

## Thai National Telescope

### Call for Observing Proposals

#### Cycle 1: November 2013-April 2014

Due Date: August 18, 2013

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Proposals are invited to request time on the 2.4m Thai National Telescope (TNT) for the Cycle 1 season, beginning **November 1<sup>st</sup> 2013** and ending **April 30<sup>th</sup>, 2014**. For this first Cycle, with several commissioning activities still pending, eligible proposers will be restricted to researchers affiliated to Thai institutes, and researchers from institutes holding special Agreements with NARIT. The proposers should read carefully the [special terms](#) and follow the [instructions](#). The [proposal form](#) should be duly filled and submitted by email to

[proposals@narit.or.th](mailto:proposals@narit.or.th)

Proposals received after August 18, 2013 (midnight Bangkok time) shall not be considered. The Proposals will be reviewed and ranked on the basis of their scientific merit by a Time Allocation Committee (TAC) nominated by the NARIT Director. A technical feasibility review by the NARIT Operations Department will further screen the proposals. Applicants will be notified of the outcome of their proposals by October 1<sup>st</sup>, 2013.

Observers are expected to contact the [NARIT staff](#) to prepare their visit at least one month in advance of their run, and to cover their expenses for travel to the TNT Doi Inthanon site and for local accommodation and subsistence. A set of [Instructions for Visiting Astronomers](#) are available to facilitate the logistics of the visit. Visitors are required to fill an [End of Run report](#) and submit it to the [NARIT staff](#) within one week after the end of observations.

#### **IMPORTANT NOTICE: Special Terms for Cycle 1**

Although the TNT is fully functional, several activities are still in progress, among others: the Telescope Control Software is being extended in functionality and subject to tests; some instruments (e.g., ULTRASPEC and the 4k ARC camera) are ready but not yet tested on sky at the time of writing; some



instruments like (e.g., U9000 and eShel) are transitional only and may not be optimized; the system of data headers and archive is in evolution; the site is not yet completely characterized in terms of environmental and sky parameters; last but not least, the TNT staff is still under recruitment and partly under training.

As a result, it is anticipated that some interruptions, changes and delays might affect the allocated observing runs. When possible, observers will be informed ahead of time and attempts will be made to minimize the negative impact. In some cases however, last minute problems might be unavoidable.

Proposers are kindly asked to acknowledge the situation and to accept that observations in Cycle 1 will be carried out on **shared-risk basis** only.

## INSTRUCTIONS

Proposers are required to read carefully this section before preparing their requests.

### *1. The Telescope and Observation Planning*

The telescope is an alt-az with 2.4m primary mirror and two f/10 Nasmyth foci. At present, only one of these is equipped with a derotator. An autoguider is expected to be delivered in July 2013 and should be tested and available in time for the Cycle 1 observations. Without the autoguider, the current tracking performance is sufficient for exposures of about 15 minutes.

The TNO site has a distinctive tall telecommunications tower to the East of the telescope, which blocks observations in a restricted area of the sky. Requesters might consult the observing horizon [map](#) while preparing their observations.

Requesters are advised to check carefully the observability of their targets depending on coordinates and time of the year, i.e. using a tool such as [Staralt](#), which already includes the TNO site.

### *2. The Instruments*

In Cycle 1, the following instruments will be available:

