



***LBT Italian Coordination Facility***

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Call for Observing Programs at the Large Binocular Telescope

Italian time

**Sep 2026 – July 2027**

**(LBTO Semesters: 2026B - 2027A)**

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Submission expires:

**Friday May 8th, 2026, 24:00 CEST**

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Send questions to the INAF LBT staff:

**[ibt-italia@inaf.it](mailto:ibt-italia@inaf.it)**

<b>ABOUT THE LARGE BINOCULAR TELESCOPE</b>	<b>2</b>
<b>1. ITALIAN OBSERVING STRATEGY and CONSTRAINTS</b>	<b>2</b>
1.1 - Scheduling and strategy	2
1.2 - Maximum exposure time	3
1.3 - Time-constrained observations	4
1.4 - Discretionary Time	4
1.5 - Strategic Programs	4
1.6 - Shark GTO Programs	5
<b>2. OBSERVING MODES &amp; TELESCOPE CONFIGURATION</b>	<b>5</b>
<b>3. SEEING LIMITED INSTRUMENTATION OVERVIEW</b>	<b>6</b>
3.1 - LBC	6
3.2 - LUCI	7
3.3 - MODS	7
3.4 - PEPSI	8
<b>4. ADAPTIVE OPTICS fed INSTRUMENT GUIDELINES</b>	<b>8</b>
4.1 - LUCI+SOUL	8
4.2 - LBTI	10
4.3 - SHARK-VIS	11
4.4 - SHARK-NIR	11
<b>5. PROPOSAL SUBMISSION</b>	<b>12</b>
5.1 - Eligibility Guidelines for LBT Proposals	12
5.2 - The Phase I Submission Tool (PIT)	13
5.3 - Observing Runs	13
5.4 - Target selection	14
5.5 - Exposure time calculation (ETC)	14
5.6 - Calibrations	15
5.7 - Proposal Evaluation	16
<b>6. DATA FLOW</b>	<b>16</b>
<b>CONTACTING THE LBT ITALIAN COORDINATION FACILITY</b>	<b>17</b>
<b>Acknowledging LBT-Italia Team Contributions</b>	<b>17</b>

# ABOUT THE LARGE BINOCULAR TELESCOPE

The Large Binocular Telescope (LBT) is situated in southeastern Arizona in the Pinaleno Mountains on Emerald Peak at an altitude of 3200m. This area is part of the Coronado National Forest.

The LBT features a binocular design, mounting two identical 8.4-meter telescopes side-by-side on a shared altitude-azimuth base. This configuration provides a combined collecting area equivalent to a single 11.8-meter telescope. The compact nature of the entire telescope and its enclosure is achieved through the fast focal ratio (F/1.14) of the primary mirrors.

The two primary mirrors are separated by 14.4m center-to-center and provide an interferometric baseline of 22.8m edge-to-edge. LBT, employs two advanced adaptive secondary mirrors (ASMs) as key components of its adaptive optics system. These deformable secondaries correct atmospheric distortions in real time at up to 1,000 Hz with nanometer precision. Integrated directly as Gregorian f/15 secondaries, they enable exceptional image quality, achieving Strehl ratios over 80% in the H-band and sharpness surpassing the Hubble Space Telescope.

The LBT is an international collaboration of the University of Arizona, Italy (INAF: Istituto Nazionale di Astrofisica), and The Ohio State University, representing also the University of Minnesota, the University of Virginia, and the University of Notre Dame

## 1. ITALIAN OBSERVING STRATEGY and CONSTRAINTS

### 1.1 - Scheduling and strategy

Since 2010, the Large Binocular Telescope (LBT) has been conducting regular scientific operations. To maximize the scientific return for the INAF community, all INAF observations utilizing the "Facility Instruments" (LBC, MODS, LUCI, and PEPSI) are executed in **service mode**. This is carried out by a specialized team of observers from the LBT Italian Coordination Facility.

Observation scheduling is meticulously planned to adhere as closely as possible to the scientific ranking determined by the INAF Time Allocation Committee (TAC) and to respect the specific observational constraints requested by the successful applicants.

Following the policy established in the 2013-2014 call, the precise schedule for the Italian observation nights remains flexible at the time of this call's release. The Large Binocular Telescope Observatory (LBTO) will finalize the schedule after all partners have selected their observing proposals. This allows for optimal program execution.

Applicants are welcome to propose observations for any target throughout the period, including those with time constraints, such as planet transits, or Targets of Opportunity (ToO).

Our team observers will contact the Principal Investigators (PIs) for programs

assigned to a specific observing run. PIs must then prepare and submit the required observing materials, which include Observation Blocks (OBs) and finding charts. The LBT staff will supply detailed guidelines for the preparation of these OBs.

