

SPACE LIFE SCIENCES SYMPOSIUM (A1)
Radiation Fields, Effects and Risks in Human Space Missions (4)

Author: Mr. Balazs Zabori

Budapest University of Technology and Economics, Hungary, zabori.balazs@energia.mta.hu

Dr. Attila Hirn

MTA Centre for Energy Research, Hungary, hirn.attila@energia.mta.hu

COMBINED TRITEL/PILLE COSMIC RADIATION AND DOSIMETRIC MEASUREMENTS
(COCORAD) IN THE BEXUS PROJECT**Abstract**

Due to significant spatial and temporal changes in the cosmic radiation field, radiation measurements with advanced dosimetric instruments on board spacecrafts, aircrafts and balloons are very important. The Hungarian CoCoRAD Team was selected to take part in the BEXUS (Balloon Experiment for University Students) project. In the frame of the BEXUS programme Hungarian students from the Budapest University of Technology and Economics will carry out scientific experiments on a research balloon. The objective of the Combined TriTel/Pille Cosmic Radiation and Dosimetric Measurements (CoCoRAD) is to measure the effects of the cosmic radiation at lower altitudes where measurements with orbiting spacecrafts are not possible due to the strong atmospheric drag. This way it will be also possible to make intercomparison of the measured doses and the first time to use the Linear Energy Transfer (LET) spectra measured by the TriTel 3D silicon detector telescope for corrections during data evaluation of the Pille thermoluminescent dosimeters. By evaluating the deposited energy spectra recorded by TriTel and the glow curve obtained after the on-ground read-out of the retrieved Pille dosimeters, the LET spectra, the average quality factor of the cosmic radiation as well as the absorbed dose and the dose equivalent can be determined. The results of the two measurements will be intercompared and will be used to make an estimation of the doses that might be expected during launch of manned space flights or even commercial air flights. This paper will present the main objectives of the CoCoRAD experiment, the radiation environment in the altitude range of the BEXUS balloon, the overview of the experiment and its parts, and the expected methods for the data evaluation.