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MASCOT Small lander for Hayabusa2

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The small lander MASCOT (Mobile Asteroid Surface Scout) is being developed for HAYABUSA-2 under the international collaboration among DLR (Germany), CNES (France), and JAXA (Japan). It aims to investigate with high accuracy and spatial resolution the surface geomorphology, the minute structure, texture and composition of rocks, and thermal and mechanical properties of C-class asteroid. Characteristics and status of the lander is briefly reported.

A 10kg-class lander is being considered with 3kg for science instrument. A wide angle multi-band imager WAC and a visible-infrared macro-imaging spectrometer will be equipped. Other candidates are laser-excited mass spectrometer ILMA, combined X-ray fluorescence and diffraction analyzer, and radar tomographer NEW-CONSERT, but no decision has been made so far. Another small, light, high-performance instrument would be a possibility. With these instruments, the lander will conduct its stand-alone surface science of geology and geophysics, obtain geologic context for sample return, and measure composition and mineralogy as groundtruth for remote sensing. The lander will strengthen and complete the science of HAYABUSA-2 complementary to remote sensing and analysis of returned samples.

Keywords: asteroid, surface measurement, lander, mobility, microscopy