



Limited Term Visits to the James Clerk Maxwell Telescope in Hawai'i

The East Asian Observatory* assumed the operation of the James Clerk Maxwell Telescope (JCMT) in Hawai'i, on 1 March 2015. This provides an exciting opportunity for you to see at first-hand how submillimetre observing works and how the telescope infrastructure and instrumentation supports our pursuit of world-class astronomy.

With a diameter of 15m the James Clerk Maxwell Telescope (JCMT) is the largest astronomical telescope in the world designed specifically to operate in the submillimetre wavelength region of the spectrum. The JCMT is used to study our Solar System, interstellar and circumstellar dust and gas, and distant galaxies. It is situated at approximately [19°49'22.2"N 155°28'37.0"W](#) close to the summit of Maunakea, Hawai'i, at an altitude of 4092m.

Visit options

The JCMT staff is multi-cultural and composed of several groups: Science, Engineering and Technical, Administration, and Computing and Software groups. If you would like to come and experience observatory operations for a limited period, please see the options below for the type of skills and experience we are looking for. These are an indication of the type of skills usually needed. If you do not fit into one of these categories, please contact us anyway with a summary of your experience and outline of what you would be interested in doing at EAO.

If you are interested in any type of visiting position, please discuss your desire with your supervisor, Director and Human Resources staff. If they approve of your wish to work with us, please send a copy of your resume and a covering letter outlining your skills and experience to careers@eaobservatory.org.

You will remain on your current employment contract and an allowance for living expenses or accommodation will be provided. No additional stipend will be paid by EAO/JCMT. Any posting to the EAO/JCMT will be subject to the appropriate US right to work/visitor's visa being obtained in advance.

If you are interested in a long-term career with the JCMT, please check for any current vacancies posted on the [employment opportunities](#) page.

- **JCMT Science group -Astronomer**

What could you expect to do?

JCMT astronomers assist visiting astronomers in obtaining high-quality observational data. They are provided time to pursue their own research and also provide technical, scientific, and logistical support to visiting

*East Asian Observatory was formed by the National Astronomical Observatories, Chinese Academy of Sciences; National Astronomical Observatory of Japan; Korea Astronomy and Space Science Institute and Academia Sinica Institute for Astronomy and Astrophysics

astronomers before, during, and after their observing runs, and assist with their data reduction. JCMT astronomers may also provide general or specific support of JCMT instrumentation such as calibration, analysis of sensitivity data, telescope performance analysis and commissioning of new instruments.

JCMT astronomers should be active researchers in the submillimetre field.

What experience is needed?

To assist the astronomy staff, you will need to have a PhD in astronomy or related field and at least two years' experience in astronomy, including techniques of astronomical measurement and data reduction.

Additionally, knowledge of the construction and operation of submillimetre instrumentation and experience in using astronomical software would be beneficial.

EAO is also interested in hosting astronomers who like to share their enthusiasm with the public, especially with children, and to help produce publicity materials for us.

- **JCMT Science Group – Instrument scientist**

What could you expect to do?

JCMT has a millimetre camera called SCUBA-2 (Submillimetre Common User Bolometer Array 2) with two auxiliary instruments: POL-2 (Polarimeter), FTS-2 (Fourier Transform Spectrometer) JCMT also maintains a suite of heterodyne instruments: HARP (Heterodyne Array Receiver Program), RxA (A-band receiver) and RxW (D-band receiver). In support of these instruments additional equipment is needed such as the WVM (Water Vapor Monitor) and ACSIS (Auto-Correlation Spectral Imaging System).

Activities of the instrument scientist include analyzing performance data, conducting research and analysis for future upgrades, diagnosing faults and preparing status reports or user instructions for any of the JCMT instrumentation.

The instrument scientist may also assist with integration and commissioning of new or visiting instruments.

What experience is needed?

To assist the instrument group, you will likely have a PhD in Astronomy, Physics or Engineering and a basic knowledge of submillimetre astronomy.

You should have at least two years post-doctoral experience and understand data acquisition and analysis. Experience in design, construction, testing or operation of astronomical instruments is also an advantage.

- **Engineering and Technical – Electrical/Electronics Engineer**

What could you expect to do?

The JCMT observatory is a complex facility with unique instrumentation systems. We need to ensure that the telescope and instrumentation is in a state of readiness at all times. You would apply your technical knowledge

in designing modifications and upgrades, troubleshooting and repair, maintenance and testing of any of the JCMT electrical and electronic systems.

You will need to translate scientific requirements into practical engineering solutions which will mean assisting with research, planning, design, testing, documenting and implementing proposals.

What experience is needed?

To assist the engineering group, you will need to have a Bachelor's degree in Electronic engineering or a closely related subject and at least two years' experience working with electronic systems in a research and development environment.

You should have a sound understanding of motion and process controls, analog and digital design and interfacing with microcomputers. You should have a good working knowledge of electrical and electronic concepts for maintenance, troubleshooting and repair as well as know how to use electronic test equipment and CAD systems.

Previous experience working with astronomical instrumentation or telescopes is an advantage.

- **Engineering and Technical – Scientific Programmer or Software Engineer**

What could you expect to do?

You would be assigned to one of two teams dependent on your experience and interest. These teams, the Scientific Computing (SciCom) group and the Instrument and Telescope Software (ITS) group are responsible for the specification, design, implementation, testing and documentation of software systems and modules for astronomical data analysis, instrument control and data acquisition.

The ITS group activities include developing and improving code, adding new features or upgrades, maintenance of existing software and responding promptly to faults. The SciCom group supports the EAO Science Archive, the Starlink suite and the ORAC-DR package. Their work includes developing new algorithms, version release and bug fixing.

What experience is needed?

To assist in this area, you will need to have a Bachelor's degree in computer science or a related discipline with at least three years of experience in application domains relevant to the position.

You will need to understand modern programming techniques and have a knowledge of state-of-the-art software and hardware technology related to an astronomical observatory. This includes understanding how software and hardware interact. You should have experience working with the UNIX operating system and should be proficient in at least one of the following languages: java, C, C++, Python or Perl.

What is the working environment like?

The EAO base office is in Hilo, a small coastal town on the east side of the volcanic Big Island of Hawai'i. The office is located in the Science and Technology Park of the University of Hawai'i at Hilo, on a street with other

astronomy facility base offices. The geography of the island includes tall mountains, waterfalls, rainforest, pastures, lava fields and Hawai'i Volcanoes National Park. The drier east side of the island can be reached within two hours and is home to various resorts and white sandy beaches. Hilo area is classified as a tropical rainforest climate with an average of 126 inches of rain per year and average temperatures between 66°F and 80° F throughout the year. The racially diverse population of Hilo is about 44,000.

Staff in Hilo can enjoy a variety of activities outside of work, including canoe paddling, surfing, fishing, snorkeling, biking, hiking, amateur dramatics, tennis, photography, hula dancing and playing music. There is a library and planetarium, local museums and a variety of dining places in the town. Public transport is minimal so visitors should expect to walk or use bicycles and taxis.

The JCMT facility is near the summit of Maunakea, the world's tallest sea mountain. It stands 13,796 feet above sea level and 32,000 feet from the sea floor. There is private accommodation at the 9,000 feet level where staff and visitors sleep and spend time acclimatizing to the high altitude before going to the observatory.

There are currently 36 staff employed at the EAO/JCMT from at least six different countries.

Hilo town

