

Opportunity Title: Astrophysics: Galactic Evolution Determined from Imaging and Spectroscopy of X-ray Emission from Extended Galactic Structure

Opportunity Reference Code: 0134-NPP-NOV23-GSFC-Astrophys

Organization National Aeronautics and Space Administration (NASA)

Reference Code 0134-NPP-NOV23-GSFC-Astrophys

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

Description Imaging and spectroscopy of X-ray emission from extended galactic phenomena (e.g., supernova remnants, superbubbles, and galactic halos) provide insights into the structure and evolution of galaxies. The hot plasma producing this emission contains the metals produced by supernovae and is an intermediate stage in the life cycles of stars and planetary systems, and is critical to understanding the energy balance of a galaxy. Data from current satellites such as XMM-Newton and Chandra combined with past observatories such as ROSAT are used to determine the distribution of the hot plasma both in the Milky Way and external galaxies, and to study the interactions with the surrounding cooler interstellar medium.

More locally, diffuse X-ray emission is produced by charge exchange between the solar wind and both Earth's exosphere (primarily in the magnetosheath) and interstellar neutrals flowing through the solar system. This emission can be used as a probe of magnetosheath phenomena, and understanding this emission as a background component is vital to the interpretation of observations of galactic emission which subtend solid angles greater than the field of view of the instruments.

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.