

Abstract Submitted
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Compact Cosmic Ray Detector for On-orbit Testing of Shielding Materials¹ STEPHEN BERKEBILE, JAMES R. GAIER, NASA Glenn Research Center — It is widely recognized that radiation poses an exposure risk to astronauts on long term missions in deep space. For deep space missions longer than six months, the principal risk to astronauts is due to galactic cosmic rays (GCRs). New shielding materials must be developed if this risk is to be mitigated. A high fidelity materials testbed, which will be integrated into the MISSE-X suite of experiments slated to fly on the International Space Station, is being developed to validate the GCR shielding effectiveness of candidate materials. A compact detector design will be presented which is intended to determine through which of nine candidate materials a particle has passed, identify the type of particle, and estimate its linear energy transfer. These tasks will be accomplished by using solid-state photomultipliers attached to two sets of polystyrene scintillating fiber arrays and a Tl-doped CsI crystal scintillator.

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