

(S7-04) European efforts in space radiation dosimetry onboard the International Space Station and beyond

Thomas Berger DLR Institute of Aerospace Medicine, Linder Höhe, Germany

The space radiation environment and the related higher radiation exposure to humans in space has been recognized as one of the main health detriments for long duration human space missions. In the view of upcoming exploration missions as for example the ORION missions to the Moon and plans for a journey to MARS ways to either measure and/or simulate the radiation exposure a crew would receive during such mission will be the prerequisite for mission planning and of course also for relevant risk assessment. From the Mercury and Gemini missions onwards radiation detectors have been and are used on all relevant human space missions. The International Space Station (ISS) serves now as one of the leading platforms for applying active and passive radiation detectors for either area monitoring and also for the determination of the personal radiation dose the crew receives. In addition various experiments designed for dedicated purposes are used onboard the ISS to answer relevant questions related to the composition of the radiation field outside and inside the space station. These are for example the MATROSHKA torso experiments for effective dose equivalent estimations, or the ALTEA experiment for determination of the flux of heavy charged particles and in addition new developments as the ISS-RAD detector and the ESA Active Dosimeter (EAD) project. Further on new technology demonstration activities as the PERSEO radiation vest flight demonstrator for the upcoming ESA mission of Paolo Nespoli emphasize the current work on getting astronaut's safer in orbit. The presentation will give an overview over past and current activities in Europe in relation to space radiation dosimetry and an outlook for what is going to come for exploration.