Abstract Submitted
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Magneto-Ionization Spacecraft Shield for Interplanetary Travel: Experimental TRACE JOHNSON, DAVID ATRI, JUSTIN BRUTGER, KEEGAN FINGER, LUKE HOFMANN, JULIE LAFRANZO, LORIEN MACENULTY, MOLLY MCCORD, GAVIN MENNING, ETHAN MORTON, NOAH PETERSON, ATHANASIOS PETRIDIS[1], AJAL RC, WILL THOMAS, DANIEL VISCARRA, Drake University, MISSFIT COLLABORATION — Extreme radiation levels pose a significant danger to any astronauts that venture outside of the Earth's protective magnetic field and atmosphere. Our general solution to the radiation problem includes both active and passive shielding. The active shield consists of a large electro-magnet that generates a strong magnetic field capable of deflecting charged particles or funneling the particles to a pole of the spacecraft. At either pole of the spacecraft, there will be large gas-filled bubbles that absorb energy from particles not deflected by the magnetic field. A strong yet flexible material is needed to contain the gas. An important feature of our group's work is experiments conducted on the ability of various materials to absorb radiation. We tested materials called Demron and Vectran. These materials will act as a passive shield to both radiation and debris in space. Our current experiments examine mechanical properties (i.e. tensile strength, melting point) to understand how these materials will interact in collisions with small debris in space.

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