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ASTRORAD RADIATION PROTECTION VEST: ENHANCING HUMAN SAFETY IN DEEP SPACE

Abstract

Radiation, a serious threat to astronauts outside Earth, can cause a variety of problems. This abstract covers the effectiveness of AstroRad, a stem cell-based protective device that can prevent the dangers of radiation to astronauts. Developed by StemRad and Lockheed Martin, this protective device prevents REID (Radiation-Related Death), ARS (Acute Radiation Syndrome) caused by solar particle events. AstroRad's special design selectively protects the most sensitive organs and tissues from radiation and is massively effective compared to providing radiation protection for the ship. This vest, made of a high-hydrogen polymer with a protective layer, provides the same level of protection as the storm shelter on board Orion. For the MARE experiment, two mannequin torsos (one with the AstroRad vest, the other without the vest) were sent to the Moon to measure radiation levels and were analyzed at the end of the mission and shown to provide protection from the high-energy proton radiation encountered by astronauts. After analyzing the sensor data, recommendations were made for improved designs and new materials.