

**Opportunity Title:** Astrophysics: Chromospheres and Winds of Cool Stars

**Opportunity Reference Code:** 0009-NPP-NOV23-GSFC-Astrophys

**Organization** National Aeronautics and Space Administration (NASA)

**Reference Code** 0009-NPP-NOV23-GSFC-Astrophys

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

**Description** The International Ultraviolet Explorer (IUE) satellite and the Goddard High Resolution Spectrograph (GHRS), Space Telescope Imaging Spectrograph (STIS), and Cosmic Origins Spectrograph (COS) on the Hubble Space Telescope have provided us with a wealth of information on the outer atmospheres (chromospheres, transition regions, winds, and circumstellar shells) of stars cooler than the Sun. Emission lines formed in these regions are visible throughout the ultraviolet spectral ranges of these instruments, including some of the strongest lines of the most abundant ions. IUE, GHRS, STIS, and COS spectra allow us to obtain estimates of the density, temperature, and velocity structure of these outer atmospheric regions. These regions also provide a natural laboratory for the study of line fluorescence processes, which flourish in low-density plasmas that are filled with strong line radiation. Current research concentrates on the higher luminosity, cool stars (K-M giants and supergiants), and includes studies of the dynamics of the outer atmospheres (flow and turbulent velocities), line profiles and formation, the derivation of thermodynamic constraints for theoretical models, and the computation of theoretical models.

**Location:**

Goddard Space Flight Center  
Greenbelt, Maryland

**Field of Science:** Astrophysics

**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/ojir/export-control>.

Eligibility is currently open to:

- U.S. Citizens;
- U.S. Lawful Permanent Residents (LPR);



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- 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.