

Project Details

ROSES ID: NRA-02-OSS-01

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Program Element: Independent Investigation: LWS

Project Title:

Dynamics of Radiation Belt Electrons Associated with Solar Wind Variations

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Summary:

The objective of the proposed work is to enhance our understanding of the physical mechanisms governing the variation of relativistic electrons in the inner magnetosphere. Outer radiation belt electrons vary on solar cycle, semiannual, and solar rotation time scales, and with geomagnetic storms. The basis of this proposal is the recent achievement of exciting new results in predicting the MeV electron flux at geosynchronous orbit 1-2 days in advance [Li et al., 2001a] based on measured solar wind parameters. This work provides a resolution to several long-standing mysteries of the variations of the MeV electron fluxes around geosynchronous orbit. The results have also raised new questions. For example, while the variation of MeV electrons at geosynchronous orbit can be attributed mostly to the variation of solar wind velocity itself, the variation of MeV electrons deeper inside the magnetosphere (L