

IAF MATERIALS AND STRUCTURES SYMPOSIUM (C2)
Interactive Presentations - IAF MATERIALS AND STRUCTURES SYMPOSIUM (IP)

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DESIGN FOR A MARS ROVER WITH ENHANCED MOBILITY TO ACHIEVE SHORT-TERM
FLIGHTS: A FLYING ROVER

Abstract

Since the 1970s, humanity has been sending rovers to the Moon and surrounding planets in order to investigate them in detail. Rovers are used to explore, acquire data, and take samples of the surface. Over the years, NASA has dispatched five robotic vehicles, called rovers, to Mars, namely Sojourner, Spirit and Opportunity, Curiosity, and Perseverance. Rovers have wheels and specialize in moving around. They descend on Mars' surface and travel around to various locations. The paper presents the design for a rover with enhanced mobility. Rovers may have to traverse through daunting terrain. So, if a situation happens where its wheel can't bring it where it needs to go, such as a minor fissure or an elevated surface, a quick flight will suffice. To enable flight, the rover will have a propeller and combustion technology. Combustion generates a powerful upward thrust. The upward pressure of heated air near the vehicle is significant. The propeller can use this pressure to boost its altitude. This allows rovers to take photos of rough terrain in order to study them in greater detail, as well as cover long distances quickly and effectively, which would not be possible with the current model. The goal of this study is to present a far more efficient rover model than those already in use in order to enhance mobility and traverse new paths securely and easily, which would be impossible with existing designs.