Abstract Submitted
for the DNP19 Meeting of
The American Physical Society

Magneto-Ionization Spacecraft Shield for Interplanetary Travel: Conceptual Design[1] LORIEN MACENULTY, DAVID ATRI, SEAN CUSICK, DOUG DRAKE, KEEGAN FINGER, LUKE HOFMANN, TRACE JOHNSON, JULIE LAFRANZO, AURORA LYON, DANIEL MADISON, MOLLY MCCORD, ATHANASIOS PETRIDIS[2], GAVIN MENNING, MELANIE SCHNURR, WILL THOMAS, Drake University, MAGNETO-IONIZATION SPACECRAFT SHIELD FOR INTERPLANETARY TRAVEL TEAM[3] — A central issue facing manned interplanetary travel is intense radiation exposure to solar wind and cosmic rays. MISSFIT is dedicated to conceptually developing a shield that combines passive and active shielding similar to Earth's magnetic field and ionosphere. The system will focus and absorb low-energy particles and deflect high-energy particles. Subgroups are assigned tasks to investigate multiple components of the system, including the motion of charged particles in complex magnetic fields, preferable structures of magnetic fields, energy loss in ionization of gases, and the composition of solar wind and cosmic rays. We will present results pertaining to various shapes and intensities of magnetic field coupled with the effects of those fields on particle trajectory calculations. Furthermore, we will expand on our experimental analysis of gamma ray attenuation in Demron and Vectran, fabrics that claim high radiation protection properties. Upon completion of a conceptual design, funding from NASA to proceed with a technical design will be pursued.

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Date submitted: 03 Jul 2019 Electronic form version 1.4