

# Call for proposals for observations on the French telescopes at OHP and TBL: first semester 2022 (22B)

**Deadline for proposal upload: Tuesday October 19th, 2021, noon (Paris - CET time)**

There is an ON-LINE procedure to prepare AND submit the proposals for OHP and TBL. See the description of this procedure below or directly at <https://northstar.omp.eu/>. The server will open on September 19th, 2021.

## News

- The MISTRAL imaging spectrograph is now offered on the T193 to the community, both in visitor mode and ToO mode (Target of Opportunity)
- Commissioning of the SOPHIE RED camera and its environment at T193: a SOPHIE technical shutdown of at least 2 months will take place over a period between March 1 and June 30. MISTRAL and the visiting instruments can be used during this technical stop.
- There is no call for Large Programmes with SOPHIE (T193) and at the TBL this semester (2022A)
- The TBL is offering the Neo-Narval instrument with the Fabry-Perot mode, giving it a stability of 10 m / s. See latest news on the site: <https://tbl.omp.eu/instruments/neo-narval/>. Due to staff reduction, the time offered this semester is reduced by 20%. The development of the new SPIP instrument should not affect the time offered this semester.

## General principles and proposal selection

Information on the telescopes and their instrumentation can be found on the respective observatory home pages:

- [Observatoire de Haute-Provence](#)
- [Observatoire du Pic du Midi](#)

Proposals from PIs working in a French institution are evaluated and selected by a French Time Allocation Committee (TAC), which covers different scientific topics (corresponding to the “[Programmes Nationaux](#)” thematic structures).

- [PNPS](#) (Programme National de Physique Stellaire): Stars and stellar physics (from protostars to planetary nebulae) (coordinator [Agnès Lèbre](#))
- [PCMI](#) (Physico-chimie du Milieu Interstellaire): Physics and Chemistry of the Interstellar Medium (coordinator [Karine Demyk](#))
- [PNP](#) (Programme National de Planétologie): Planetary science (coordinator [Thierry Fouchet](#))
- [PNCG](#) (Programme National Cosmologie et Galaxies): Cosmology and galaxies

- (coordinator Samuel Boissier)
- PNHE (Programme National Hautes Énergies) : High energy astrophysics (coordinator Susanna Vergani)

Primary criteria to rate the proposals on the 2-m telescopes are: scientific value, urgency, previous experience from and results obtained by the team. Combining different proposals, proposing key-programs, and observations made in support of large-size ground-based telescopes or of space borne observations are greatly encouraged. Proposals requiring a large number of nights but fulfilling those conditions may be supported.

The proponent must check that the targets he/she requests are not already present in the OHP and TBL (<http://polarbase.irap.omp.eu>) databases.

A telescope fee for each night is requested. For the successful French teams, this fee, as well as lodging and meals (but not the travel expenses), are granted. Mixed teams with non-French Co-Is are partially funded; the remaining part is paid by the foreign institutions.

All non-French teams that are eligible to the OPTICON (ORP) program must submit their proposals through OPTICON (ORP). The TNA call for this semester 2021A (<https://www.orp-h2020.eu/optical-telescope-transnational-access>) is closed since August 31st 2021.

## **193-cm telescope at OHP**

The mean number of hours of observations per night is 7 hours in winter and 5.5 hours in summer (including weather conditions). These numbers are to be used in the calculation of the number of requested nights.

For 2022A, the OHP reserves 10 nights to OPTICON ORP programs.

### ***SOPHIE Spectrograph***

The SOPHIE spectrograph is available to the community since the end of October 2006. This instrument, covering the 3872-6943 Å spectral range with 39 orders, has two observing modes: high efficiency (HE,  $R \sim 35000$ ) and high spectral resolution (HR,  $R \sim 75000$ ).

For each mode two fibres of 100-micron diameter each ((star and sky, or star and calibration) pipe the light from the Cassegrain adaptor to the spectrograph. Each fibre sees 3 arcsec of the sky. The switch between modes is obtained by moving the fibre heads in the adaptor and takes about 3 minutes. In order to achieve a higher spectral resolution, the HR mode has optical scramblers and a 40-micron exit slit. This makes the throughput 2.5 times smaller.

For the high-resolution HR mode, HR\_fpsimult (Fabry-Pérot on fibre B) template is only recommended for observing programs that need to achieve high accuracy radial velocities (< 5 m/s).

For observing programs not requiring radial velocities more accurate than 10 m/s, it is recommended to use templates HE\_AB and HR\_AB (sky on fibre B) rather than templates HE\_A et HR\_A so that sky spectra can be recorded, which, under the presence of moonlight, can contaminate the spectra and the radial velocity (and thus the cross-correlation profile) of stars fainter than visual magnitude 10-12. Recording the sky also should allow proper subtraction from reconnected s1d spectra.

