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

Author: Dr. Stephan Ulamec
Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR), Germany, stephan.ulamec@dlr.de

Dr. Patrick Michel
University of Nice-Sophia Antipolis, CNRS, Observatoire de la Cote d'Azur, France, michelp@oca.eu
Dr. Matthias Grott
DLR (German Aerospace Center), Germany, matthias.grott@dlr.de
Dr. Ute Böttger
German Aerospace Center (DLR), Berlin, Germany, ute.boettger@dlr.de
Dr. Susanne Schroeder
DLR (German Aerospace Center), Germany, Susanne.Schroeder@dlr.de
Prof. Heinz-Wilhelm Hübers
German Aerospace Center (DLR), Berlin, Germany, Heinz-Wilhelm.Huebers@dlr.de
Dr. Yuichiro Cho
University of Tokyo, Japan, cho@eps.s.u-tokyo.ac.jp
Prof. Fernando Rull
Spain, rull@fmc.uva.es
Dr. Olga Prieto Ballesteros
Centro de Astrobiologia (INTA-CSIC), Spain, prietobo@cab.inta-csic.es
Dr. Naomi Murdoch
ISAE-Supaero University of Toulouse, France, Naomi.MURDOCH@isae-supaero.fr
Dr. Pierre Vernazza
Laboratoire d'Astrophysique de Marseille, France, pierre.vernazza@lam.f
Dr. Jens Biele
Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR), Germany, jens.biele@dlr.de
Dr. Simon Tardivel
Centre National d'Etudes Spatiales (CNES), France, Simon.Tardivel@cnes.fr
Dr. Hirdy Miyamoto
University of Tokyo, Japan, hm@um.u-tokyo.ac.jp

THE MMX PHOBOS ROVER: SCIENTIFIC PAYLOAD INTEGRATED AND GETTING READY FOR LAUNCH

Abstract

The Martian Moon eXploration (MMX) mission by the Japan Aerospace Exploration Agency, JAXA, is going to explore the Martian Moons Phobos and Deimos. Both moons will be investigated remotely samples are going to be collected from the surface of Phobos, and a small rover will be delivered to Phobos surface.

The Rover carries a scientific payload of four instruments: RAX, a Raman spectrometer to measure the mineralogical composition of the surface material, NavCam, a stereo pair of cameras looking ahead to image the terrain and also support navigation, miniRAD a radiometer measuring the surface brightness temperature of both regolith and rocks, and two WheelCams looking at the wheel-surface interface,

and thus investigating the properties and dynamics of the regolith. The cameras, will serve for both, technological and scientific needs.

It is foreseen to deliver the rover early 2027, during the rehearsal of the first landing operations of the main spacecraft. It will be released from an altitude of about 40 m, fall to the surface, upright itself and drive and carry out scientific investigations for about 100 days. The measurements performed with the rover instruments will complement the remote observations from the main spacecraft, as well as the analyses of the returned samples. The four instruments are integrated into the MMX rover flight model and currently going through qualification and functional tests. Launch of the MMX mission is planned for September 2024.

The Rover is a contribution by the Centre National d'Etudes Spatiales (CNES) and the German Aerospace Center (DLR) with additional contributions from INTA and Univ.Valladolid (Spain) and Univ. Tokyo and JAXA.