JMU Call for Proposals for the Liverpool Telescope

Semester 2016B

The Liverpool Telescope is a 2.0 metre fully robotic facility sited at Observatorio del Roque de Los Muchachos, La Palma, Canary Islands. The Liverpool Telescope Time Allocation Committee is now accepting proposals for JMU time for observations in Semester 2016B (1st Jul 2016 – 28th Feb 2017). **Full details of the telescope, instrumentation and proposal submission process (Phase 1) are available from:**

http://telescope.livjm.ac.uk/

You may also apply for **Reactive Time** at any time throughout the year as described at the end of this call.

THE LATEST VERSION (V0.6) OF THE APPLICATION FORM MUST BE USED. APPLICATIONS USING OLDER FORMS WILL BE AUTOMATICALLY REJECTED.

Time available and deadline

The deadline for submission of proposals is

5pm GMT on Monday, 4th Apr 2016

The total available time for JMU users in 2016B will be 280 hours. 40 hours have already been allocated in previous rounds and 9 hours set aside for Reactive Time proposals, leaving **231 hours available to be allocated**. Time is allocated approximately in the ratio 1:1 between Priority A and B. In addition **90 hours** will be available as Priority C (backup). Applications are particularly encouraged for brighter sky conditions, which are typically less subscribed.

In an effort to reduce problems with under-filled observation queues at the start and end of each semester, the LT observes proposals throughout two “8 month semesters” a year. This means that there is a two-month overlap period at the start and end of each semester when proposals from *both* semesters may be observed. “A” semesters run from 1st January – 31st August and “B” semesters from 1st July to 28th February.

JMU accepts proposals from Principal Investigators (PIs) based at Liverpool John Moores University. See the LT proposal instructions webpage (Phase 1) for details on how non-JMU PIs may apply for telescope time.
http://telescope.livjm.ac.uk/PropInst/Phase1/

JMU proposals are evaluated by a joint JMU/PATT Time Allocation Committee (TAC). PATT do not make selections nor allocate telescope time; rather, they advise the ARI board on the merits or failings of each proposal, ranking them A, B or C accordingly, and advise on potential conflicts with PATT proposals. All JMU allocations are ultimately approved by the ARI board. David Bersier currently represents the ARI on the PATT TAC.

Instrument availability

The following instruments will be available in semester 16A

- **IO:O** – IO:O is the primary imaging CCD camera available this semester. IO:O has a field-of-view of 10 arcmin, Sloan u'g'r'i'z' filters, Bessell B and V filters, a rest wavelength Hα filter and four red-shifted Hα filters.

- **SPRAT** – SPRAT provides high-throughput, low-resolution (R=350), long-slit optical spectroscopy at the LT. The slit width is ~1.5 arcsec. A single spectrum spanning roughly 400-800 nm is obtained, optimized for improved sensitivity in either the red and blue portion of the spectrum by tilting the grism assembly.

- **FRODOSpec** – FRODOSpec is an integral-field optical spectrograph providing observations from 380 to 1000 nm in either low (~2400) or high (~5400) resolution mode. The IFU provides a 12x12 lenslet array over a total field-of-view of ~10 arcsec.

- **LOTUS** – A heavily far-blue optimized, long slit spectrograph with 2.5 and 5arcsec slit width options and a dispersion of 4.7Å / pixel. Wavelength coverage is from 320-630 nm, but the blue optimization means throughput exceeds that of SPRAT only for λ < 420nm.

- **RINGO3** – RINGO3 provides imaging polarimetry over a ~4 arcmin diameter circular field-of-view simultaneously in three optical wavebands (350-640 nm, 650-760 nm, 770-1000 nm). Polarization accuracies of ~1% are typically obtained with this instrument.

- **RISE** – RISE is a fast-readout frame-transfer CCD optical imager and provides a cycle time of less than 1 second. The instrument uses a fixed, broad "V+R" filter and re-imaging optics giving a 7x7 arcmin field-of-view.

- **IO:I** – IO:I uses a 2048x2048 pixel Hawaii 2RG detector with a 1.7 micron cutoff. Field of view is 6x6 arcmin at pixel scale of 0.18 arcsec. Currently configured with a fixed H-band filter, alternative configurations exist with either a fixed J filter or a split-field J+H filter in which half of the array sees the J-band, the other the H-band; the effective field-of-view is halved but targets may be observed near-simultaneously in both bands by nodding them between the two filter halves. If you have a requirement for either of these J-band configurations please contact us. For 16B we expect to offer H only but configuration in future semesters will be based on demand from applicants.

For further information on any LT instrumentation please refer to the LT website (http://telescope.livjm.ac.uk/TelInst/Inst/) or contact the LT support team (ltphase1@ljmu.ac.uk) **well before** submitting an observing proposal.

Calibrations and Standards

The telescope routinely observes standard stars with **IO:O** and **RINGO3.** These are acquired in all of the broad-band filters. A spectrophotometric standard is

obtained on photometric nights with **SPRAT**, **FRODOSpec** and **LOTUS**. No standards will be taken for the other instruments. Observers who wish to obtain standards in addition to those that are routinely observed, must include these in their proposal (and include the time needed to acquire these observations in their observing time request). Flat-field observations are routinely obtained for all instruments, as and when required: these should not be included in a phase 1 time request.

Proposal process

Phase 1 – the science definition phase:

All phase 1 proposals are evaluated by a joint PATT+JMU Time Allocation Committee (TAC). Submitted proposals must contain a one-page science case, a one-page technical case, and should describe why the proposed observations are best conducted on a robotic telescope.

