Postbaccalaureate Positions in Astrophysics Science and Solar System Exploration Divisions at Goddard Space Flight Center

Applications are now being accepted for short-term postbaccalaureate research positions to support the Astrophysics Science and Solar System Exploration Divisions at NASA/Goddard Space Flight Center (NASA/GSFC) in Greenbelt, MD. The position is funded by Southeastern Universities Research Association (SURA) through the Center for Research and Exploration in Space Science and Technology II (CRESST II).

The Astrophysics Science Division conducts a broad program of research in astronomy, astrophysics, and fundamental physics. Individual investigations address issues such as the nature of dark matter and dark energy, which planets outside our solar system may harbor life, and the nature of space, time, and matter at the edges of black holes.

The Solar System Exploration Division conducts theoretical and experimental research to explore the solar system and understand the formation and evolution of planetary systems. Laboratories within the division investigate areas as diverse as astrochemistry, planetary atmospheres, geochemistry, geophysics, geodynamics, space geodesy, extrasolar planetary systems, and comparative planetary studies.

Positions available within the Astrophysics Science and Solar System Exploration Divisions span a variety of research areas. Successful candidates will be chosen to work on one of the research projects listed below.

- **Project #1** - Exoplanet spectroscopy modeling with the Planetary Spectrum Generator and development of the open-access exoplanet software database called the Exoplanet Modeling & Analysis Center. The selected candidate will be working with Dr. Avi Mandell.
- **Project #2** - Let's get our hands dirty with X-ray reflection spectroscopy of famous prominent Black Hole X-ray Binary stars in our Galaxy! Using NASA space telescope data (XMM-Newton, NuSTAR), we will constrain key parameters with state-of-the art physical models and explore how machine learning can further advance such analysis. The selected candidate will be working with Dr. Panayiotis Tzanavaris.
- **Project #3** - Mining for GEMS in TESS - Analysis of photometric and spectroscopic data of exoplanet candidates and development of a pipeline to vet and validate giant planet candidates discovered by TESS orbiting low mass stars. The selected candidate will work with Dr. Caleb Cañas and Dr. Knicole Colón.
- **Project #4** - There is an ongoing program of multi-wavelength studies of active galactic nuclei (AGN) and starburst galaxies. The post-bac would become involved in studies of the AGN-host galaxy connection and co-evolution and would develop analysis skills related to data that includes XMM-Newton, Chandra, NuSTAR, Spitzer, GALEX, VLA, HST and other ground and space-based missions. The selected candidate will work with Dr. Kimberly Weaver.

- **Project #5** - Join our cutting-edge astrophysics research on neutron stars and pulsars, utilizing Fermi and NICER data alongside advanced computational techniques, including MHD, PIC, and radiation codes, complemented by Markov Chain Monte Carlo and machine learning for enhanced computational efficiency. Engage in projects focusing on pulsar particle acceleration and neutron star parameter inference. Strong computational skills are required, with Fortran or C experience advantageous. The selected candidate will work with Dr. Constantinos Kalapotharakos.
- **Project #6** - The post-bac would work on scientific and software preparations to study the first billion years of galaxy formation, known as the Cosmic Dawn, using the Roman Space Telescope. This could include developing software; applying the software to relevant precursor data sets; and addressing related science questions using existing facilities. The project would succeed previous work described within WFIRST and LAGER. The selected candidate will work with Dr. James Rhoads and Dr. Sangeeta Malhotra.

Candidates should be soon or recent graduates with bachelor's degree in astronomy, physics, computer science, chemistry, or a related science, or engineering discipline. We encourage applicants who are considering applying to a graduate program in the near future, and who wish to expand their research experience in the interim to also apply. Successful candidates may have significant experience in scientific programming (Python in particular is a major plus) OR physical/chemical laboratory work.

To apply, each applicant should submit a Curriculum Vitae, unofficial transcript, and contact information for two references **to each project of interest** through the CRESST II Breezy application platform. An optional cover letter describing personal background and interest in the applicants' chosen project will also be accepted. After sponsors review applications, additional support materials may be requested which may include a work sample in the form of a report, poster, journal article, writing sample, or coding examples. The deadline to submit an application is **Sunday, March 31, 2024, at 11:59 pm EDT**.

This is a full-time position working on-site at NASA/GSFC for 40 hours/week. Salary and benefits are competitive, commensurate with experience and qualifications. The desired start date is in the range from April - September 2024, with an initial employment term of one year that may be extended for one additional year contingent on performance and availability of funds. Financial assistance for relocation expenses is possible and can be discussed as part of the onboarding process. For general questions, contact the CRESST II Office (cresstoffice@gmail.com). SURA is an equal opportunity employer and welcomes all to apply. EOE/M/F/D/V.