

Opportunity Title: Heliophysics Science: Physics of Earth's Magnetospheric Boundaries

Opportunity Reference Code: 0062-NPP-NOV23-GSFC-HelioSci

Organization National Aeronautics and Space Administration (NASA)

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Application Deadline 11/1/2023 6:00:59 PM Eastern Time Zone

Description This area of investigation concerns the structures and fluctuations in the magnetic fields and low energy proton and electron particles present in the Earth's magnetospheric boundaries and the surrounding solar wind. Fluctuations can appear as ultralow frequency waves determined from the magnetic field data using Fourier analysis. We study the structure of magnetospheric boundaries such as the bow shock and the magnetopause, emphasizing the flow of plasmas and waves starting upstream of the Earth's bow shock, then passing into and through the magnetosheath region, and into the tail and/or the magnetosphere proper. We also consider the response of the boundaries separating the regions to the flows. Tools that exist to help in the analysis of the boundaries include a data base of bow shock crossings compiled from IMP 8, Geotail, Cluster and Magion-4 (Interball Tail's subsatellite) spacecraft, and a data base of magnetopause crossings compiled from the Hawkeye and ISEE satellites. Tools also include Fourier analysis, shock normal determination software (which leads to shock characterization), minimum variance analysis, and boundary models. The CDAWeb system can be used to look for data on various time scales from current SEC missions like Cluster, Wind, ACE, IMP 8, Geotail, THEMIS, Van Allen Probes, and MMS, and Polar, and will include future data from Living with a Star and Solar Terrestrial Probes as these become available. We expect the applicant to obtain detailed knowledge in the use and interpretation of major types of magnetospheric data, and to develop and utilize modeling and analysis tools for visualizing space physics data.

Location:

Goddard Space Flight Center
Greenbelt, Maryland

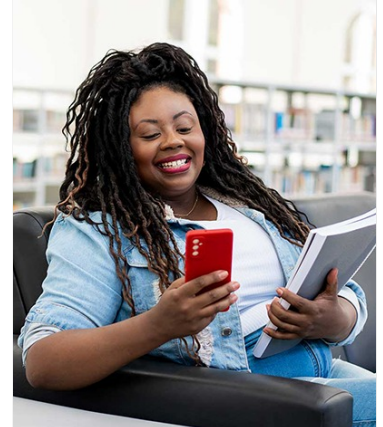
Field of Science:Heliophysics Science

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Applications with citizens from Designated Countries will not be accepted at this time, unless they are Legal Permanent Residents of the United States. A complete list of Designated Countries can be found



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at: <https://www.nasa.gov/oiir/export-control>.

Eligibility is currently open to:

- U.S. Citizens;
- U.S. Lawful Permanent Residents (LPR);
- Foreign Nationals eligible for an Exchange Visitor J-1 visa status; and,
- Applicants for LPR, asylees, or refugees in the U.S. at the time of application with 1) a valid EAD card and 2) I-485 or I-589 forms in pending status

Eligibility Requirements

- **Degree:** Doctoral Degree.