

# **TL dose measurements on board the Russian segment of the ISS by the “Pille” system during Expedition-11 and -12**

I. Apáthy (1), Yu. A. Akatov (2), V. V. Arkhangelsky (2), L. Bodnár (3), S. Deme (1), S. Krikalev (4), T. Pázmándi (1), P. Szántó (1), V. Tokarev (5)

(1) KFKI Atomic Energy Research Institute, Hungary, (2) Institute for Biomedical Problems, Russia, (3) BLElectronics, Hungary, (4) NPO Energia, Russia, (5) Gagarin Cosmonaut Training Center, Russia

The most advanced version of a thermoluminescent (TL) dosimeter system (“Pille-MKS”) consisting of ten  $\text{CaSO}_4:\text{Dy}$  bulb dosimeters and a compact reader, developed by the KFKI Atomic Energy Research Institute (KFKI AEKI) and BLElectronics for application in space is continuously in use on board the ISS since October, 2003. The Pille-MKS dosimeter system is applied for the routine and EVA individual dosimetry of astronauts as part of the service system as well as for onboard experiments and operated by the Institute for Biomedical Problems (IBMP). It is unique providing accurate and high resolution TL dose data already on board the space station which became increasingly important during the suspension of the Space Shuttle flights.

Seven dosimeters are located at several places of the Russian segment of the ISS and read out once a month, two dosimeters are dedicated for EVAs and one dosimeter is kept in the reader and read out automatically every 90 minutes providing high resolution in time dose measurements.

During particular events like coronal mass ejections, hitting Earth incidental measuring campaigns are intercalated with frequent readouts.

In this paper we report results of dosimetric measurements made aboard the International Space Station during Expedition-11 and -12 using the “Pille” portable TLD system and compare them with our previous measurements on the ISS and previous space stations.