To maximize observing efficiency despite varying weather and instrumental conditions, our team is equipped to execute programs with diverse sky conditions and instrumental requirements, **irrespective of their original rank**. Therefore, we encourage the community to submit backup programs—defined as those with more relaxed constraints on seeing or background conditions—to be utilized as "filler" observations when seeing deteriorates (e.g., exceeding 1.3 arcsec).

## 1.2 - Maximum exposure time

Due to operational constraints and the need to maximize program completion, the following limitations apply:

- **Maximum Target Observation Time:** Individual targets, or groups of targets with similar Right Ascension (RA), are typically limited to **30-40 hours of open shutter time** for binocular (both telescopes) observation. This limit is reduced to **15-20 hours** if only one telescope is available and includes all necessary overheads.
- **Program Success Probability:** To ensure efficient use of telescope time, larger observing programs are discouraged. Programs that exceed these limits will inherently have a lower success probability and **may be skipped during operations, irrespective of their scientific rank**.

Investigators must determine the necessary exposure time for each instrument configuration using the provided Exposure Time Calculators (ETCs) outlined in section 5.5. This estimated exposure time must be included in both the Proposal Information Tool (PIT, see section 5.2) and the proposal form.

**Important Note: When calculating the open shutter time, assume the LBT has only a single primary mirror. The ultimate implementation of programs in binocular mode will be arranged between the accepted program's Principal Investigators (PIs) and the observers, contingent on the availability of both LBT arms.**

If a binocular setup is scientifically essential (e.g., for simultaneous observations at different wavelengths), users are required to specify this need within the proposal description.

For large and multi-target programs, proposers should prioritize a minimum number of targets and/or exposure times that are sufficient to achieve a publishable, significant scientific result.

We strongly recommend that proposers contact the LBT Italian staff ([lbt-italia@inaf.it](mailto:lbt-italia@inaf.it)) early in the proposal preparation process to verify the feasibility of their proposed programs.

## 1.3 - Time-constrained observations

Types of Observations permitted:

- **Time-Constrained Observations:** You may request observations that are time-sensitive, such as planet transits or solar system objects requiring non-sidereal tracking. Be aware that time-constrained observations carry a risk, as the specific night required may ultimately not be allocated to Italian observers.
- **Target of Opportunity (ToO) Observations:** Requests for unpredictable events requiring prompt follow-up (e.g., Gravitational Waves, Gamma Ray Bursts, Supernovae) are accepted. These will only be executed if they receive a very high ranking from the Time Allocation Committee (TAC). Cross-Partner ToO observations that span different partners' time must adhere to the Time Domain Observation Policy (February 2019).

## 1.4 - Discretionary Time

The INAF Discretionary Time (DT) policy was established in 2012 to enhance flexibility in LBT usage. While this general call is available, DT observations can also be requested at **any time** throughout the year for specific types of proposals:

- **Sudden Events:** Proposals requiring immediate observation of unexpected astronomical phenomena.
- **Urgent Science:** New, unforeseen proposals needing quick observations on highly competitive, hot scientific topics.
- **Follow-up Studies:** Proposals asking for prompt follow-up observations to ground-based or space programs, where rapid implementation is expected to yield breakthrough results.
- **Feasibility Tests:** Proposals of a somewhat risky nature, requesting a small amount of time to test the feasibility of new observing capabilities.

**Mandatory Action for Users:** Users interested in these INAF-DT projects **MUST** contact the LBT Team via e-mail.

The required **DDT form** is available in both MS-Doc and LaTeX formats [here](#).

## 1.5 - Strategic Programs

Strategic Programs are designed to maximize LBT's impact across the astronomical community by achieving significant advances in key scientific areas and showcasing the unique capabilities of LBT's instrumentation.

**Key Differences from Normal Programs:**

- **Duration:** They can be multi-year, extending up to two years, though this is not mandatory.
- **Priority:** Their "Strategic Program" status must be explicitly confirmed by the TAC, resulting in the highest rank and priority during observation scheduling.
- **Execution:** Incomplete execution allows for the program to be "carried over" to the next observation period.

### **Scope and Feasibility:**

Given the limited observing nights available to the Italian community, Strategic Programs should not be viewed as "Large Programs." They should generally adhere to the open shutter time limits specified in paragraph 1.2.

The ideal Strategic Program involves a collection of diverse targets that can be conveniently monitored throughout most of the year.

Proposers are strongly encouraged to contact the LBT Italian staff early in the proposal preparation phase to verify the program's feasibility.

## **1.6 - Shark GTO Programs**

Following the approval of the scientific direction, the SHARK VIS-NIR Teams will be allocated **60 hours in disruptive mode and 9 pre-allocated nights for AO observations**. Because most of the GTO proposals focus on targets in the Taurus region (Right Ascension = 4-5 hours), regular programs with targets in similar RA ranges that require excellent seeing conditions are unlikely to be observed.

