

Radiation hazards in space

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The space radiation field poses a significant hazard both for humans as well as for sensitive electronic equipment. It consists mainly of swift ions from protons up to iron with energies exceeding those obtainable by even the most powerful accelerators. These particles deposit large amounts of energy in sensitive structures of living systems or electronic control circuits causing e. g. mutations and neoplastic transformations which can ultimately lead to cancer in exposed astronauts. This paper describes the radiation parameters, doses expected in space travel scenarios and the radiobiological background of risk estimations, both experimentally and theoretically. It will be shown that similar approaches may also be used to assess the possible damage to electronic microcircuits. It is concluded that radiation risk is one of the most important hazards in manned and unmanned space exploration.