

## **Announcement of Opportunity for Science with the**

### **Large Millimeter Telescope Alfonso Serrano**

**Observing Period 2021-S1: 15<sup>th</sup> March 2021 – 14<sup>th</sup> September 2021**

**Application Submission Deadline: midnight (CDT) 21<sup>st</sup> December 2020**

#### **Overview**

The Large Millimeter Telescope Alfonso Serrano (LMT) invites members of the Mexican, U.S. and Spanish astronomy communities to participate in the open call for scientific observing proposals (2021-S1).

The LMT has been closed for scientific operations since late March 2020 due to the COVID-19 pandemic situation. The current schedule to re-open the telescope, perform essential maintenance and prepare the telescope systems, equipment and instruments for scientific observations is unclear. However we are hopeful that the situation will improve and enable the start of a new scientific program in the spring of 2021.

#### **Announcement of Opportunity (2021-S1)**

This Announcement of Opportunity is an invitation to the user-communities of the LMT partners to submit scientific proposals requesting observing time on the 50-meter diameter LMT. **The deadline to receive proposals is midnight central daylight time (24:00 CDT) on the 21<sup>st</sup> December 2020. The provisional schedule for the next observing season (2021-S1) is the 15<sup>th</sup> March 2021 – 14<sup>th</sup> September 2021.** The precise date to begin scientific observations may be subject to change given the uncertainty in the impact of the evolving COVID-19 pandemic on future LMT operations.

During the spring and summer of 2021, the LMT is expecting to complete a number of necessary engineering projects that will require the temporary suspension of night-time scientific observations. Furthermore the anticipated installation and commissioning activities of new scientific instruments, as well as the more unpredictable weather conditions during the “rainy season”, will also impact the scheduling of the higher-frequency instruments during the 2021-S1 observing period.

It is expected that a maximum of 600 hours of observing time for on-source scientific observations will be available in the 2021-S1 observing season.

### **Eligible LMT user-communities**

Principal Investigators that are affiliated with national institutions and universities within the eligible LMT user-communities (Mexico, USA and Spain) will be able to submit proposals and share LMT observing time in the following proportions:

70% Mexico – all members of the Mexican national research community (of which 2.5% will be shared with the Spanish national research community);

15% University of Massachusetts Amherst (UMASS), USA – all members of the UMASS and Five Colleges research community;

15% USA – all members of the US national research community.

The telescope time associated with each scheduled project will be allocated (charged) to a particular observing queue of the LMT user-communities according to the affiliation of the Principal Investigator. The affiliation of co-investigators, including those external to the eligible LMT user-communities, does not impact the time allocated (charged) to each user-community.

### **Available Scientific Instruments**

In the observing period 2021-S1 the LMT will offer the opportunity to conduct spectroscopic observations with the following instruments:

#### **SEQUOIA, RSR, B4R and MSIP1mm.**

Descriptions of these available scientific instruments and their data acquisition systems are provided in the following LMT webpage -

<http://lmtgm.org/telescope/instrumentation/general-information/>

The SEQUOIA, RSR and MSIP1mm instruments and data reduction software are fully supported by the LMT and hence no collaboration with members of their instrument teams is required.

In contrast, the 2mm B4R instrument has been developed and funded independently with no participation from the LMT partners. The B4R team in Japan will provide the technical support and assistance during the preparation of proposals, scientific observations and the data-analysis for all scheduled projects. Therefore the use of the B4R instrument requires a scientific collaboration with the B4R team. Principal Investigators requesting to use the B4R instrument should first contact Ryohei Kawabe ([ryo.kawabe@nao.ac.jp](mailto:ryo.kawabe@nao.ac.jp)) to discuss their scientific interest and collaboration before submitting a proposal.

A VLBI capability with the LMT is also offered in the 2021-S1 observing period. However the participation of the LMT in coordinated observations with existing VLBI networks involves a highly non-standard LMT observing-mode. Given the special circumstances to enable the LMT participation in VLBI networks we require that the Principal Investigator of a potential VLBI proposal first submits a simple letter of interest to conduct VLBI observations with the LMT to the LMT Help Desk [gtmlmt@inaoep.mx](mailto:gtmlmt@inaoep.mx) before Friday 27<sup>th</sup> November 2020. The LMT project will contact these individual P.I.'s and discuss the particular requirements and necessary agreements between the respective parties before submitting LMT proposals that involve coordination with existing VLBI networks.

The LMT cannot offer continuum observations in the 2021-S1 observing period. It is expected that multi-color continuum and polarimetric observations with TolTEC will be available in the next observing period 2021-S2 (September 2021 – September 2022) following the installation and commissioning of the TolTEC instrument in early 2021. The details of the Call for Proposals for this next observing period (2021-S2) will be announced in the spring of 2021.

### **Proposal Submission Process**

The proposal submission process is identical for all members of the eligible scientific communities. LMT observing proposals will be made through a simple web-based on-line form (<http://www.lmtobservatory.org/>). Proposals will be required to include a list of participating researchers, a description of the scientific goals and technical feasibility using the requested instruments, and a justification of any special scheduling or weather requirements.

Further details and instructions on how to prepare and submit a scientific proposal to the LMT can be found at the following link (<http://lmtgm.org/proposal-submission-process>).

### **Telescope Time Allocation and Flexibly-scheduled Queue Observing**

All proposals will be subject to a technical assessment prior to a scientific review conducted by a Time Allocation Committee constituted by members of the eligible user-communities, and supported by independent external expert evaluations. Each user-community will provide a unified prioritized list of proposals covering all scientific areas, based primarily on their anticipated scientific impact, that will be merged into the LMT observing schedule.

The full and proportionate allocation of observing time for the prioritized scientific projects from each user-community will be flexibly scheduled during the observing season to maximize the efficiency of the overall scientific program and the telescope operation.

Depending on the assigned priority and ranking of the proposal, following the scientific and technical peer-review, the Principal Investigator will be contacted before scheduling the scientific program on the LMT to prepare the required observing scripts.

The LMT telescope operators and staff scientists will conduct the necessary observations on behalf of those prioritized projects that are scheduled. Standard calibrated data-products for all instruments, using customized data-reduction pipelines, will be delivered to all Principal Investigators that receive observing time.

The primary objective of science observations with the LMT is to generate published scientific results that illustrate the competitiveness and uniqueness of the telescope. The LMT will assist this effort by providing a designated LMT scientist to each scheduled project to serve as a direct point of contact and support the preparation of the observing scripts, provide technical details during the data analysis and production of the final data products, and coordinate other necessary help towards the publication of the scientific results.

### **LMT Help Desk**

For additional general information on the Call for Proposals, or for assistance with the proposal submission process, please contact the LMT Help Desk at [gtmlmt@inaoep.mx](mailto:gtmlmt@inaoep.mx) .