## **2. OBSERVING MODES & TELESCOPE CONFIGURATION**

Check the available telescope configurations and binocular modes offered by LBTO at the following link: <https://scienceops.lbto.org/proposal-submission/>:

### **SEEING LIMITED**

- All facility instruments: LBC, MODS, LUCI, PEPSI
- Mixed Mode\*: LBC+MODS, LBC+LUCI, LUCI+MODS, PEPSI+LUCI (LS), PEPSI+MODS

### **DIFFRACTION LIMITED**

- LUCI1 + SOUL (imaging only)
- LUCI2 + SOUL (imaging only)\*
- LBTI

- SHARK - VIS
- SHARK - NIR

\* For shared-risk observations, LBTO and its partners understand and accept that the instrument, capability, or facility might not operate at full efficiency or could experience technical downtime during night operations. LBTO staff may, at their discretion and for the benefit of the wider community, investigate the cause of the issue(s) or pursue recovery actions.

### 3. SEEING LIMITED INSTRUMENTATION OVERVIEW

Facility Instruments are those fully accepted by the Large Binocular Telescope Observatory (LBTO) and can be operated by the Partner Observing Teams. Current instrument descriptions and manuals are accessible via:

<https://scienceops.lbto.org/>

Proposals to use PI and Strategic Instruments, such as LBTI, must be submitted in consultation with the Instrument Principal Investigator before the general proposal submission deadline.

The Instrument Team is solely responsible for operating these instruments. Scheduled PI instrument blocks will include Instrument Team assistance for conducting observations.

#### 3.1 - LBC

**Type:** wide-field imager - FOV: 25'x23'

Facility Instrument - Binocular

LBCB: (SX) 350-650nm, LBCR: (DX) 550-1000nm

LBC is a fully binocular, twin optical imager consisting of two identical, large field cameras, each with a Field of View (FoV) of approximately 25'x23'. These cameras are mounted at the prime foci of the two telescopes and are designed to simultaneously observe the same field.

The instrument is divided into two optimized channels:

- **LBC-Blue:** Optimized for the UV/blue wavelength range, it offers imaging with Bessel filters (U, B, V) and SDSS-like filters (U<sub>spec</sub>, g, r).
- **LBC-Red:** Optimized for the red/near-IR range, it provides imaging using Bessel filters (V, R, I), SDSS filters (r, i, z), the 1 $\mu$ m broad-band Y filter, and the narrow band F972N20 filter, centered at 972 nm.

Further details about the instrument are available

at: <https://scienceops.lbto.org/lbc/>

### 3.2 - LUCI

**Type:** Near IR multi-object, long-slit spectrograph and imager - FOV: 4'x4'

Facility Instrument - Binocular

LUCI1: (SX) 0.85-2.4 $\mu$ m; LUCI2: (DX) 1.00-2.4 $\mu$ m

LUCI (LBT NIR spectroscopic Utility with Camera and Integral-field unit, formerly known as LUCIFER) is a near-IR spectrograph and imager mounted at the Nasmyth focus. It offers imaging, long-slit and multi-object (MOS) spectroscopy in the wavelength range 1- 2.5 $\mu$ m over a field-of-view  $\sim$ 4' x 4'.

Details on the instrument can be found at:

<https://scienceops.lbto.org/luci/>

[https://lbt.inaf.it/LUCI\\_UserMan.pdf](https://lbt.inaf.it/LUCI_UserMan.pdf)

### 3.3 - MODS

**Type:** optical multi-object, long-slit spectrograph and imager - FOV: 6'x6'

Facility Instrument - Binocular

MODS1: (SX) 320-1100nm; MODS2: (DX) 320-1100nm

MODS (The Multi-Object Double Spectrographs) are the twin optical spectrographs and imagers mounted at Gregorian focal stations. Each MODS has two arms highly optimized for the Blue and Red portions of the spectrum. With a 6 arcminute square field of view, it is capable of long-slit and multi-slit spectroscopy as well as imaging in the ugriz bands from 0.33 to 1.1 $\mu$ m.

**MODS Refurbishment Alert:** The MODS instruments are undergoing a major refurbishment, including detector and control electronics upgrades, which is expected to significantly enhance performance. However, because commissioning is still ongoing, a return to routine science operations is anticipated around September. Users should therefore be aware that instrument availability and data reduction methods may change during the next observing period. We strongly encourage users to regularly check official observatory updates:

<https://scienceops.lbto.org/2025/08/19/mods-controller-upgrade/>

or contact the LBT-ITALIA staff for the most current information.

Details on the instrument (before the refurbishment) can be found at:

<https://scienceops.lbto.org/mods/>

<http://www.astronomy.ohio-state.edu/MODS/>

### 3.4 - PEPSI

**Type:** Fiber Feed high-resolution spectrograph and polarimeter.

PI Instrument - Binocular

PEPSI: 383-907nm: Resolution: 50.000, 120.000 and 270.000

PEPSI is the bench-mounted, two-arm, fibre-fed and stabilized Potsdam Echelle Polarimetric and Spectroscopic Instrument for the LBT. Three spectral resolutions of either 50.000, 120.000 or 270.000 can cover the entire optical/red wavelength range from 383 to 907 nm in three exposures.

