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## The ALTEA and ALTEA-Shield experiment onboard the International Space Station

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Anomalous Long Term Effects in Astronaut's Central Nervous System (ALTEA) is a helmet-shaped device holding six silicon particle detectors that has been used to measure the effect of the exposure of crewmembers to cosmic radiation on brain activity and visual perception, including astronauts' perceptions of light flashes behind their eyelids as a result of high-energy radiation. Because of its ability to be operated without a crewmember, it is also being used as a dosimeter to provide quantitative data on high-energy radiation particles passing into the ISS. ALTEA capabilities are also used to give additional information on the exposure of crewmembers to radiation during their stays on ISS for use in health monitoring.

The ALTEA experiment was designed by the Italian Space Agency (ASI) in collaboration with a science team led by Professor L. Narici of Tor Vergata University, Rome. The experiment onboard the International Space Station since July 2006 and it has been used as operative instrument by the Space Radiation Analysis Group (SRAG) of NASA.

Since September 2010 ALTEA detectors are used on a different support for the ESA experiment ALTEA-Shield, which is designed to assess radiation flux in different positions inside the UsLab module. ALTEA-Shield will also provide data about radiation shielding effects by a variety of special materials.

A description of the experiment and a summary of the main results obtained by ALTEA and ALTEA-Shield investigation will be presented.

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