

Opportunity Title: Astrophysics: The Physics of Compact Objects

Opportunity Reference Code: 0079-NPP-JUL24-GSFC-Astrophys

Organization National Aeronautics and Space Administration (NASA)

Reference Code 0079-NPP-JUL24-GSFC-Astrophys

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

Description A unified approach is taken in the study of the physics of compact objects (i.e., objects whose size is a few Schwarzschild radii). These objects span roughly ten decades in luminosity, from galactic x-ray sources to luminous quasars, with a variety of morphologies and global spectral characteristics (i.e., radio bright, radio quiet, blazar, and Seyfert I and II). Generally, it is thought that the engine responsible for the release of the radiation, presumably by accretion on a compact object, is similar in all of these object classes. Their apparent differences are attributed to diverse physical conditions in their environments; however, there is no successful framework for understanding such a classification in terms of their physical parameters (e.g., magnetic field and gas density) and in relation to the energy release mechanism. Because the spectra of these objects cover a large number of decades, with roughly equal energy per decade, we have initiated a modeling program, which employs nonthermal processes. The purpose of this research is to provide model spectra that extend from radio to gamma rays, which will allow us to examine and possibly uncover correlations between the emission in diverse frequency bands. We are currently modeling radio loud quasars, placing particular emphasis on their relationship to the radio quiet counterparts.

Location:

Goddard Space Flight Center
Greenbelt, Maryland

Field of Science: Astrophysics

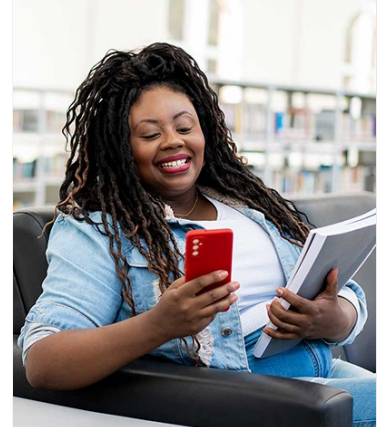
Advisors:

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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/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



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pending status

Eligibility Requirements • **Degree:** Doctoral Degree.