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Space Radiation a Potential Show Stopper in Missions to Moon and Mars and beyond RAM TRIPATHI, NASA Langley Research Center, Hampton, VA — Exposure from the hazards of severe space radiation in deep space/ long duration missions is 'the show stopper' for NASA's vision of missions to Moon, Mars and beyond. The key to the success of human exploration and development of space is protecting astronauts, habitat and electronics against the hazards of severe space radiation environment. Accurate risk assessments critically depend on the accuracy of the input information about the interaction of ions with materials, electronics and tissues. This is further augmented by nonexistence of in vivo or in vitro data or studies about continuous long duration exposure of radiation to tissues. Due to paucity of the huge amount of needed experimental input data about the interaction of radiation, it is imperative to develop reliable accurate models of nuclear reactions and structures that form the basic input ingredients. State-of-the-art nuclear cross sections models have been developed at the NASA Langley Research center. The vital role and importance of nuclear physics for space missions would be discussed and a few examples would be presented for space missions.

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