Two 10.3k x 10.3k CCDs with 9µm pixels and peak quantum efficiencies of 94–96% record a total of 92 echelle orders. It bears a new variant of a wave-guide image slicer with 3, 5, and 7 slices and peak efficiencies between 92–96%. A total of six cross dispersers cover the six wavelength settings of the spectrograph, two of them always simultaneously. The peak efficiency of the system, including the telescope, is 15 % at 650 nm, and still 11% and 10% at 390nm and 900nm, respectively. In combination with the 110 square meters light-collecting capability of the LBT, the expected limiting magnitude of 18th mag in V in the low-resolution mode. A description of the instrument and more information can be found at:

<https://pepsi.aip.de>

<https://pepsi.aip.de/wp-content/uploads/2019/12/1070212.pdf>

## 4. ADAPTIVE OPTICS fed INSTRUMENT GUIDELINES

### 4.1 - LUCI+SOUL

LUCI (**1 & 2**) with SOUL AO correction will be offered in the full period of this call. This imaging mode uses the N30-camera of LUCI with a scale of **0.015 arcsec/pix and provides** a FOV of **30"x30" in the zJHK bands**. Imaging mode only is available with two read-out modes: LIR (double-correlated sampling) and SUR (sample up the ramp). The list of available filters and other info about the N-30 camera are available in sect. 2 of

[LUCI user manual](#)

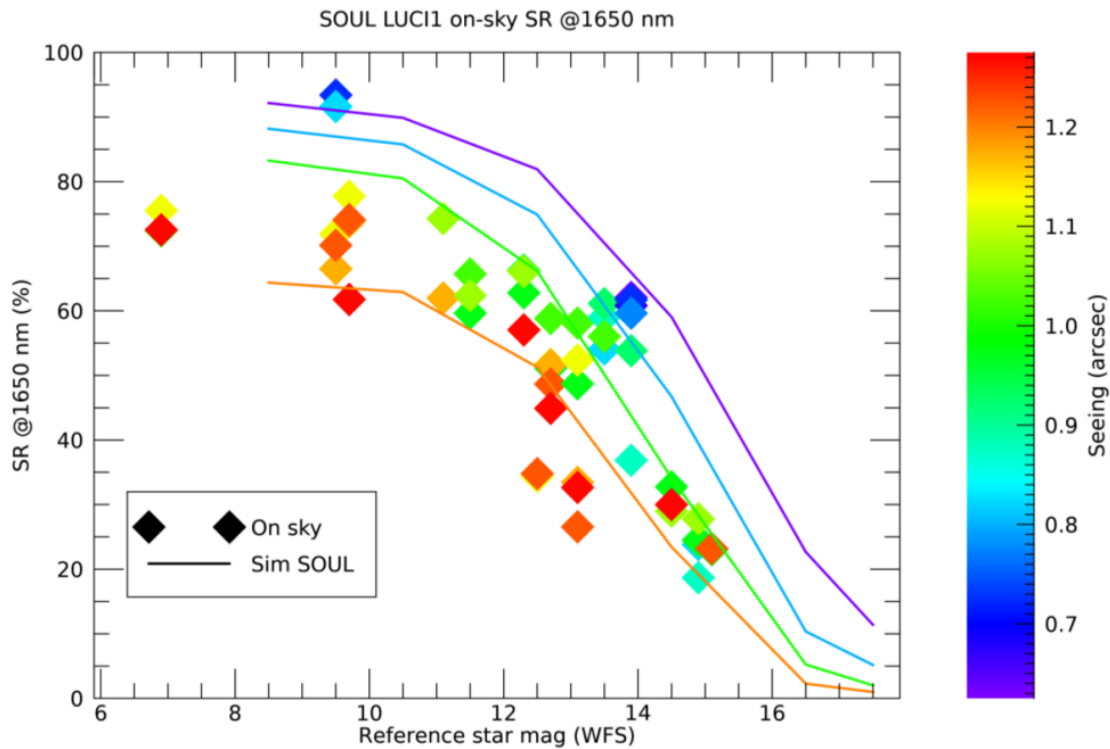
([https://lbt.inaf.it/LUCI\\_UserMan.pdf](https://lbt.inaf.it/LUCI_UserMan.pdf))

SOUL is a Natural Guide Star (NGS) AO system with single conjugation (upgrade of FLAO). The NGS can be the science target itself (even if not properly a star) or a nearby different object. The performances of the system are mainly dependent on the brightness of the NGS, its distance from the target and the seeing conditions. With

