



# **5<sup>th</sup> Announcement of Opportunity for Observing Time in the CHEOPS Guest Observers Programme**

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## **CHEOPS Discretionary Programme**

### **Policies and Procedures CHEOPS-EST-SCI-TN-014**

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# 1. INTRODUCTION

This document serves as a comprehensive guide for potential users of the European Space Agency's (ESA's) CHaracterising ExOPlanet Satellite (CHEOPS). It outlines the policies and procedures relevant to the preparation and submission of proposals requesting observing time in the Guest Observer's (GO) Programme.

This document has been updated to reflect the GO Programme at the 5th Announcement of Opportunity (AO-5), which covers observations during the period from 1 October 2024 until 30 September 2025. This document also outlines all information for the Discretionary Programme (DP), which is open on a rolling basis. Any information detailed here takes precedence over that presented in other/previous documentation.

Submitting observing proposals for CHEOPS is a two-step process:

- Phase I Phase 1 inputs are submitted through the Proposal Handling Tool for Phase 1 (PHT1). Proposals are made up of (a) team expertise, (b) scientific justification, and (c) technical justification and implementation documents. It also includes target details and outputs from tools used in proposal preparation. Proposer information will not be shared with the Time Allocation Committee (TAC) before the review is concluded.
- Phase II Phase 2 inputs are required for proposals that have been awarded observing time. They are submitted through the dedicated [Proposal Handling Tool for Phase 2 \(PHT2\)](#).

ESA now conducts a double-anonymous peer-review for Phase 1 proposals. As such, proposers must not include information that could reveal their or their teams' identity into any of these documents or file names. Breaking this will lead to a rejection on formal grounds.

This document is organised as follows:

- Section 2 provides a brief introduction to CHEOPS;
- Section 3 gives an overview of the different categories of observing time;
- Section 4 explains constraints specific to AO Calls and the DP, including which targets can be observed with CHEOPS;
- Section 5 provides an overview of the tools and documentation available to aid the observer in their proposal preparation, together with a detailed description of the content required for the different elements of the Phase 1 proposal;
- Sections 6 and 7 give detailed descriptions of the proposal submission procedure and the ESA proposal evaluation/selection procedures, respectively;
- Section 8 provides a short description of the Phase 2 data entry required from PIs of proposals awarded CHEOPS observing time;
- Section 9 contains information on CHEOPS data products and proprietary periods;
- Section 10 summarises how personal and intellectual data that is submitted in CHEOPS observing proposals will be used within the CHEOPS mission
- The appendix contains a list of key documents and website links for further information

Prospective proposers must read all Sections of this document carefully and consult the additional information provided in the references and webpage links, in particular:

- [Mission Website](#)
- [GO Programme Website](#)
  - [AO Webpage](#)
  - [DP Webpage](#)

Prospective proposers are reminded that the team supporting the GO Programme is small, in-line with the small-class mission status of CHEOPS. Whilst every effort will be made to respond quickly to questions raised in the framework of proposal submission, it is the responsibility of the proposers to get in contact way ahead of any deadline if support is needed.

## 1.1. Acronyms

AO	Announcement of Opportunity
BJD	Barycentric Julian Date
CHEOPS	CHaracterising ExOPlanet Satellite
CET	Central European Time
CEST	Central European Summer Time
CST	CHEOPS Science Team
CMC	CHEOPS Mission Consortium
Co-I	co-Investigator
DP/DT	Discretionary Programme/Discretionary Time
EM1/EM2	First/Second Extended Mission
ETC	Exposure Time Calculator
GO	Guest Observers
GTO	Guaranteed Time Observers/Observing
IOC(R)	In-Orbit Commissioning (Review)
ICRS	International Celestial Reference System
MOC	Mission Operations Centre
MJD	Modified Julian Date
M&C	Monitoring and Characterisation
NM	Nominal Mission
OR(s)	Observation Request(s)
PHT1	Phase 1 Proposal Handling Tool
PHT2	Phase 2 Proposal Handling Tool
PI	Principal Investigator
PS	Project Scientist
RTL	Reserved Target List
SOC	Science Operations Centre (University of Geneva)
TAC	Time Allocation Committee
UTC	Coordinated Universal Time

## 1.2. Foreseen timeline for the AO-5 Call

Date	Event/comment
12 March 2024, 12:00 (noon) CET	AO-5 Call opens. GTO Reserved Target List (RTL) of up to 50 targets is frozen and made publicly available. The Proposal Handling Tool for Phase 1 (PHT1) opens.
25 April 2024, 12:00 (noon) CEST	AO-5 Call closes. Double-anonymous peer-review starts.
5-7 June 2024	Meeting of the CHEOPS Time Allocation Committee (TAC).
25 June 2024 (foreseen by)	Announcement of accepted AO-5 programmes. PIs of all submitted AO-5 programmes will be informed of the status of their proposals in due course.
5 July 2024 (starting from)	PIs of accepted AO-5 programmes prepare their Phase 2 inputs, with reviews by ESA and the SOC. First, PIs prepare and save (but must not yet submit) their observation requests (ORs) as soon as possible. Next, ESA and SOC review the saved ORs, and iterate with PIs as needed. Finally, the PIs update and submit their ORs.
1 October 2024	Start of AO-5 observations.

