

Plasma Magnetic Shield for Crew Protection John Slough, University of Washington

Exposure to the energetic particles associated with solar energetic particle events and galactic cosmic rays are known radiation hazards for human exploration. Material shielding and superconducting solutions add substantial mass to spacecraft and provide shielding over very limited areas. It is proposed here to provide the shielding by making use of ambient low density plasma ejected from the spacecraft that supports the large scale currents required to provide sufficient magnetic flux to deflect the energetic particles. Based on laboratory results, such a closed magnetic configuration can be produced by force-free currents and is referred to as the plasma magnetic shield.

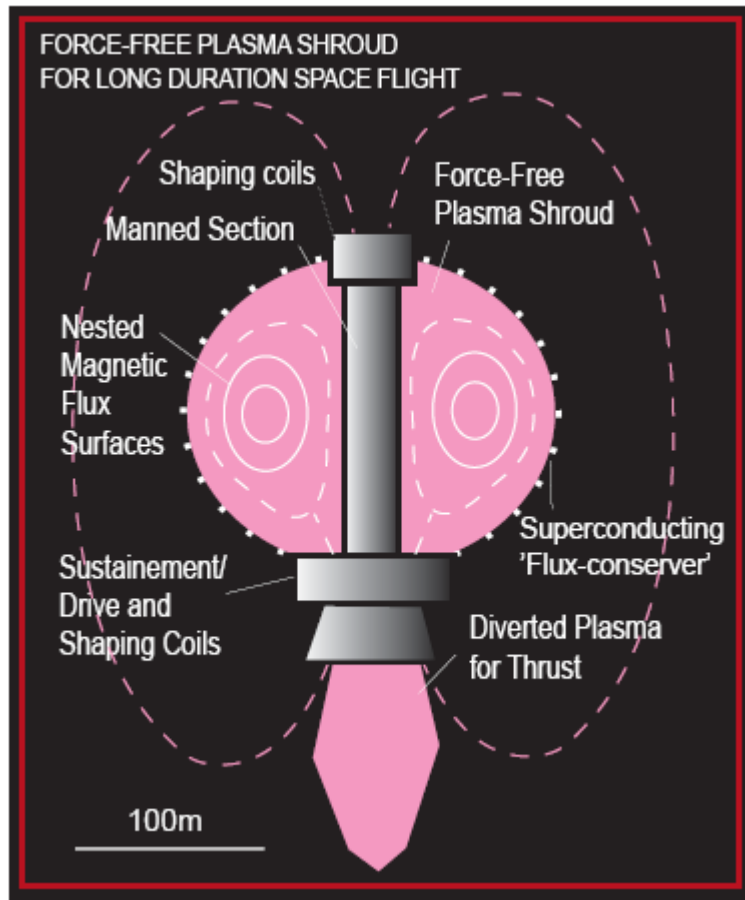


Figure: Schematic of the Plasma magnet concept.