“bright” NGSs the system is able to provide diffraction limited images in all bands and high contrasts in the diffraction pattern of the NGS. The current characterization of on-sky AO performances for SOUL-LUCI1 is detailed in:

**[SOUL-T06 SOUL-LUCI performance](#)**

([http://soul.arcetri.inaf.it/wp-content/uploads/2020/09/SOUL-T06 SOUL-LUCI1 performance V1.0 20200918.pdf](http://soul.arcetri.inaf.it/wp-content/uploads/2020/09/SOUL-T06_SOUL-LUCI1_performance_V1.0_20200918.pdf))



**Fig. 1** - SOUL-LUCI1 performance measured on sky during the commissioning, extracted from [SOUL-T06 SOUL-LUCI1 performance](#). Each point represents the average of a set of SR measurements done on the PSF acquired with the LUCI1-N30 camera. The solid line represents the performance expected via simulation. The conversion from catalog mags to WFS mag is available in the SR-calculator tool and detailed in the document.

In order to estimate the expected AO performance on an object we provide a dedicated web tool:

**[SOUL SR Calculator](#)**

(<http://adopt.arcetri.inaf.it/strehl.html>)

Finally, we report the link to the LUCI ETC that is provided with a diffraction limited option, requiring the input of the expected SR value on the object:

**[LUCI Exposure Time Calculator](#)**

(<http://luci-etc.lbto.org/calculator.py>)

In summary, the suggested steps to assess the feasibility on a particular observation

are:

- Identify the AO reference (Natural Guide Star);
- Go to the SR calculator, fill the parameters and obtain estimated SR value;
- Pickup the obtained SR value and use into the LUCI ETC to estimate the SNR vs time on your target;
- Compare the expected performance with respect to those needed for your scientific goal;
- Observers are welcome to contact the SOUL PI in case of doubts or for a preliminary evaluation of a target ([enrico.pinna@inaf.it](mailto:enrico.pinna@inaf.it)).

We remind here that, for the proposal evaluation, it is mandatory to report the estimation of the minimal AO performance required to achieve the proposed scientific goal. This estimation must be reported in the proposal form in terms of SR or PSF FWHM or flux contrast.

More details about diffraction limited observation with LUCI1+SOUL and info are available [here](https://scienceops.lbto.org/luci/preparing-to-observe/adaptive-optics-ao-with-luci/phase-i-planning-for-full-ao/)  
<https://scienceops.lbto.org/luci/preparing-to-observe/adaptive-optics-ao-with-luci/phase-i-planning-for-full-ao/>

## 4.2 - LBTI

LBTI (Large Binocular Telescope Interferometer) is a uniquely powerful common-mount, dual-aperture system that fully exploits the AO capabilities of LBT. LBTI can be used both as an imager and as an interferometer. The LBT Interferometer combines the light from the two 8.4m apertures of the LBT, to synthesize a 23m telescope. The system is optimized for observations in the thermal infrared. Visible light is used to feed the SOUL adaptive optics systems. After the beam combiner, infrared light is sent to one of two scientific cameras:

- **LMIRCam**: high resolution imaging camera, coronagraph and IFU; optimized from **3-5 $\mu$ m** and available in H and K too. Offered as a single dish or Fizeau interferometer.
- **NOMIC**: high resolution camera in the **8-13 $\mu$ m** band. Offered as imager, Fizeau and nulling interferometer.

The full description of the cameras and respective observing modes is available at

[LBTI web page](#)

LBTI focal stations are **fed by SOUL systems** and, as for LUCI1, an estimation of AO performance on specific targets is provided by the web tool:

[SOUL SR Calculator](#)

LBTI is a PI instrument and all proposals must be send at least **1 week before the deadline** to:

[lbtipi@lbto.org](mailto:lbtipi@lbto.org)

in order to check for resource availability of the LBTI team and support the proposal redaction. All details about the access to LBTI for users can be found at

[LBTI User Policy](#)

### 4.3 - SHARK-VIS

SHARK-VIS is the visible-band high-contrast imager of the LBT, fed by the SOUL AO system, and offers both narrow-band and wide-band capabilities. It is optimized for extremely high-angular-resolution and high-contrast imaging in a field of a few arcseconds. It is equipped with a high-cadence low-noise sCMOS camera with a pixel scale of 6.5 mas/pix, which is adequate to Nyquist sample the diffraction limited PSF of the LBT telescope down to 450nm. The instrument adopts a fast-imaging approach, using short DITs to limit the PSF smearing due to atmospheric AO residuals and telescope jitter.

Additional details about the instrument and the available filters and observing modes for the present Call can be found at the following link:

[SHARK-VIS - LBT Call 2026](#)

SHARK-VIS, a PI instrument developed at INAF-Osservatorio Astronomico di Roma, **requires interested proponents to contact the instrument team at least 2 weeks before the deadline.** This mandatory pre-contact allows the team to assess the feasibility of the proposed observations, estimate performance, and check for potential conflicts with the SHARK-VIS scientific team's ongoing programs.

