

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

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RADIATION RISK IN HUMAN SPACE MISSIONS: "HOW MUCH" OR "WHEN"?

Abstract

Galactic cosmic radiation is generally acknowledged as one of the main health risks for human space exploration. This is generally ascribed to the potential high effectiveness of energetic heavy ions in the induction of late effects, including cancer. We will present results from accelerator experiments suggesting that densely ionizing radiation may rather accelerate natural aging processes. Therefore, rather than an increased probability of stochastic effects, cosmic rays may cause a time-shift, i.e. the effect will be observed earlier. These experimental data are supported by the epidemiological analyses of cataracts in astronauts. The impact of this paradigm shift can be substantial in space radiation risk assessment and crew selection, in particular for the age-dependence of the risk in space missions.