## 1.3. Foreseen timeline for the DP

The DP is open for submissions on a rolling basis. DP proposals must be submitted at the latest 3-4 weeks before the date of the first possible observation. We highly recommend already alerting us via email to [cheops-support@cosmos.esa.int](mailto:cheops-support@cosmos.esa.int) before you start preparing your DP proposal, as this will allow our team to prepare for the incoming submission.

## 2. CHEOPS OVERVIEW

CHEOPS is the first mission dedicated to the search for exoplanetary transits through high precision photometry of individual, bright stars already known to host planets. The mission is a partnership between Switzerland and ESA with important contributions from 10 other ESA member states that make up the Swiss-led CHEOPS Mission Consortium (CMC).

CHEOPS was launched from ESA's spaceport in Kourou on 18 December 2019 as a co-passenger on a Soyuz rocket, with the early orbit phase culminating on 22 December 2019. In-orbit commissioning (IOC) started on 7 January 2020, and concluded with a successful IOC Review held on 25 March 2020. On this date, the responsibility for CHEOPS operations was handed over from ESA to the CMC led by the University of Bern, Switzerland. This date also marked the start of the 3.5-year nominal mission (NM) lifetime, running from 25 March 2020 until 24 September 2023. Routine science operations began a few weeks after on 18 April 2020. ESA's Science Programme Committee meeting on 7 March 2023 approved a first mission extension (EM1) from 25 September 2023 until 31 December 2026, and an

indicative second mission extension (EM2) from 1 January 2027 until 31 December 2029 (both contingent on ongoing commitments and confirmations from national contributors and partners).

The CHEOPS payload consists of a single instrument - a space telescope with a primary mirror with an effective diameter of 30 cm, which feeds a single CCD focal plane detector covering 330 – 1100 nm with a field of view of 0.32 deg<sup>2</sup>. The payload design and operation has been optimised for ultra-high photometric stability and to achieve a photometric precision of, or better than, 20 parts per million (ppm) on the light curve of a  $V_{\text{mag}} = 9$  G dwarf star ( $T_{\text{eff}} = 5500$  K) in 6 hours, and 85 ppm or better on the light curve of a fainter  $V_{\text{mag}} = 12$  K dwarf star ( $T_{\text{eff}} = 4500$  K) in 3 hours. In both cases, these levels of precision are called for over periods of 48 hours and thus, together with high-cadence (from one image circa every 23 s to 1 image every 60 s) sampling, CHEOPS offers the capability to measure high-precision, high-cadence, broad-band light curves covering the visible to near infrared waveband.

Please explore the [Mission Website](#) and resources listed therein for more information.

## 3. OBSERVING TIME

### 3.1. Division of operational and science time

An estimated 10% of the total time in a year is top-sliced for two activities: (a) spacecraft- and instrument-related activities, such as satellite/instrument software maintenance and patching, satellite safe mode and recovery, and anomaly investigation; and (b) a dedicated Monitoring and Characterisation (M&C) Programme. The M&C Programme has been designed by the CHEOPS Science Team (CST) to establish the scientific performance and characteristics of the payload, and to monitor their evolution over the course of the mission lifetime (see the [Observers' Manual](#)). In the case that the top-sliced time used is either less than or more than 10% of a CHEOPS year, it will be either reassigned to or taken from the nominal science observing time according to the time split between the Guaranteed Time Observing (GTO) and GO Programmes described below.

The time remaining in a year is referred to as nominal science observing time, or science time.

### 3.2. Guest Observers time

Of the nominal science observing time, twenty percent (20%) in the NM and thirty percent (30%) in the EM1 is available through the ESA-run GO Programme to the global science community to conduct investigations of their choice. The Programme is administered by ESA, using tools and an [Observers' Manual](#) provided by the CMC. The GO Programme is split into two parts:

- Announcements of Opportunity (AOs), which are calls for proposals foreseen on an annual cycle and fill a minimum of 75% of the GO time;
- Discretionary Programme (DP), to which proposals can be submitted throughout the year and fills up to 25% of the GO time.

Additional details can be found on the [GO Programme Website](#).