To submit a proposal for SHARK-VIS please contact the PI and instrument scientist:

PI: Fernando Pedichini ([fernando.pedichini@inaf.it](mailto:fernando.pedichini@inaf.it))

IS: Simone Antonucci ([simone.antonucci@inaf.it](mailto:simone.antonucci@inaf.it))

### 4.4 - SHARK-NIR

SHARK-NIR is a PI instrument built at INAF-Osservatorio di Padova with the collaboration of MPIA and Steward Observatory.

SHARK-NIR is the near-infrared-band (between 0.95 and 1.7  $\mu\text{m}$ ) high-contrast imager of the LBT fed by SOUL AO system. It proposes three different observing modes: coronagraphic imaging, classical imaging and medium resolution spectroscopy. The coronagraphic mode allows to observe with different types of coronagraphs: Gaussian Lyot coronagraph; four-quadrant-phase-mask (FQPM) coronagraph; symmetric shaped pupil (SP) coronagraph and two different asymmetric SP coronagraphs. The first two coronagraphs allow observation of a large field-of-view (FOV) with a radius of 9" while the SP coronagraphs have a limited FOV allowing a deep contrast in the region between 0.1" and 0.3". The Gaussian Lyot coronagraph is currently in use for all scientific observations while the other coronagraphs are still in

their commissioning phase and are offered on a best-effort basis. Each observing mode allows the use of both wide-band (Y, J and H) and narrow-band (FeII, HeI, Pa $\beta$ , contJ, contH, NB\_H2 and NB\_H3) scientific filters. Furthermore, both coronagraphic and classical imaging modes allow observation in dual band imaging with the light from the telescope split in two near wavelength images. The possible combinations of filters for the dual-band imaging are: H2-H3, ContJ-Pa $\beta$  and ContH- FeII. Finally, the long slit spectroscopy (LSS) mode allows to obtain spectra with a resolution of R=100 or R=700 in the same spectral region of the imaging mode. This observing mode has been designed to obtain the spectra of bright companions (contrast of the order of 10<sup>-4</sup> -10<sup>-5</sup>) at a separation of less than 1" from the host star, and it has been thoroughly tested on stellar companions while testing on lower mass companions is ongoing.

Additional details on the instrument can be found in the following document:

[SHARK-NIR Instrument Description](#)

**Interested proponents must contact the PI and science team of SHARK-NIR at least 2 weeks before the proposal deadline**, in order to allow the evaluation of the technical feasibility of the proposed observations and to check for possible conflicts with ongoing programs.

To submit a proposal for SHARK-VIS please contact the PI and instrument scientist:

PI: Jacopo Farinato ([jacopo.farinato@inaf.it](mailto:jacopo.farinato@inaf.it))

IS: Valentina D'Orazi ([valentina.dorazi@inaf.it](mailto:valentina.dorazi@inaf.it))

## 5. PROPOSAL SUBMISSION

### 5.1 - Eligibility Guidelines for LBT Proposals

**Principal Investigator (PI) Eligibility:** The PI of a proposal must be a researcher affiliated with an Italian astronomical institution or university.

**Co-Investigator (CoI) Eligibility and Limits:** Researchers from institutions that are not LBT partners may be included in the CoI list, but they must not constitute more than 50% of the total number of applicants.

**Anonymous Submission:** to ensure effective anonymity for the PI and/or team, LBT has adopted an anonymous submission policy for the proposal evaluation process, a trend already established by other telescopes. Proposers must adhere to a set of measures when writing their proposals, which are submitted through the PIT. Before preparing your proposal, please consult the full guidelines in the "[Guidelines for LBT-ITA proposers](#)."

**Proposal Submission Requirement:** Proposals that fail to meet these eligibility requirements will not be reviewed by the Time Allocation Committee (TAC).

**Collaborative Programs:** Proposals that seek to use observing time from other LBT partners are encouraged, and the details of such collaborative programs should be included in the application.

**Independent Review and Self-Consistency:** However, each application must be submitted separately to the respective TACs and will be evaluated independently. Because the various TACs do not coordinate, every application must be scientifically self-consistent. This means the proposal's scientific productivity should not rely on observations carried out by other partners. Coordinated observations may be utilized to expand the scope of the program and/or to enhance observing efficiency and increase the likelihood of completion.

## 5.2 - The Phase I Submission Tool (PIT)

Proposal submission for the LBT 2026-2027 call is managed through the Phase I Tool (PIT), a Java GUI developed by LBTO and customized for the INAF partnership. This tool is mandatory for proposal screening and cannot be bypassed.

### Submission Process:

1. **Preparation:** Fill out the INAF proposal form (available in ms-doc and LaTeX format [here](#)).
2. **Submission:** Use the PIT GUI, downloadable [here](#), to submit the proposal PDF and all necessary information.

