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## Effective dose calculation at flight altitudes with the newly computed yield function

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An important topic in the field of space weather research is estimation of the expected effective dose of aircrew at flight altitudes due to cosmic rays of solar and galactic origin. The primary cosmic ray particles induce a complicated nuclear-electromagnetic-muon cascade in the Earth atmosphere. The secondary particles form the main source of increased exposure at flight latitudes compared to the sea level. In this work we propose a numerical model for computation of the effective dose at flight altitude. It represents a full chain analysis, namely estimation of the solar particle spectral and angular characteristics from neutron monitor data and application of the newly computed yield function for the effective/ambient dose. The new computed yield functions for conversion of secondary particle flux to dose were obtained on the basis of extensive Monte Carlo simulation of the atmospheric cascade induced by primary protons and alpha particles and subsequent application of recently computed conversion coefficients. A comparison with the reference data is performed. A good agreement is achieved. Several example calculations are demonstrated.

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