

## **Announcement of Opportunity**

### **Shared-Risk Early Science with the Large Millimeter Telescope Alfonso Serrano**

**Observing Period 2014-ES3: 15<sup>th</sup> October 2014 – 31<sup>st</sup> May 2015**

**Application Submission Deadline: 31<sup>st</sup> August 2014**

#### **Overview**

The Large Millimeter Telescope Alfonso Serrano (LMT) invites members of the Mexican astronomy community and members of the Department of Astronomy at the University of Massachusetts and the Five College Astronomy Department to participate in the third call for Shared-Risk Early Science observing proposals (2014-ES3).

This Announcement of Opportunity describes the guidelines for proposers. Further details can be found on the LMT webpage [www.lmtgm.org](http://www.lmtgm.org).

The selection of shared-risk Early Science projects will follow a peer-review process to be organized by the LMT Scientific Committee (LMTSC). Successful proposals will result in a set of approved Scientific Project Teams. The selection criteria for approved scientific projects is similar to the previous calls, and will be based on the potential of the proposals to satisfy some or all of the following goals:

1. feasible projects that can be completed by the Scientific Project Teams within the current range of uncertainties on the telescope and instrument performances;
2. generate refereed journal publications that demonstrate the scientific impact of the LMT with an emphasis on research topics for which the telescope provides a unique capability with the initial suite of instrumentation (angular resolution, sensitivity, mapping speed, spectral coverage, etc.);
3. scientific analysis and interpretation of the LMT data that can lead directly to publishable results, and do not require additional supporting observations that are currently unavailable;
4. involvement and training of graduate students and postdoctoral researchers, as well as demonstrations of the relevance of these Early Science LMT data to on-going MSc and PhD student research programs;
5. scientific collaboration between the research communities of the LMT partners;
6. provide opportunities and material for immediate educational and public outreach purposes.

Scientific Project Teams with successful proposals that were allocated time, but which were not completed in the previous observing period (2014-ES2), are encouraged to update and resubmit those proposals taking into account the current telescope performance and instrument sensitivities, as well as providing a summary of the observations conducted previously. Suitable justification should also be given in any cases where repeated observations are requested.

### **Scientific Project Teams**

Proposals for Early Science must identify the full Scientific Project Team that will carry out the observational program. The LMT project will be unable to offer the normal full “observatory-style” support during the current cycle of observations. Therefore each Scientific Project Team must be self-sufficient, and contain team members that are familiar with the operation of the LMT, the use of the scientific instruments and the analysis of the data. The LMTSC strongly suggests that potential leaders of Scientific Project Teams contact the LMT Project Scientists, Miguel Chávez ([mchavez@inaoep.mx](mailto:mchavez@inaoep.mx)) and Min Yun ([myun@astro.umass.edu](mailto:myun@astro.umass.edu)), who will facilitate and coordinate the involvement of experienced LMT project personnel within the individual Scientific Project Teams.

Membership of the Scientific Project Teams is open to individuals with affiliation at a Mexican research institution or at the Department of Astronomy at the University of Massachusetts and the Five College Astronomy Department. Scientific collaboration between the partners of the LMT project is strongly encouraged. Inclusion of additional external collaborators should be justified in the proposal and shown to offer an essential capability or unique resource to the project.

### **Shared Risk Observing**

The LMT Project is working to provide community access to the LMT as early as possible. The call for Early Science projects is therefore made with the understanding that all successful proposals and scheduled observations are considered as “shared-risk”. During this period of scientific observations, the LMT user-community should be aware that the feasibility of the proposed observations may change due to differences in the instrument sensitivities and the efficiency of the telescope performance compared to those that are advertised in this call. Early Science observations may be rescheduled or cancelled according to the need for additional commissioning and engineering activities.

## **Schedule for Early Science Observations & Proposal Submission**

This Announcement of Opportunity for Early Science observations with the LMT is released on 18<sup>th</sup> July 2014. The deadline to receive proposals is 11pm CDT (23:00hrs CDT) on 31<sup>st</sup> August 2014. The provisional schedule for conducting Early Science observations with the LMT will provide an operational period from 15<sup>th</sup> October 2014 to 31<sup>st</sup> May 2015, during which scientific observations will be restricted to a nighttime shift of 12-10 hours respectively lasting from approximately 1 hour after sunset to sunrise.