**Note on Strategic Proposals:** Requests for strategic proposals must *only* be included in the INAF proposal form, as the PIT GUI does not have a dedicated field for this, consistent with previous calls.

Support is available from us, in collaboration with LBTO, for preparing and submitting proposals using this system.

To ensure effective anonymity for the PI and/or team, LBT has adopted an **ANONYMOUS SUBMISSION** policy for the proposal evaluation process, a trend already established by other telescopes.

Proposers must adhere to a set of measures when writing their proposals, which are submitted through the PIT. Before preparing your proposal, please consult the full guidelines in the "[Guidelines for LBT-ITA proposers](#)."

## 5.3 - Observing Runs

An observing program proposal is composed of one or more "runs," with each run representing the smallest unit that yields self-contained results. A run corresponds to a single instrument configuration and must be distinctly labeled within the Proposal Information Tool (PIT) (e.g., "A, B, C," "A1, A2," "B1, B2," etc.). The Technical

Allocation Committee (TAC) may assess and assign separate priorities to each run independently.

## 5.4 - Target selection

Proposers must carefully consider the requirements for preparing Observation Blocks (OBs) and/or masks when determining the observational feasibility of their proposal.

For instance, in the case of MOS spectroscopic observations of faint targets, it is highly recommended to include extra slits on sufficiently bright targets that will be visible in a single exposure. This practice serves as an additional check on the quality of the mask alignment and greatly facilitates the data reduction process, thereby significantly enhancing the quality of the resulting data.

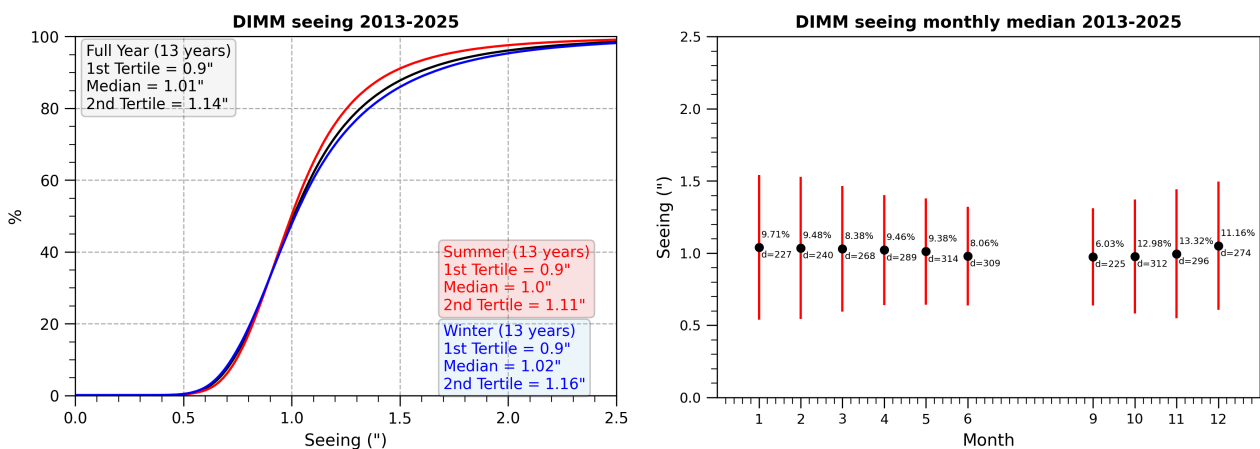
For complex programs, particularly those involving multiple targets, applicants are also requested to present a clear strategy for the eventual publication of the data.

## 5.5 - Exposure time calculation (ETC)

For all instruments, applicants must compute and specify in the proposal only the net exposure time (open shutter time) requested (including special calibrations, see Sect. 6.6), with no correction for overheads.

Exposure times can be evaluated using the following tools:

- LBC: <https://lbt.inaf.it/ETC.php>
- LUCI: <http://luci-etc.lbto.org/calculator.py>
- MODS: [MODS Exposure Time Calculator](#)
- PEPSI: [https://pepsi.aip.de/?page\\_id=1410](https://pepsi.aip.de/?page_id=1410) (NB: use Monocular mode)
- LBTI: see section 4.2



**Fig. 2** - LBTTO Seeing statistics provided by ALTA center (<http://alta.arcetri.inaf.it/climatology/dimm.php>).

Based on the cumulative seeing distribution measured by the ALTA Team (available at <http://alta.arcetri.inaf.it/index.php>), Figure 2 indicates that half (50%) of the available nights have a seeing of 1 arcsecond or better. Consequently, proposals should consider that requesting stricter seeing constraints will result in a lower expected number of nights matching that requirement.

## 5.6 - Calibrations

All proposals must detail their necessary calibration observations and strategy in **Section 6** of the proposal form.

