

## **Announcement of Opportunity**

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

**Observing Period 2015-ES4: 1<sup>st</sup> November 2015 – 30<sup>th</sup> June 2015**

**Application Submission Deadline: midnight (CDT) 30<sup>th</sup> September 2015**

#### **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 call for Shared-Risk Early Science observing proposals (2015-ES4).

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-ES3), 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.

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

This Announcement of Opportunity (2015-ES4) for Early Science observations with the LMT is released on August 25<sup>th</sup> 2015. **The deadline to receive proposals is midnight central daylight time (24:00 CDT) on 30<sup>th</sup> September 2015.** The provisional schedule for conducting Early Science observations with the LMT will provide a night time operational period from 1<sup>st</sup> November 2015 to 30<sup>th</sup> June 2016, during which scientific observations will be restricted to a nighttime shift of 10-12 hours 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.lmtgm.org](http://www.lmtgm.org).

### **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.

Proposals for Early Science must identify the full Scientific Project Team that will carry out the observational program. Each Scientific Project Team must demonstrate that it is self-sufficient, and contain team members that are familiar with the operation of the LMT, the preparation of the observing scripts, 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, and members of the instrument teams, within the individual Scientific Project Teams.

Depending on the assigned 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 selection of the target sources and the generation of the required observing scripts, and to organize the logistical support of the observations at the telescope.

### **Shared Risk Observing**

The call for Early Science projects is 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.

### **Scientific Instrumentation & Available Observing Time**

#### Redshift Search Receiver & AzTEC

Both scientific instruments offered in the previous observing periods, 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 2015-ES4. 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)).

Given the experience of the previous 8-month long observing season, and taking into consideration the variable weather conditions, the telescope operational efficiency and the observing overheads, we anticipate a total of ~300 hours of AzTEC on-source integration time and ~500 hours of Redshift Search Receiver on-source integration time during the next observing period (November 1<sup>st</sup> 2015 to June 30<sup>th</sup> 2016). The exact division of observing time between the instruments will depend on the scientific priority awarded to the individual projects, and the weather conditions encountered during this next observing season.

### **Staffing Observations**

Observations will be flexibly-scheduled with queue-observing to maximize the efficiency of the overall scientific program. The LMT Project will provide telescope operators and site-staff to perform routine start-up & shut-down procedures, and safety checks at the telescope. The Scientific Project Teams with an approved observing program are required to provide a

minimum of one observer at the telescope with experience in the use of the scientific instruments and LMT data reduction. Training of new observers as part of the LMT science program is strongly encouraged. Further information on the staffing of the scientific observations 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)). For safety reasons the observers must be able to drive and have a valid driver's license.

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

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 instrument teams will, if necessary, review the reduced scientific data products to ensure uniformity and quality prior to publication. 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, and Grant Wilson ([wilson@astro.umass.edu](mailto:wilson@astro.umass.edu)) for queries about AzTEC. For general assistance regarding the proposal submission process, contact Alfredo Montaña ([amontana@inaoep.mx](mailto:amontana@inaoep.mx)).