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MAGIA, THE ITALIAN MISSION FOR GEODESY, GEOPHYSICS AND GEOCHEMISTRY OF THE MOON

Abstract

The Mission MAGIA ("Missione Altimetrica Gravimetrica geochImica lunAre") was selected for phase-A study within the framework of the call for proposals for small scientific missions issued by the Italian Space Agency (ASI) in 2007. Rheinmetall Italia S.p.A is the Prime Contractor with INAF – IFSI acting as Principal Investigator; the study, which was accomplished by the end of 2008, has been carried out in close cooperation with the Italian scientific community and with the contribution of national companies and SMEs active in the space domain. The main MAGIA scientific objective is to make a step forward in our understanding of the origin of the Moon by studying its internal structure and carrying out a detailed characterization of the polar regions. The MAGIA payload allows to perform remote sensing of the lunar surface by an infrared spectrometer and context camera, a radar altimeter radiometer scatterometer, and an high-resolution camera, to analyse the lunar radiation environment and exosphere by energetic neutral atoms detector and an energetic particle spectrometer, to improve the lunar gravitational field by a radio science payload and accelerometers, distributed between the main spacecraft and a subsatellite, and to perform fundamental physics and technological experiments rispectively by CCR arrays and GNSS software receiver.