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Equivalent dose measurements on board an Armenian Airline flight and Concord (9–17 km)

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Abstract

The results of investigations of the neutron component (E=1–10 MeV) of cosmic radiation on board the "Armenian Airlines" aircrafts using nuclear photoemulsion are presented. The emulsions were exposed on the flights from Yerevan to Moscow, St.-Petersburg, Beirut, Athens, Frankfurt, Amsterdam, Paris and Sofia, and on Concord supersonic flights from Paris to New York.

The dependence of the neutron fluxes, and on absorbed and equivalent doses on the flight parameters were investigated. On the flights of the supersonic Concord, with an altitude of 17 km, the neutron fluxes were essentially higher in comparison to those measured on Armenian airliners. It is interesting to note, that the neutron flux and equivalent dose rate decrease with altitude up to 470 km in space, for example, on board the STS-57.

The shape of the differential energy spectrum for fast neutrons is the same on all Armenian airlines flights, but significantly different at 17 km altitude, where the flux in the energy region above 3 MeV is increasing.

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