

Abstract Submitted
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Nuclear Physics on Critical Path for Space Missions RAM TRIPATHI, NASA Langley Research Center — Protection from hazards of space radiation has been identified as one of the five NASA's critical areas for human space flights. The space radiation environment consists of galactic cosmic rays (GCR), solar particle events (SPE), trapped radiation, and includes ions of all the known elements over a very broad energy range. These ions penetrate spacecraft materials producing nuclear fragments and secondary particles that damage biological tissues, microelectronic devices, and materials. One of the major considerations in human exploration and development of space is protecting astronauts, habitat and electronics against the hazards of severe deep space radiation. Accurate risk assessments critically depend on the accuracy of the input information about the interaction of ions with materials, electronics and 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.

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