A standard set of basic calibrations will be executed by the service observers, and the time for these must **not** be included in your proposal's requested time.

- **Basic Calibrations:**

- **Imaging:** Bias/dark frames, flat fields, and photometric standards.
- **Spectroscopy:** Darks, flat fields, and arc lamps.

These are typically acquired at the beginning or end of the night, or during the daytime.

**Important Note:** Due to operational constraints, the acquisition of these basic calibrations during the same night as your science observations **is not guaranteed**.

**Any additional, non-standard calibrations** that must be performed during the night-time must be fully described in **Section 5** of the proposal form and their required time must be included in the total time requested. This includes, but is not limited to, spectrophotometric standards taken between consecutive observations and IR telluric standards.

- **Non-Standard Calibrations:**

- Photometric standards: **15 minutes** each.
- Spectroscopic standards (telluric or spectrophotometric): **30 minutes** each.

### **Pre-imaging for Mask Preparation:**

Pre-imaging is **not required** for MOS (Multi-Object Spectroscopy) observations using either LUCI or MODS. Masks can be created using the dedicated tools ([LMS] for LUCI, [MMS] for MODS) by inputting a pre-existing image that has accurate WCS (World Coordinate System) astrometry. Given the minimal distortion in both instruments, the resulting masks will be accurate for all slit widths that are  $\geq 1$  arcsecond or larger.

## 5.7 - Proposal Evaluation

The INAF-TAC (Technical Allocation Committee) determines the final ranking of proposals primarily based on scientific merit. However, other factors are also considered, including scheduling feasibility, the likelihood of proposal completion, and the investigators' past record of using LBT data.

The proposal review process involves two distinct stages:

### Stage 1: External Peer Review (Anonymous)

- Proposals are distributed to external referees (typically 3-5 per proposal) who evaluate them anonymously.
- Each referee assigns a grade and provides feedback on the strengths and weaknesses of the proposal.
- In line with the procedure for other Italian telescopes, PIs (by default) and 2-5 Co-Is for each proposal may be asked to serve as external referees for other LBT proposals.
- PIs must indicate the names of Co-Is who will act as external referees and confirm their consent before listing them.
- The grades are combined to produce a preliminary ranking.

### Stage 2: TAC Final Assessment (Non-Anonymous)

- The TAC receives the external referee grades and re-assesses the ranking.
- In this final phase, the proposals are not anonymous, and the investigators' previous utilization of LBT observations is explicitly taken into account by the TAC when finalizing the ranking.

## 6. DATA FLOW

Scientific data from LBC, LUCI, and MODS instruments will be archived in raw format at the IA2 Italian archive (<http://archive.lbto.org/>) and are generally accessible to the Principal Investigator (P.I.) within a few days of observation.

The procedure for accessing the LBT web interface has been updated. Please consult the help page [here](#) for detailed instructions.

Imaging data from LBC, LUCI, and MODS are processed at the LBC Survey Center (LSC) at OA Roma. All reduced data will be made available to the P.I. at <https://lsc.oa-roma.inaf.it/>.

Since cycle 2021B, the LBT spectroscopic reduction center at IASF-Milano has provided SIPGI (<http://pandora.lambrate.inaf.it/LBT/>), a semi-automatic pipeline. This pipeline is configured to reduce both Long Slit (LS) and Multi-Object Spectroscopy

(MOS) spectra acquired with MODS and LUCI in **standard configurations (see the SIPGI website)**.

**MODS Data reduction update:** The SIPGI team will update the MODS data reduction pipeline as soon as new data become available upon MODS's return to operation. While every effort will be made to release the updated version promptly, there may be a temporary period when the pipeline is not yet available for the reduction of new MODS spectroscopic data.

The LBT spectroscopic reduction center at IASF-Milano also offers a help desk to fully support PIs during the reduction process using the pipeline.

## **CONTACTING THE LBT ITALIAN COORDINATION FACILITY**

For general information: [lbt-italia@inaf.it](mailto:lbt-italia@inaf.it).

For any information dealing with the observations: [lbt-italia-obs@inaf.it](mailto:lbt-italia-obs@inaf.it).

For imaging data reduction: [lbt-italia-img@inaf.it](mailto:lbt-italia-img@inaf.it).

For spectroscopic data reduction: [lbt-italia-spec@inaf.it](mailto:lbt-italia-spec@inaf.it).

### ***Acknowledging LBT-Italia Team Contributions***

To recognize the dedication and professional development of the LBT-Italia team, whose members often contribute beyond their standard duties, we encourage Principal Investigators (PIs) to include one or two team members as co-authors on publications derived from LBT data.

PIs interested in this collaboration option should contact the Italian Coordinator ([roberto.speziali@inaf.it](mailto:roberto.speziali@inaf.it)) for a list of suitable candidates. Thank you for considering this opportunity.