

IAF SPACE EXPLORATION SYMPOSIUM (A3)  
Small Bodies Missions and Technologies (Part 1) (4A)

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## CRITICAL DESIGN OF MARTIAN MOONS EXPLORATION (MMX)

**Abstract**

Martian Moons eXploration (MMX) is a mission under development in JAXA in cooperation with NASA, CNES, ESA, DLR to be launched in 2024. This paper introduces the result of its critical design and the latest status of the MMX program. The goal of MMX is to reveal the origin of the Martian moons and then to make progress in our understanding of planetary system formation and of primordial material transport around the border between the inner and the outer part of the early solar system. Additionally, the mission is to survey two Martian moons and return samples from Phobos. Add to those MMX's contribution to the planetary science field, on the growing discussion on the International Space Exploration activities, MMX's contribution to future human Mars exploration is also considered as an essential aspect of the program. Following the preliminary design results presented in the previous conference, the following items will be reported in this paper. First, as a result of the comprehensive completion of the Phase-C activities, the critical design is completed in coordination with the design of the spacecraft system, mission instruments, and operation plans. Second, Phase-D activities have started, incorporating flight models manufacturing and tests. Moreover third, the programmatic aspects, including international cooperation frameworks and the program schedule, are presented. The details will be shown in the paper.