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Project: Optimization of Superconducting Magnets and Space Travel

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So far, one promising method of protecting astronauts from cosmic radiation is generating a magnetic field similar to the Earth's magnetosphere to avoid high radiation in space.



Mass and power consumption are significant to the practical implementation of building a device to generate strong magnetic field.

In this case, we explore using superconductors to generate the magnetic and optimize the previous models.





- 1. Optimize coil configuration parameters (coil size and shape, and distance from spacecraft, and operating current)
- 2. Use Ansys Maxwell to analysis magnetic field and magnetic forces
- 3. Figure out reasonable cryocoolers used in the space
- 4. Figure out requirements to reduce mass, power consumption and the most efficient and safe use of YBCO superconductors

