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Magneto-Ionization Spacecraft Shield For Interplanetary Travel(MISSFIT): General Overview MOLLY MCCORD, DAVID ATRI, JUSTIN BRUTGER, KEEGAN FINGER, LUKE HOFMANN, TRACE JOHNSON, TIMOTHY KUTNINK[1], JULIE LAFRANZO, MEREDITH LUTTRELL[2], LORIEN MACENULTY, GAVIN MENNING, ETHAN MORTON, NOAH PETERSON, ATHANASIOS PETRIDIS[3], AJAL RC, WILL THOMAS, DANIEL VISCARRA, Drake University — One issue concerning manned interplanetary travel is intense radiation exposure from solar wind and cosmic rays. The purpose of this collaboration is to develop a conceptual design for a magneto-ionization shield for radiation and a technique to create artificial gravity. One aspect of the conceptual design is the development of a magnetic field that will deflect high energy charged particles and trap lower energy particles in regions of space where those particles will lose energy through scattering, taking inspiration from the Earth's ionosphere and magnetic field. A concern of the group is debris collisions because of the large gas-containing chambers that aide in shielding. Materials are being investigated for their mechanical response to collisions with small particles and their passive radiation absorption properties. These materials include Demron, Nitinol, Carbon-fiber, and other materials. This interdisciplinary collaboration is a student-led project involving students of all academic years that meets weekly to exchange information and discuss progress. This project is supported by the Iowa Space Grant Consortium under NASA Award No. 80NSSC20M0107.

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