

Abstract Submitted
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Challenges and Issues of Radiation Damage Tools for Space Missions RAM TRIPATHI, JOHN WILSON, NASA Langley Research Center — NASA has a new vision for space exploration in the 21st Century encompassing a broad range of human and robotic missions including missions to Moon, Mars and beyond. Exposure from the hazards of severe space radiation in deep space long duration missions is ‘the show stopper.’ Thus, protection from the hazards of severe space radiation is of paramount importance for the new vision. Accurate risk assessments critically depend on the accuracy of the input information about the interaction of ions with materials, electronics and tissues. A huge amount of essential experimental information for all the ions in space, across the periodic table, for a wide range of energies of several (up to a Trillion) orders of magnitude are needed for the radiation protection engineering for space missions that is simply not available (due to the high costs) and probably never will be. In addition, the accuracy of the input information and database is very critical and of paramount importance for space exposure assessments particularly in view the agency’s vision for deep space exploration. The vital role and importance of nuclear physics, related challenges and issues, for space missions will be discussed, and a few examples will be presented for space missions.

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