The proposal submission will be made through a simple web-based form. For all details and instructions on how to submit an Early Science proposal to the LMT, visit the LMT website [www.lmtgtm.org](http://www.lmtgtm.org).

## **Scientific Instrumentation**

### Redshift Search Receiver & AzTEC

Both scientific instruments offered in the previous observing period, a 3mm wide-band heterodyne receiver (Redshift Search Receiver) and a 1.1mm continuum array camera (AzTEC), will again be available for the Shared-Risk Early Science observing period 2014-ES3. A description of the instruments and the tools to calculate the feasibility of the proposed observations (updated instrument sensitivities, expected weather conditions & atmospheric transparency, integration time calculators etc.) are provided on the LMT webpage ([www.lmtgtm.org](http://www.lmtgtm.org)).

### 3mm VLBI

Following a successful 3mm VLBI run between the LMT and VLBA antennas in May 2014, the LMT will be offered as a station of the High Sensitivity Array (HSA) operating at 3mm, combining the LMT with the VLBA and GBT facilities. Access to 3mm VLBI using the LMT is provided exclusively through the VLBA Resident Shared Risk Observing (RSRO) program. VLBA RSRO should be therefore selected as the resource in the NRAO Proposal Submission Tool. Researchers that are interested in proposing 3mm VLBI observations with the LMT, operating as a station of the HSA, should note the earlier NRAO submission deadline of 1<sup>st</sup> August 2014. The scientific and technical evaluation of all HSA proposals that include LMT observations will be conducted by both the NRAO and LMT Time Allocation Committees. The LMT will only be available for VLBI observations with the HSA between 1<sup>st</sup> February and 31<sup>st</sup> May 2015 in the semester 15A of the current NRAO call for proposals. Information related to the capabilities of the HSA and the NRAO proposal submission process is provided at the following respective links:

<https://science.nrao.edu/facilities/vlba/proposing/HSA>

<https://science.nrao.edu/observing/call-for-proposals/2015A>

## **Staffing Observations**

Observations will be flexibly-scheduled with queue-observing to maximize the efficiency of the overall scientific program. The LMT Project will provide site-staff to perform routine start-up & shut-down procedures, and safety checks at the telescope. These site-staff however will not perform scientific observations on behalf of the Science Project Teams. Therefore Scientific Project Teams with approved observing program are required to provide a minimum of two observers at the telescope, with experience in the operation of the LMT, for each night of observations. A list of experienced observers and contact information may be found at the LMT Early Science website. Training of new observers as part of the LMT science program is strongly encouraged. Further information can be provided by the LMT Project Scientists, Miguel Chávez ([mchavez@inaoep.mx](mailto:mchavez@inaoep.mx)) and Min Yun ([myun@astro.umass.edu](mailto:myun@astro.umass.edu)).

## **Publications and the Public Release of Early Science Data**

The primary objective of Early Science observations with the LMT is to generate published scientific results that illustrate the competitiveness and uniqueness of the telescope. The LMTSC will assist this effort by coordinating the communication between the individual Scientific Project Teams, and encouraging the sharing of technical details during the data analysis, to enable increased efficiency, reliability and accuracy in the production of the final data products. The LMTSC will review the data products to ensure uniformity and quality before their release and prior to publication. The LMTSC will not evaluate the scientific interpretations of the LMT data. The Early Science data for each scientific project will have a short proprietary period of 6 months, following the completion of the observing program and receiving the data, before they are made available to the wider scientific community. Press releases to the media involving Early Science LMT data, or the use of LMT data for educational purposes, will be coordinated through the LMT Project office.

## **Further Information**

Questions about the operational policies of Early Science observations with the LMT should be directed to David Hughes ([dhughes@inaoep.mx](mailto:dhughes@inaoep.mx)). Specific questions related to the use of the scientific instruments should be sent to Gopal Narayanan ([gopal@astro.umass.edu](mailto:gopal@astro.umass.edu)) for queries about the Redshift Search Receiver, Grant Wilson ([wilson@astro.umass.edu](mailto:wilson@astro.umass.edu)) for queries about AzTEC, and Jonathan León Tavares ([leon.tavares@inaoep.mx](mailto:leon.tavares@inaoep.mx)) for queries related to VLBI observations with the LMT. For general assistance regarding the proposal submission process, contact Alfredo Montaña ([amontana@inaoep.mx](mailto:amontana@inaoep.mx)).