### 3.3. Guaranteed Time Observations (CHEOPS Science Team)

A major part of the nominal science observing time on CHEOPS, eighty percent (80%) in the NM and seventy percent (70%) in EM1, is dedicated to observations that are defined by the CST, and that are collectively referred to as GTO.

In the EM1, the GTO focuses on 3 axes of maximum scientific return:

- Architecture of systems and structure of planets (Axis 1)
- Atmospheres and climates of irradiated planets (Axis 2)
- Deep characterisation of planets and their environments at the frontier of exoplanet science (Axis 3)

A share of the CHEOPS GTO ( $\leq 15\%$ ) will be dedicated to building community synergies through the Synergy with other Missions (SoM) programme run by the CMC.

Additional details can be found on the [GO Programme Website](#).

## 4. CONSTRAINTS AND CONSIDERATIONS

### 4.1. Eligibility

AO-5 and the DP are open to the worldwide scientific community, regardless of nationality or institutional affiliation.

Undergraduate and PhD students are eligible if it is guaranteed that their supervisor can provide sufficient guidance throughout the proposal, observation planning, and data analysis steps. The supervisor must then be listed as co-I, clearly indicated as such, and actively take part in all correspondence.

An eligible DP proposal for early-career researchers (i.e., before PhD award or within 5 years from PhD award) must meet the following criteria:

- Contain a single target of high scientific interest
- Contain a target/event that is observable by the date by the end of the running AO observing cycle and that is not on the Reserved Target List

An eligible DP proposal for mid- and late-career researchers (i.e., more than 5 years after PhD award) must meet the following criteria:

- Contain a single target of high scientific interest
- Contain a target/event that is observable by the date by the end of the running AO observing cycle and that is not on the Reserved Target List
- Demonstrate that the target was either (a) discovered, or (b) declared to be of high scientific interest since the closure of the previous AO

## 4.2. Observing period and available time

AO-5 covers the allocation of observing time/orbits (an orbit is circa 99 minutes in duration) during the period from 1 October 2024 to 30 September 2025. In exceptional cases, it may be possible to schedule observations only 1 week in advance, however this opportunity cannot be guaranteed. Additional orbits may be available in case of a very strong interest in/oversubscription of the AO Call. To facilitate the efficient scheduling of observations, up to a factor of approximately 33% more time than is physically available may be allocated during the AO Call.

DP proposals must be submitted at the latest 3-4 weeks before the date of the first possible observation. It is highly recommended to already alert the CHEOPS PS ([cheops-support@cosmos.esa.int](mailto:cheops-support@cosmos.esa.int)) before working on a DP proposal, as this will allow the team to prepare for the incoming submission.

## 4.3. Sky visibility

CHEOPS can observe different regions of the sky at different times throughout the year, due to its passages through the South Atlantic Anomaly and straylight from the Sun, Earth, or Moon. The [Observers' Manual](#) and [Sky Visibility](#) webpage provide additional information, such as annual and monthly visibility plots, and the Visibility Tool and Scheduling Feasibility Checker (SFC).

## 4.4. Time requested

There is no maximum amount of time that may be requested in a single proposal.

There is an absolute minimum of 1 orbit per single pointing or “visit” (see [Observers' Manual](#)). In cases where high photometric precision is required, the minimum recommended duration of a visit is 5 orbits.

An individual visit should be no longer than 100 orbits, which is set by the 1-week duration of the observing schedule (activity plan) that is uplinked to the spacecraft. Under exceptional circumstances it may be possible for an observation with a longer duration (e.g., longer than 1 week) to be scheduled by splitting it into two contiguous visits. Such long visits have a significant impact on the CHEOPS schedule, however, and will be considered in very rare cases only.

## 4.5. Sampling/cadence

The maximum image cadence is dependent on the exposure time and the stacking order required to meet the available downlink bandwidth. A higher temporal sampling may be achieved through the processing and analysis of imagerettes which are not stacked. See the [Observers' Manual](#) for further details.

## 4.6. Limiting target magnitudes

CHEOPS' photometric performances are presented in the [Observers' Manual](#) and can be explored further using the [Exposure Time Calculator \(ETC\)](#).



There is no bright limit to the magnitude of an object that can be observed with CHEOPS.

The photometric performance for observations of stars fainter than  $G_{\text{mag}} \approx 11$  can vary a lot depending on stray light levels and background contamination, and users proposing targets at this magnitude or fainter can expect the photometric precision of the light curve products to vary, particularly in crowded fields. For such cases, a higher level of photometric detrending (not included in the data reduction pipeline) will be needed to extract the best possible performance from the data.

To get a feeling for the achievable precision, please search for observations of faint targets in the [Mission Archive](#) as many data sets are already public.

As faint-target observations may be carried out under conditions that could be detrimental to the scientific goal of the observations, proposals for objects that are much fainter  $G_{\text{mag}} \approx 11$  will be considered at the discretion of the TAC.

