones for the initial vertical lift and articulate the propellers to assist in horizontal travel until it reaches targeted speed in order to achieve optimum aerodynamic performance in terms of lift-to-drag ratio, and weight ratio for longer gliding time. In addition, the mother glider acts as charging bed for the drones due to the large surface area filled with solar cells. Once vehicle lands on targeted location, drones are detached to fly nearby and explore from airborne view. Mars is a planet of vast contrasts — huge volcanoes, deep canyons, and craters that may or may not host running water (i.e. Olympus Mons, Valles Marineris and other areas of interest in Mars). It will be an amazing location for future tourists to explore, once we put the first Red Planet colonies into motion. With the current existing technologies, its not possible to explore these areas, whereas the proposed design will bring new capabilities to overcome the future exploration plan.