

Postdoctoral Scholar - Space Sciences Laboratory - UC
Berkeley
University of California Berkeley

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| Job Title | Postdoctoral Scholar - Space Sciences Laboratory - UC Berkeley |
| Department | Space Sciences Laboratory |
| Institution | University of California Berkeley Berkeley, California |
| Date Posted | Nov. 11, 2024 |
| Application Deadline | 04/18/2025 |
| Position Start Date | Available immediately |
| Job Categories | Post-Doc |
| Academic Field(s) | Physics - General Astronomy and Astrophysics |
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Job Description

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Postdoctoral Scholar - Space Sciences Laboratory - UC Berkeley

Position overview

Salary range: The UC postdoc salary scales set the minimum pay determined by experience level at appointment. See the following table(s) for the current salary scale(s) for this position:

https://www.ucop.edu/academic-personnel-programs/_files/2023-24/oct-2023-acad-salary-scales/t23.pdf . A reasonable estimate for this position is \$70,902-\$79,014.

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Percent time: 100

Anticipated start: 7/1/2024

Position duration: 2 years with the possibility of renewal depending on performance and availability of funding.

Application Window

Open date: April 18, 2024

Next review date: Monday, Dec 2, 2024 at 11:59pm (Pacific Time)

Apply by this date to ensure full consideration by the committee.

Final date: Friday, Apr 18, 2025 at 11:59pm (Pacific Time)

Applications will continue to be accepted until this date, but those received after the review date will only be considered if the position has not yet been filled.

Position description

POSITION DESCRIPTION

The Space Sciences Laboratory (SSL) at the University of California, Berkeley, seeks applicants for Postdoctoral Scholar position(s). SSL has a long history of developing and operating space instruments and full missions and seeks to hire the next generation of scientists and engineers to continue this legacy of research in space, to advance our current capabilities and to take advantage of numerous recent developments in space science and technology that enable new scientific discoveries. SSL currently seeks energetic, independent and qualified candidates to support NASA Helio-physics and/or Planetary missions in scientific research and/or hardware development mentored by their respective PI's. The specific projects that are hiring are as follows.

The Ionospheric Connection Explorer (ICON) is a NASA Explorer Mission that has been on orbit since late 2019, collecting ground-breaking measurements of thermospheric and ionospheric densities, temperatures and velocities at low to-middle latitudes. These can be used for investigations of topics such as ion neutral coupling in planetary atmospheres, atmospheric wave generation/propagation, geomagnetic storm effects, and lower-atmospheric forcing of Geospace.

The Solar Polarization and Directivity X-Ray Experiment (PADRE) is a 12U Cubesat observatory that will observe the Sun in hard X-ray (HXRs) from low earth orbit, with a planned launch in 2026. PADRE will investigate the accelerated electron angular distribution in solar flares. These observations

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will provide a unique opportunity to make stereoscopic X-ray observations and measure the electron anisotropy of individual flares confidently for the first time. PADRE has one science objective: determine the angular distribution of accelerated electrons from standalone and joint Solar Orbiter/STIX observations. This will allow the determination of the angular distribution of flare-accelerated electrons.

The Parker Solar Probe (PSP), a mission to touch the Sun, was launched in August 2018 to unlock the mysteries of the Sun's corona and solar wind. PSP has made 11 solar encounters so far, producing world-class measurements of the solar wind in the Sun's environment and inner heliosphere. SSL plays a lead role on the PSP science and instrumentation teams for The Solar Wind Electrons Alphas and Protons (SWEAP) and FIELDS investigations. SWEAP makes measurements of electrons, protons and helium ions and their properties such as density, velocity and temperature using electrostatic analyzers and a Faraday Cup. FIELDS consists of fluxgate and search coil magnetometers and 5 plasma voltage sensors and makes direct measurements of electric and magnetic fields, radio waves, Poynting flux, absolute plasma density and electron temperature. These two suite of instruments have collected unprecedented in-situ measurements to investigate the dynamics of solar coronal heating and solar wind acceleration.

