

Opportunity Title: Astrophysics: X-Ray Timing Studies

Opportunity Reference Code: 0091-NPP-NOV23-GSFC-Astrophys

Organization National Aeronautics and Space Administration (NASA)

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

Description The x-ray sky is dramatically variable. Variability time scales range from days for active galactic nuclei to sub-milliseconds for neutron stars. Studies of temporal variability have always played important roles in identifying and understanding compact objects. This is especially true since the discovery of sub-millisecond quasi-periodical variability with the Rossi X-ray Timing Explorer (RXTE). With sub-millisecond temporal variability in both the persistent and bursting flux from LMXBs, we are probing the strong gravitational field near neutron stars and stellar mass black holes. We are beginning to analyze and understand a massive amount of data being collected by RXTE. In the years to come, we expect to be able to test different gravity theories. Although these theories predict the same phenomenologies as Einstein's general relativity where the gravitational field is weak, they give different predictions in strong gravity. Neutron stars have some of the most accurately measured masses; however, their physical sizes are not yet accurately measured. Various estimates and highly model-dependant measurements have placed their radii on the order of 10 km. With the timing data, we expect to find new ways of measuring the neutron star radius for a few special stars. We expect to compare the behaviors of accreting matter near neutron stars and black holes.

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:



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- 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.