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Magneto-Ionization Spacecraft Shield For Interplanetary Travel<sup>1</sup> GAVIN MENNING, DAVID ATRI, JUSTIN BRUTGER, KEEGAN FINGER. LUKE HOFMANN, TRACE JOHNSON, JULIE LAFRANZO, MEREDITH LUTTRELL<sup>2</sup>, LORIEN MACENULTY, MOLLY MCCORD, ETHAN MORTON, NOAH PETERSON, ATHANASIOS PETRIDIS<sup>3</sup>, AJAL RC, WILL THOMAS, DANIEL VISCARRA, Drake University — One of the main issues concerning manned interplanetary travel is intense radiation exposure from solar wind and cosmic rays. The purpose of this collaboration is to develop and test a conceptual design for radiation shielding via magnetic fields and the ionization of particles in a gas. The conceptual design seeks to absorb the energy of low energy particles and deflect higher energy particles, taking inspiration from the Earth's ionosphere and magnetic field. Since there are numerous factors that must be considered, subgroups have been created to more effectively work on various aspects of the project. The factors include the relativistic motion of charged particles in complex magnetic fields, energy loss due to ionization in gases, debris collisions with the craft, effective ways to generate artificial gravity, and the composition and spectrum of solar wind and cosmic rays. This collaboration is a student-led project involving students of all academic years, and a few disciplines, that meet weekly to exchange information, discuss progress, and assign tasks.

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