HERMES (Heliophysics Environmental and Radiation Measurement Experiment Suite) is a suite of instruments that is mounted on the upcoming Lunar Gateway and will serve as a Heliospheric science experiment and a Space Weather station. The lunar gateway itself is a space station that is planned to be in a cislunar, near rectilinear halo orbit (NRHO) orbit around the moon with a short-term habitation module for humans and a science laboratory. For this mission, the SSL is building the ion sensor, called SPAN-Ion, which will provide the science payload with measurements of the ambient ions to measure definitive atmospheric loss around Earth and solar wind acceleration.

The Lunar Surface Electromagnetics Experiment (LuSEE) is a payload in development for a lunar landing as part of NASA's Commercial Lunar Payload Services (CLPS) program. The LuSEE program consists of two payloads for separate landers: one to the Schroedinger Basin near the lunar South Pole farside in late 2024. This payload will measure electric and magnetic fields on the surface, resulting from plasma/surface interactions, the lunar ionosphere, and photoelectron sheath effects. A second LuSEE payload will focus on exploratory low frequency (<50 MHz) radio astronomy measurements from the farside, in an effort to constrain cosmological models and provide best-yet low frequency foreground measurements.

The Compton Spectrometer and Imager (COSI) is an upcoming NASA Astrophysics Explorer satellite mission planned for launch in 2027. COSI observes in the 0.2-5 MeV gamma-ray energy band

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with a large (>25%-sky) field of view and daily all-sky coverage. COSI will study 511 keV electron-positron annihilation emission, nuclear lines, accreting black holes, and gamma-ray bursts. The germanium detectors have excellent energy resolution for making Galactic maps of 511 keV and nuclear line emission, and the instrument will also make measurements of source polarization. In addition to Astrophysics, COSI has a Science Enhancement Option for solar science, and applications from people interested in Astrophysics or solar physics will be considered.

SSL is committed to filling these positions by attracting a pool of candidates with representation along all axes of diversity. SSL invites applicants from all backgrounds and life experiences. Applicants with hardware or instrumentation backgrounds in addition to experience publishing science results using observations from heliophysics or planetary projects are especially encouraged to apply.

Responsibilities of the ICON Position Include:

- Develop an area of original scientific research, focused on observation of phenomena in the upper atmosphere by ICON, possibly in coordination with other space-based missions or ground-based observatories.
- Disseminate new results in peer-reviewed journals and international conferences.
- Present annually at the Space Science Seminar or other colloquia.
- Support discussions between the mission operations and science disciplines in developing new strategies for ICON observational campaigns. Support research efforts of undergraduate student interns during the school year and in the SSL Summer REU program.

Responsibilities of the PADRE Position Include:

- Characterization of Timepix2/3 based detectors.
- Characterization of the spectro polarimetric assembly
- Disseminate new results in peer-reviewed journals and international conferences.
- Present annually at the Space Science Seminar or other colloquia.
- Support development of new concepts of observations in space to advance scientific understanding.
- Support discussions between the science and mission operations with other heliophysics missions like Parker Solar Probe, the Solar Dynamics Observatory and others.

Responsibilities for Parker Solar Probe SWEAP/FIELDS Position(s) include:

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- Analyze PSP plasma (ions and electrons) data and/or (magnetic and electric) field, plasma wave, and radio data.
- Characterize PSP data with respect to understanding the effects of space weather, such as turbulence, waves, instabilities, wave-particle interactions, reconnection events, magnetic switchbacks, coronal mass ejections (CMEs), flares, solar energetic particles (SEPs), corotating interaction regions (CIRs). Help define instrument operation modes, selecting burst data, organizing. observing campaigns, and participating in subsequent science results Participate in instrument development for future missions.
- Develop models or simulations using MHD, hybrid or kinetic models of the solar wind.
- Disseminate new results in peer-reviewed journals and international conferences.
- Present annually at the Space Science Seminar or other colloquia.

Responsibilities for the HERMES position include:

- Participate in the SPAN-Ion instrument calibration and environmental testing, both at SSL and at NASA facilities.
- Design, test, and implement instrument configurations in order to complement or improve the science return.
- Collaborate with the Interdisciplinary Science team to define scientific goals and help disseminate the collected data among the community. Travel to meetings / conferences to discuss results and publish findings in peer-review journals.
- Operate vacuum chambers and high voltage sources.

