Abstract Submitted
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Computational methods for developing optimal attenuation of radiation for interplanetary travel (The MISSFIT Collaboration)[1] KEEGAN FINGER, WILLIAM THOMAS, DAVID ATRI, JUSTIN BRUTGER, TREVIN DETWILER, GANNON HENRY, LUKE HOFMANN, TRACE JOHNSON, JULIE LAFRANZO, MEREDITH LUTTRELL, LORIEN MACENULTY, MOLLY MCCORD, GAVIN MENNING, ETHAN MORTON, NOAH PETERSON, ATHANASIOS PETRIDIS, AJAL RC, HUNTER STOUT, DANIEL VISCARRA, Drake University — One of the greatest problems with manned interplanetary travel is the prolonged exposure to high intensity radiation. The purpose of this work is to determine a viable shielding solution via a combination of magnetic-fields, ionization chambers and passive absorbers by developing the computational methods required to properly simulate the propagation of high-energy particles through such systems. We calculate a magnetic field employing a relaxation algorithm involving the magnetic vector potential. We use the output in a separate relativistic propagation code to calculate the trajectory of charged particles through various media. We produce highly accurate results that illustrate particle trajectory around the spacecraft. We have used deterministic code for particle trajectory and energy loss calculation but now we are including a Monte-Carlo process. We study various particles at energies encountered in the solar wind and cosmic rays with varying magnetic field configurations.

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