The spectrograph uses an EEV 44-82 4102x2048 pixel CCD that has two reading modes (fast and slow). The read-out noise is 6.4 e<sup>-</sup> for the fast mode (read-out time = 19 s) and 2.1 e<sup>-</sup> for the slow mode (read-out time = 197 s), which is suitable for the fainter objects. The slow mode is only useful for objects with expected S/B < 30. The spectrograph, attached to the telescope pillar, is installed in a thermally controlled chamber. The dispersive elements are placed in a closed tank filled with nitrogen gas, which provides a constant pressure environment. The instrument software allows the preparation of the observations, the control of the instrument, and complete real time data reduction. All data are archived at the telescope.

In June 2011, the installation of new fibres has considerably increased the stability in radial velocity in the HR and HE modes. The scientific validation achieved during semesters 2011B and 2012A indicates an accuracy of 2 m/s (Bouchy et al., A&A 549, A49, 2013), which allows us to undertake Doppler asteroseismology programs and search for exoplanets of low masses. A new unit of calibration lamps for SOPHIE has been installed at the beginning of semester 2014A and a new software NSTS for preparing the observations. Since the optimization of the thermal regulation of the spectrograph, the intrinsic drifts of the instrument are now less than 1 m/s per hour. The accuracy on the long term is about 2 m/s and 4 m/s respectively for the HR and HE modes. In addition, a stabilized Fabry-Pérot etalon is now installed in the calibration unit, which allows an optimal measurement of the drifts, simultaneously with the HR\_fpsimult. From now on, the ThAr lamps must only be used during the day for calibration sequences; the intrinsic stability of the spectrograph does not require calibration at night. However, if a calibration is required during the night, switch on the ThAr2 lamp, execute the sequence FP2 - ThAr2 - FP2, then switch off the ThAr2 lamp. It is now recommended to use \_fpsimult instead of \_thosimult. A documentation is available online and in the control room of the telescope.

***For more information see:***

- SOPHIE spectrograph: <http://www.obs-hp.fr/guide/sophie/sophie-eng.html>
- SOPHIE spectrograph data products : [http://www.obs-hp.fr/guide/sophie/data\\_products.html](http://www.obs-hp.fr/guide/sophie/data_products.html)
- Access to the public data of the SOPHIE spectrograph: <http://atlas.obs-hp.fr/>

***Large Programs***

**There is no call for Large Programmes this semester (2022A)**

### ***Service mode observing (SOPHIE)***

Service observing mode is offered on the spectrograph SOPHIE. However, the time devoted to this mode is limited and cannot exceed 5% of the total available time. Moreover, if the exposure time exceeds one hour per night, an appropriate justification should be given.

As these service mode observations are conducted by the observers during their missions at T193, program applicants with service mode observations may be called upon to conduct observations with the SOPHIE spectrograph on behalf of the programs that have provided the service mode observations.

In the proposal, the user should estimate the total equivalent number of nights needed for the program: the total exposure time of the program should include 5 minutes of dead time per exposure if the CCD is read out in fast mode and 8 minutes with slow read-out (including pointing of the telescope, time to prepare the spectrograph and read-out of the CCD), except if the requested exposures are consecutive. It should be noted that most of the observations use fast CCD read-out mode. The change from fast to slow read-out of the CCD (and vice-versa) requires taking an offset at each change in the mode of the next exposure, for example an offset in slow mode if the next exposure is read in slow mode.

The requested S/N ratio is the optimal value. The exposure time per object corresponds to the maximum time that the observation will be performed. In service mode, if the ratio S/N as given on line is obtained in a shorter time, the exposure will be automatically stopped.

In addition, if service mode observations are requested, in order to facilitate their planning, it is necessary to fill in the table “observations de service” available at [http://www.obs-hp.fr/guide/sophie/obs\\_service.xls](http://www.obs-hp.fr/guide/sophie/obs_service.xls) and to send it to [ohp.demandes@osupytheas.fr](mailto:ohp.demandes@osupytheas.fr) at the time of the submission of the proposal.

Once an observing program is accepted, it is mandatory to send the observing catalogues before the start of the semester to [herve.lecoroller@lam.fr](mailto:herve.lecoroller@lam.fr).

### ***MISTRAL imaging spectrograph***

The MISTRAL imaging spectrograph is now offered to the community, both in visitor mode and in ToO (Target of Opportunity) mode for rapid transients. The allocated time cannot exceed 15%, including 2.5% in ToO mode, of the total T193 time offered this semester. MISTRAL observations in ToO mode triggered by an alert can be authorized on SOPHIE nights by respecting the following rules:

- Prior approval of OHP management.
- One ToO every 3 nights at maximum.
- 2 hours / night maximum including overheads (pointing / changing instrument

SOPHIE => MISTRAL => SOPHIE).

