Current Development Status of Transportation Technologies for Future Mars Landing Exploration

（将来の火星着陸探査に求められる輸送系技術と研究開発の現状）

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ABSTRACT

The purpose, the scope, the requirement, and the outcome which are expected of the Martian landing exploration next to the Martian Moons Explorer (MMX) are examined, from which a desired strategic research and development plan for deep space transportation technologies is proposed. The transportation technologies for Martian landing exploration, including atmospheric entry, descent, and landing technologies, should be determined not only from the scientific uniqueness and the engineering originality standpoints, but from a viewpoint of which technologies Japan should acquire in the next decade so that Japan can undertake a considerable role in the international collaborative exploration missions such as manned/unmanned lunar explorations to be conducted in 2020s, as well as manned Martian explorations scheduled in 2030s. In this context, Martian rover missions are considered to be one of the most promising candidate for the next Martian landing mission. Small-size missions with reduced explorers launched by an enhanced Epsilon sound rocket are considered to bring about breakthrough in the current space exploration mission roadmap. Selection of the high-priority technologies to be tacked with is proposed, and their current development status is overviewed.