2025 Workshop: COMP/RB-SoS

Long title
Comparative Planetary Radiation Belt Processes
GEM-only session
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Description

Radiation belts are present around Earth, Jupiter, Saturn, Uranus, and Neptune, representing all the sufficiently large and magnetized planets in the Solar System. This fact is quite remarkable, since it implies that particle trapping and acceleration in magnetospheric systems is potentially a universal process not only in planetary magnetospheres but also in other astrophysical systems. Understanding which processes may be common or unique to a magnetospheric system and the reasons behind them requires aggregating observations and comprehension of radiation belts across these planetary systems. We propose a mixed format session that blends scene setting presentations with a small number of contributed talks and ample time devoted to an open discussion of the common topics we wish to overcome. These topics will focus on the RB-SoS science goals, since this is their inaugural GEM workshop. Specifically, we'll focus on particle dynamics via wave-particle interactions and how radiation belts are modulated by coupled systems in magnetospheres throughout our solar system.

Justification

The recent Solar and Space Physics Decadal Survey highlighted the importance of comparative magnetospheric processes and specifically listed planetary radiation

belts as a longer-term goal for NASA’s heliophysics. GEM is probably the only forum where these diverse communities come together to discuss such topics; therefore, it is critical that we keep workshopping these important issues with the aim to better understand magnetospheric systems overall and to help NASA achieve its longer-term goal. The topics of discussion are relevant to both focus groups.

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