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MISSION MINERVA: THE ITALIAN SPACE AGENCY EXPERIMENTS OVERVIEW

Abstract

The Minerva Mission was the second long-duration spaceflight mission on the International Space Station (ISS) by ESA astronaut Samantha Cristoforetti. She launched on 27 April 2022 on board a SpaceX Crew Dragon spacecraft and returned to Earth on 14 October 2022. During the flight to and from the Station, Samantha served as a mission specialist. On Station, she was USOS Lead, responsible for all activities within the US, European, Japanese and Canadian modules and components of the Station for the duration of her mission. She also became the fifth European and the first European female commander of the International Space Station.

One of the mission goals was to carry out experiments sponsored by the Italian Space Agency (ASI), a part of which were selected and operated in collaboration with ESA, others launched through the ASI-NASA MoU. This talk provides an overview of these Italian experiments successfully initiated and/or performed while Samantha Cristoforetti was onboard the ISS (Acoustic Diagnostics, NutriISS, Prometeo, Ovospace, Evoos and LIDAL), by describing flight hardware, major tasks relevant to the mission integration, ground processing and on-orbit operations. A description of the ASI education and communication initiatives for the Minerva Mission, jointly implemented with ESA, is also provided. The UTISS (Utilization of the ISS) team, composed by ALTEC, is providing ASI with support to whatever is necessary to accomplish the success of the experiment. This support ranges from the early payload development stage to the return of the sample data to the scientific teams, which are located in different Italian sites. LIDAL experiment, studying the cosmic radiation flux seen in the ISS, is still on going. LIDAL is intended to operate at least until the end of 2024. In this frame, the paper provides also insight on the LIDAL measurements and first results.