- Observation within 30 minutes of the alert (the current SOPHIE integration can be stopped if necessary)

MISTRAL is a low-resolution single-slit spectro-imager installed via a focal reducer, at the angled return of the Cassegrain focus on the 1.93-m telescope. A retractable mirror allows very simple and fast switching between SOPHIE and MISTRAL instruments, without mechanical operation.

MISTRAL is equipped with a 2K × 2K deep depletion ANDOR CCD camera (iKon-L DZ936N BEX2DD CCD-22031) cooled by a 5-stage Peltier. The operating temperature can reach -95 °C to -100 °C. Dark current is less than 3 electrons / hour / pixel at -95 °C.

Two dispersers cover the spectral range 4200Å - 9950Å at  $R \sim 700$  resolution. Four motorized modules allow the slit, the gratings, the filters and the calibration mirror to be moved or removed. The FLI filter wheel includes 12 slots for 50-mm filters (available filters: SDSS g', r', i', z' + Y, galactic H, OIIIa & b, H $\alpha$ , SII).

The calibration unit is integrated into the mechanical structure of the instrument. The spectral calibration lamps (Hg Ar Xe) and PLU (tungsten) are injected by four optical fibers via the removable calibration mirror.

The slit can be oriented via the telescope's field rotator.

The main features are available at <http://www.obs-hp.fr/guide/mistral/sub1.html>.

More information is available on the MISTRAL web page:

[http://www.obs-hp.fr/guide/mistral/MISTRAL\\_spectrograph\\_camera.shtml](http://www.obs-hp.fr/guide/mistral/MISTRAL_spectrograph_camera.shtml)

It is strongly recommended to consult the Cookbook available on this page before any request. In case of doubt, it is also possible to contact the support astronomer: [christophe.adami@lam.fr](mailto:christophe.adami@lam.fr).

### *Visitor instruments*

In case of using a visitor instrument, it is compulsory to contact the OHP director to check the feasibility.

### *Data rights*

The proprietary period is **one year**. Once the proprietary period expires, the data enter the public domain and are available to anyone.

## Observations at TBL

The spectro-polarimeter Neo-Narval is offered for semester 2022A. Observations will be conducted in multi-mission service mode, except on specific argued request.

For 2022A, TBL has been offering 7 nights for OPTICON/ORP programs. Please note that OPTICON/ORP proposals are handled independently by a dedicated TAC. The TNA call, available at <https://www.orp-h2020.eu/optical-call-2022a>, is closed since August 31, 2021. See the above link for the criteria of eligibility.

Neo-Narval is a spectro-polarimeter stabilized in pressure and temperature, the long-term objective being a velocimetric stability of  $\Delta v \sim 3$  m/s. Neo-Narval is installed since September 2019 and the integration of the Fabry-Pérot occurred in October 2020. First applied to comparison stars, this 3rd channel is now offered for observing programs. For reasons of channel pollution, PIs are strongly advised to give priority between either radial velocity precision or spectral quality precision. Currently, the latter is chosen by default. Transmission and polarimetric separation capability are similar to those of Narval in spectropolarimetry but Neo-Narval shows a better efficiency on the sky. The latest information on Neo-Narval is available at: <https://tbl.omp.eu/instruments/neo-narval/>. Neo-Narval has been developed, integrated and tested for TBL within the OMP (TBL, IRAP and UMS OMP collaboration).

For a project aiming at sampling the rotation of the star (e.g. Zeeman Doppler Imaging), the proponent is encouraged to specify the rotation period to justify the requested frequency of the proposed observations.

### *Service observing*

Please check the [latest news on developments of service observing at TBL](#). The observation statistics for the last years are available at <https://tbl.omp.eu/observer-au-tbl/statistiques-observations/#toc9>.

### *Proposal submission*

The proposals (submitted using the on-line procedure) will be gathered by INSU and forwarded to the Time Allocation Committee.

A given proposal should refer to a main thematic field (covered by a so-called [programme national](#)), although some proposals may concern several fields.

### *Large Programmes (2022A)*

**There is no call for Large Programmes at TBL for 2022A.**

## Submission procedure

All proposers must submit their proposals using the software <https://northstar.omp.eu/> developed by the SEDOO OMP. Proposers must register and connect to the site through ORCID (automatic procedure) in order to submit their proposals.

Please send your TECHNICAL (only) questions to François André ([francois.andre@obs-mip.fr](mailto:francois.andre@obs-mip.fr)). Other questions should be directed towards either the contact person for each telescope or towards the INSU representative Bruno Bézard ([bruno.bezard@obspm.fr](mailto:bruno.bezard@obspm.fr)).

**Deadline for proposal submission: Tuesday October 19th, 2021 at noon (Paris time).** No late proposals will be considered, whatever the reason.

[Bruno Bézard](#) Chargé de mission INSU-AA