- ARC 4k camera. This is the facility imager, delivered under contract to ACE (Astronomical Consultants & Equipment Inc.) for a camera and auto-guider. The camera has been designed and realized by ARC (Astronomical Research Cameras, Inc.), and is based on an E2V232-84 thinned, astronomy broadband AR coated, Grade One CCD with 4096 x 4096 x 15.0 micron pixels. The field of view is 8' on the side and the RON is 4e-. The camera is equipped with UBVRI, H $\alpha$ , and red continuum filters. It is expected to be delivered to NARIT in July 2013. Following a period of commissioning, it should be available to users by the start of Cycle 1.
- Apogee Alta U9000, a 3k x 3k CCD camera with 12 $\mu$ m pixel size, and 12e- RON. It is noisier and with less field of view (4.8') than the ARC Camera, and the filters can be changed only manually. It is intended mainly for the Drift-Scan mode, which allows to read out a small number of pixels at high temporal resolution (up to 2 ms).
- ULTRASPEC, a visitor instrument delivered under a Memorandum of Understanding among NARIT, the University of Sheffield and the University of Warwick (PI V. Dhillon). Born out of the experience with the successful ULTRACAM fast 3-band camera and using similar acquisition electronics, ULTRASPEC is based on a state-of-the-art low-light level (L3) Electron Multiplying CCD by e2V with 1k x 1k x 13 $\mu$ m pixels with virtually zero RON. One key feature is the so-called frame-transfer to a second CCD, thus enabling fast data readout (100ms full frame, and up to

10ms on subarrays). ULTRASPEC is ideally suited to measure fast varying phenomena such as flares, outbursts, transits, etc. It is expected to be delivered in June 2013 and, following a period of commissioning, to be available to users from the start of Cycle 1. The ULTRASPEC consortium has a right to Guaranteed Time Observations, but open time is also available for other requesters.

- eShel, a commercial echelle spectrograph from the Shelyak manufacturer, operating in the 430-710 nm range with  $\sim 10,000$  spectral resolution. It is based on a QSI632, 2184x1472 pixels, 6.8x6.8 micron CCD. It is fiber-fed, but given the long focal length of the telescope the fiber core size is not ideally matched to the pixel size. As a result, the efficiency is relatively low.

Other instruments might become available during Cycle 1, notably a low-resolution fiber-fed spectrograph donated by the University of Manchester thanks to Dr. J. Meaburn, and the EMS medium-resolution facility echelle spectrograph under contract with the Nanjing Institute of Astronomical Optics & Technology (China). At this moment, no commitments can be made regarding the date of their availability. Interested persons might require updated information later on.

### *3. Performance*

Exposure Time Calculators (ETCs) are available for the imaging instruments at the following links:

[ULTRASPEC](#), available from V.Dhillon's web page

[U9000](#), available from A. Richichi's web page

Note that both calculators are based on preliminary assumptions and will need more thorough testing in Cycle 1. They should be use only as an indication of the expected performance.

For spectroscopy, an ETC is not yet available. As a guideline, the estimated sensitivity limit of eShel at TNO is  $V=11$  in 30 minutes (courtesy of Dr. Mkrtychian).

Also, the following overheads should be considered in the time requests:

- Telescope pointing and acquisition: 5 min
- Filter changes: 30s
- Flat-Field, Dark: usually included in the calibrations at the beginning and end of night.
- Other calibrations: consult the NARIT staff

### *4. Weather*

The weather at the Doi Inthanon site is known to have not only a large seasonal variation, but also significant fluctuations of conditions from one night to the next and within the same night. In particular, humidity can vary from extremely dry in some winter nights (below 10% RH), to condensing conditions



even when the sky is clear. A set of rules to open and close the dome are in place and will be followed by the Telescope Operator in charge.

Weather statistics are still incomplete and therefore for this Call it is recommended that requesters apply only for the time strictly needed for their observations, without allowance for weather factors.

Similarly, the seeing conditions are not yet fully characterized. Experience in the past season has shown that the seeing can be as good as 0.8", it is often around 1.2" and is generally better than 2".



## CONTACTS

Action	Email	Notes
Proposal submission:	<a href="mailto:proposals@narit.or.th">proposals@narit.or.th</a>	Deadline August 18, 2013
Inquiries about travel and accomodation arrangements:	<a href="mailto:vis_ast@narit.or.th">vis_ast@narit.or.th</a>	
Inquiries about Instrumentation availability and performance:	<a href="mailto:opd@narit.or.th">opd@narit.or.th</a>	
End of Run report:	<a href="mailto:vis_ast@narit.or.th">vis_ast@narit.or.th</a>	