- See http://telescope.livjm.ac.uk/PropInst/ for instructions on how to **prepare and submit** a Phase 1 proposal. *Note that PIs should receive an email acknowledging successful submission. If you do not receive a confirmation email within 1 working day, please contact us immediately.*
- Please note that we have relaxed our policy on **Maximum Group Length**. There is no official limit to the length of an observing group. However, proposals that request very long groups (more than a few hours in a single contiguous block), especially groups that need repeating on consecutive nights, must include an explanation as to why the observations require a robotic telescope (i.e. why they should not be conducted on a classically scheduled telescope).
- **FIXED groups** are extremely intrusive in terms of telescope scheduling. FIXED group status will ONLY be awarded to observations that specifically require this mode of operation. See the phase 1 website for further details.
- Please be sure to **review instrument web pages** prior to preparing your proposal (http://telescope.livjm.ac.uk/TelInst/Inst/), since some contain specific guidance and/or unique constraints, for example: limits on source brightness, or minimum recommended exposure times.

Phase 2 – the observation specification phase:

Shortly after the ARI board has made its selections, JMU allocations will be posted on the LT website, and proposal PIs will be informed by email.

A few weeks before the start of the semester the LT staff will create proposal accounts in the Phase 2 system. Proposal PIs will be informed (by email) when these are ready. Users may then enter observing groups using the Phase 2 User Interface, an online Java tool used to programme observations and transmit them directly to the telescope. For details and a tutorial please visit the Phase 2 website: http://telescope.livjm.ac.uk/PropInst/Phase2/.

IMPORTANT: Note that once groups have been prepared they are immediately "live". This means that, provided an observing sequence is valid, enabled, and the semester has begun, the telescope could at any time acquire data for your programme. Users are therefore encouraged to contact the LT group should they have any questions at all regarding their observations. *Note that the LT staff do*

not routinely check submitted proposals, though we are happy to do this if requested.

Priority Definition

Successful proposals are entered into the observing queue with one of three rankings:

A. High priority programmes. The TAC would like to see **100% completion**.
B. Medium priority programmes. The TAC would like to see **at least the Minimum Usable Fraction (MUF) of the time requested** observed, provided this does not impact on priority A completion.
C. Low priority programmes. These programmes are used to over-subscribe the observing queue so that the telescope is never left idle. There is no guarantee that any observations will be obtained, though in our experience groups with relaxed observing constraints have a good chance of being executed.

Minimum Usable Fraction

The Minimum Usable Fraction (MUF) helps the LT technical team schedule observations effectively. It allows us to better understand your requirements rather than being used directly by the scheduler. Please specify the MUF for your programme on the cover page and in the technical case of your proposal. For example, the MUF can be used to specify that “any observations would be usable” (MUF= a few %), or “a complete or nearly complete sample is essential to achieve the science goals” (MUF=90%). The ARI board reserves the right to revise the MUF of any successful LT proposal.

Exposure Time Calculator

LT users are encouraged to use the LT’s Exposure Time Calculator (see the link on the sidebar of the LT homepage: http://telescope.livjm.ac.uk/TelInst/calc/) when preparing their proposals.

Telescope performance

The pointing accuracy of the telescope for semester 16A is expected to be ~5 arcsec RMS. The current tracking performance provides seeing-limited images (FWHM < 2.0 arcsec) for exposures up to 1 minute without the auto-guider (open loop) and up to 30 minutes with the auto-guider (closed loop). However, note that absolute seeing of less than 1.0 arcsec is rare at the LT. Those requiring excellent image quality are encouraged to always use guide stars.

Observing conditions

The LT welcomes applications for all available observing modes, conditions, and RA ranges, particularly those that take advantage of the robotic nature of the LT and its strengths in rapid response and long-term monitoring. Applicants do not need to break down time by seeing and sky brightness categories. Instead, please simply list the worst acceptable sky brightness and seeing that is applicable for the majority of the observations in your proposal.

Reactive time proposals

In addition to applying for telescope time through the JMU twice-yearly process, observers may apply for Reactive time via:

http://telescope.livjm.ac.uk/PropInst/Reactive

Reactive time proposals should request no more than 3 hours of telescope time (although in exceptional circumstances more time may be allocated).

JMU Reactive Time is open to all ARI staff, regardless of their prior use of the LT or any time they may already have allocated. It is intended to allow **observations of unforeseen phenomena** such as targets-of-opportunity, or **test observations** prior to a full proposal. Reactive Time is *not* to be used to apply for time denied in the normal round or for target-of-opportunity observations of targets/phenomena already known to exist (e.g. novae, GRBs). The TAC aims to make a decision within 48 hours of receipt of Reactive proposals, and will generally respond more rapidly. Proposers should take account of the information on instrumentation etc. as per the standard application round and must demonstrate the feasibility of their proposal.

Reactive time proposals that clearly should have been submitted as part of a JMU call will be rejected. Reactive proposals should include a brief summary as to why the proposed observations were not submitted to a normal JMU call.

Targets of Opportunity and Rapid Response

The LT receives many proposals requesting Target of Opportunity status. Most PIs are happy to submit their observations using the Phase 2 GUI, shortly (a day or two) after the ToO is discovered. However, LT users should be aware that the LT is able to respond to ToOs within hours or even minutes of their discovery. PIs requiring rapid response to alerts are welcome to contact the LT support staff (ltphase1@ljmu.ac.uk) to discuss this unique service further.

Changes to the LT Data Access Policy

Users should be aware that the LT has updated its policy on data access (the policy is available here: http://telescope.livjm.ac.uk/DataProd/). Data now remain proprietary to the PI for **one year after the end of the semester within which the data were acquired**. An additional year may be granted by the LT Director, though a clear scientific need must be presented in the proposal.