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Mars Exploration – missions current and future (3A)

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MARS SAMPLE RETURN LANDER MISSION CONCEPT

Abstract

This talk will provide an overview of current concepts and options for the architecture and design of a Mars Sample Return Lander (called Sample Return Lander, SRL). Key mission objectives and the overall baseline mission design will be described, including the mission's concept of operations and a notional timeline from launch to entry, through surface operations, to delivery of the samples to Mars orbit. The overall lander vehicle concept will be described, including current options being evaluated. Key lander element options will be discussed, including the Mars Ascent Vehicle (MAV), Fetch Rover, Orbiting Sample container (OS), and tube transfer robotics systems. Details of the Fetch Rover functions, constraints and challenges will be discussed.

Specific challenges and approaches for addressing those challenges will be discussed, including key technical margins and planetary protection. Major trade studies and implementation approaches and a proposed schedule will also be discussed. The information provided about possible Mars sample return architectures is for planning and discussion purposes only. NASA and ESA have made no official decision to implement Mars Sample Return.