AOGS 2005

Space Radiation Measurements by NaI and LiI Scintillation Spectrometers and Liulin-4J Silicon Spectrometer in Japanese Air Lines

YUKIO UCHIHORI[1], KAZUNOBU FUJITAKA[1], HISASHI KITAMURA[1], KUMIE NOJIMA[1] and MASAHIRO OKANO[2]

[1]*National Institute of Radiological Sciences*
[2]*Radiation Effects Association*

Measurements of space radiation in aircrafts performed in many domestic and international routes. The measurements have been done using NaI Scintillation Spectrometers and LiI Scintillation Spectrometer. There are two types of NaI Scintillation Counters which are 3 inches spherical scintillator and 2 inches cylindrical scintillator which were developed Riken in Japan. One is surrounding LiI scintillation counter, a 5 inches polystyrene sphere is located. Because of this polystyrene sphere, high energy neutrons are moderated to thermal neutrons and the thermal neutrons are converted to 4He and 3H particles and recorded high deposit energy in the LiI scintillation counter. The other is used 2 inches NaI Detector with GPS system. Intensities of space radiation in aircrafts at high altitude can be measured. The ratios of charged particles which were measured in NaI SC and neutron which were measured LiI SC were correlated the altitude of aircraft and geomagnetic latitude.

Using Liulin-4J silicon spectrometers which were developed in Bulgaria, a part of charged particles could be observed. The results from Liulin-4J can be compared our NaI SC and LiI Sc.

We report these data in many domestic and international routes and results of comparison of these detectors and estimated doses by simulation codes.