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Radiation Fields, Effects and Risks in Human Space Missions (5)

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NEUTRON FLUENCE AND EFFECTIVE DOSE FROM GALACTIC COSMIC RAYS IN A SHIELDED ENVIRONMENT IN SPACE

Abstract

Shielding from the harsh radiation environment has an important role in future exploration missions. Secondary neutrons from galactic cosmic rays could lead to harmful effects on humans and physical systems. Assessing the radiation environment inside space habitats is vital for determining the viable methods used for secondary neutrons measurement. In this study, we perform a series of Monte Carlo simulations to predict the neutron fluence and neutron dose in different materials used for shielding. These simulations cover various materials including aluminum, LiH, polyethylene and hybrid composites with thicknesses ranging between 2.7 and 54 g/cm^2.$Sincemostneutrondosimetersinspacemeasureneutronenergiesfromthethermalrangeu$
$20MeV, thisworkwillhelpinassessingtheimpactofneutronswithenergiesabove20MeV.$