Responsibilities for the LuSEE position include:

- Characterization and calibration of electric and magnetic field signal chains.
- Participation in instrument environmental testing.
- Modeling of antenna/spacecraft, antenna-regolith, and antenna/plasma interactions from DC to radio frequencies.
- Development of ground software in support of science analysis and operations.
- Science analysis, presentations, and publication of LuSEE science results.
- Mentoring of students and early career scientists.

Responsibilities for the COSI Position include:

- Performing testing, calibration, and evaluation of the performance of the COSI detectors

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- Participating in the development of the COSI data-analysis pipeline and testing it with simulations as well as astrophysical observations from the COSI 2016 balloon flight
- Helping with simulations needed to determine performance estimates Improving the COSI event selections and background reductions using machine learning

Program: <https://www.ssl.berkeley.edu/>

Qualifications

Basic qualifications (required at time of application)

PhD (or equivalent international degree) or enrolled in a PhD (or equivalent international degree) program

Additional qualifications (required at time of start)

- PhD or equivalent international degree
- No more than 3-years post PhD research experience

Preferred qualifications

- Ph.D. degree, or equivalent degree, in Planetary science, Physics, Astronomy, Astrophysics, Aerospace Engineering or a closely related field.

One or more of these qualifications are preferred for **ICON/PSP**:

- Comprehensive knowledge of physical processes occurring in both planetary atmospheres and/or space plasmas.
- Strong background in data analysis of measurements collected in the space environment.
- Experience in software development and deployment of collaborative tools for analysis or production.

One or more of these qualifications are preferred for **PADRE**:

- Experience with spaceflight hardware systems, including power and communications.
- Experience in the design, build and/or test of HXR detector systems.
- Experience with lab calibration of HXR detectors.
- Experience with X-ray or gamma-ray detectors.
- Record of publication and presentation of results at international conferences.

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One or more of these qualifications are preferred for **HERMES/LuSEE**:

- Experience with spaceflight hardware systems, including power and communications.
- Strong background in data analysis of measurements collected in the space environment.
- Experience in software development and deployment of collaborative tools for analysis or production.

Application Requirements

Document requirements

- Curriculum Vitae - Your most recently updated C.V.
- Cover Letter (Optional)
- Statement of Research
- Statement on Contributions to Advancing Diversity, Equity, and Inclusion - Statement on your contributions to diversity, equity, and inclusion, including information about your understanding of these topics, your record of activities to date, and your specific plans and goals for advancing equity and inclusion if hired at Berkeley (for additional information go to <https://ofew.berkeley.edu/recruitment/contributions-diversity>).
- (Optional)
- Publication List (Optional)

Reference requirements

- 3 required (contact information only)

Apply link: <https://aprecruit.berkeley.edu/JPF04417>

Help contact: ajoga@berkeley.edu

About UC Berkeley

UC Berkeley is committed to diversity, equity, inclusion, and belonging. The excellence of the institution requires an environment in which the diverse community of faculty, students, and staff are welcome and included. Successful candidates will demonstrate knowledge and skill related to ensuring equity and inclusion in the activities of their academic position (e.g., teaching, research, and service, as applicable).

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The University of California, Berkeley is an Equal Opportunity/Affirmative Action Employer. All qualified applicants will receive consideration for employment without regard to race, color, religion, sex, sexual orientation, gender identity, national origin, disability, age, or protected veteran status.

Please refer to the [University of California's Affirmative Action Policy](#) and the [University of California's Anti-Discrimination Policy](#).

In searches when letters of reference are required all letters will be treated as confidential per University of California policy and California state law. Please refer potential referees, including when letters are provided via a third party (i.e., dossier service or career center), to the [UC Berkeley statement of confidentiality](#) prior to submitting their letter.

As a University employee, you will be required to comply with all applicable University policies and/or collective bargaining agreements, as may be amended from time to time. Federal, state, or local government directives may impose additional requirements.

Job location

Berkeley, CA

To apply, visit <https://aprecruit.berkeley.edu/JPF04417>

Contact Information

Please reference Academickeys in your cover letter when applying for or inquiring about this job announcement.

Contact

N/A

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