

Project Details

ROSES ID: NRA-00-OSS-01

Selection Year: 2001

Program Element: Independent Investigation: LWS

Project Title:

Modeling Geomagnetic Cutoffs for Solar Energetic Particle Hazards on the International Space Station and Other Spacecraft

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Summary:

A recent report from the National Academy of Sciences, entitled Radiation and the International Space Station: Recommendations to Reduce Risk, identified the need for accurate "mapping [of] the latitudes to which [solar energetic] particles can penetrate under a variety of geomagnetic conditions to the altitude of ISS" as a "crucial project deserving the earliest possible attention" "because its potential impact on radiation risk reduction". In recognition of this need, the ROSS-2000 NRA specifically mentions "models of the near real-time latitudinal cutoff of solar energetic particles" among the objectives of the LWS/DATM program. In response to these needs, we propose to develop new models and software tools for evaluating the near-real time geomagnetic cutoffs, based on numerical integration of particle trajectories through semi-empirical models of the near-Earth magnetic fields. We further propose to validate our models by comparison with high time-resolution (