

Opportunity Title: New Techniques for Magnetic Field Measurements in the Inner Heliosphere

Opportunity Reference Code: 0256-NPP-JUL24-GSFC-HelioSci

Organization National Aeronautics and Space Administration (NASA)

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How to Apply All applications must be submitted in [Zintellect](#)

Application Deadline 7/1/2024 6:00:59 PM Eastern Time Zone

Description Description:

Variability of the Sun-Earth system is mainly driven by solar magnetism. Currently, the distribution of solar magnetic field is routinely measured mainly in the photosphere and sometimes in the chromosphere. Solar eruptive events originate in the corona, where magnetic field measurements are rare that too close to the Sun. New techniques using shock stand-off distance and flux rope from eruption data (FRED) provide means of measuring magnetic field strength in the ambient medium and in coronal magnetic flux ropes, respectively. These techniques can be used to determine the magnetic fields typically in the coronagraphic field of view. At larger distances from the Sun, one has to use other techniques such as the Faraday rotation of spacecraft signals.

Experimental research is being carried out to measure the magnetic field in the Sun-Earth connected space using the Faraday rotation. Given the enormous distances that the radio signals have to propagate (about 2 au), there are challenges in transmitting radio signals and receiving them in space. The research involves design studies and laboratory experiments to make the Faraday rotation technique usable in various space situations including multiple spacecraft transmitting and receiving in 1-au orbits around the Sun.

Field of Science: Heliophysics Science

Advisors:

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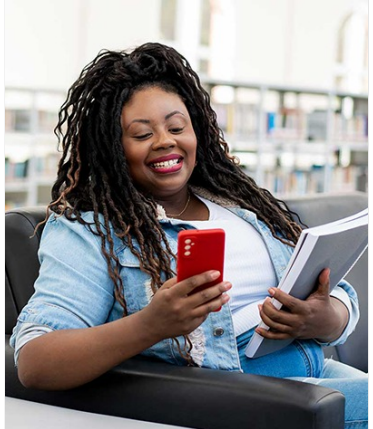
Applications with citizens from Designated Countries will not be accepted at this time, unless they are Legal Permanent Residents of the United States. A complete list of Designated Countries can be found at:

<https://www.nasa.gov/oirr/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.



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