#### 4.7. Time criticality of observations

Both time-critical and non-time critical observations may be requested. Proposals for non-time critical observations that can be flexibly scheduled, and either broken up or extended to fill gaps between time-critical observations can also be submitted. A short explanation of why flexible scheduling is appropriate, together with a proposed approach, should be included in the technical justification.

#### 4.8. Uncertainties in ephemeris

Target ephemerides are only required at the Phase 2 input stage (see Section 8). Once this is completed, updates are only foreseen in exceptional circumstances. Where possible, in case of time-critical observations, proposers should therefore allow for uncertainties in ephemerides (e.g., mid-transit times and orbital periods) when considering their observing time requests in Phase 1.

#### 4.9. Reserved targets (i.e., lines of sight), unreserved targets, and more

Please pay close attention, as there are several novelties as of EM1. Most importantly, there will only be 50 targets reserved for the GTO Programme. All other targets are open for GO proposals in AOs and the DP in EM1. Due to this novelty in EM1, some special cases may appear (see below). If you have any questions, please contact the CHEOPS PS ([cheops-support@cosmos.esa.int](mailto:cheops-support@cosmos.esa.int)).

All targets (i.e., lines of sight) and programmes of the GO and GTO Programme are available to see for the Community. These can be consulted at any time using the PHT2 interface's [Target and Programme Information](#) webpage and its [Target Checker](#). Prospective AO-5 proposers must check their targets again after the AO-5 Call opening. Prospective DP proposers must check their targets again at the time of submission.

The GTO Programme's Reserved Target List (RTL) contains up to 50 targets which must not be included in GO proposals. The RTL is frozen from the AO-5 Call opening until its closure. The RTL is available via the [Target Checker](#) and as a CSV file on the [CHEOPS GO Programme Website](#).

The GTO Programme will also contain many unreserved targets. These are completely open for all GO proposals in AOs and the DP in EM1. The PHT2 interface's [Target and Programme Information](#)

webpage and its [Target Checker](#) will also identify these targets clearly. If there happens to occur a science case overlap of a GO proposal with already scheduled/ongoing GTO unreserved targets, then the CHEOPS Project Scientist (PS) will liaise between both parties. First, the GO and GTO teams will be encouraged to collaborate and share resources. Both parties are fully free to decide against this, in which case both programmes may go ahead independently.

The available tools give a full insight into whether targets are reserved, unreserved, or not part of any current GTO or GO programme. The pages also describe the scientific goals of the respective programmes.

**Case 1: A target is part of the GTO Reserved Target List (RTL).**

- GO proposals for this target are not possible. This target (i.e., line of sight) is reserved by active GTO programmes.

**Case 2: A target is part of an active GO programme.**

- GO proposals for this target are welcome if they address different or additional science cases compared to active GO programmes. Before submitting a GO proposal, please contact the CHEOPS PS ([cheops-support@esa.cosmos.int](mailto:cheops-support@esa.cosmos.int)). Please also consult the [Mission Archive](#) for past observations on this target.

**Case 3: A target is not part of any active programme.**

- GO proposals for this target are welcome and all science cases can be proposed. Please also consult the [Mission Archive](#) for past observations on this target.

**Case 4: A target is part of an active GTO programme but unreserved.**

- GO proposals for this target are welcome. While the target is already part of active GTO programme(s), it is not reserved and can be included in new GO programmes. If you have any questions, please contact the CHEOPS PS ([cheops-support@esa.cosmos.int](mailto:cheops-support@esa.cosmos.int)). Please also consult the [Mission Archive](#) for past observations on this target.

**Case 5: A target is part of active GTO and GO programmes but unreserved.**

- GO proposals for this target are welcome if they address different or additional science cases compared to active GO programmes. This target (i.e., line of sight) is part of active GTO and GO programmes but is not reserved by the GTO programme. Before submitting a proposal, please contact the CHEOPS PS ([cheops-support@esa.cosmos.int](mailto:cheops-support@esa.cosmos.int)). Please also consult the [Mission Archive](#) for past observations on this target.

A target is no longer reserved when all requested observations for the target have been completed. Thus, a small number of targets that appear on the RTL at the AO-5 Call opening may become available again before the AO-5 Call closure. Moreover, many targets may become available again for the DP during the following AO-5 observation cycle. The online tool must therefore always be checked, as it provides the definitive status of a target.

It might be possible to submit DP proposals while the AO-5 Call is open, if all usual DP criteria are fulfilled and observations are required before the beginning of the AO-5 observing cycle. However, in such a case all DP allocation expires once the AO-5 observing cycle starts. Before working on such a proposal, please contact the CHEOPS PS ([cheops-support@esa.cosmos.int](mailto:cheops-support@esa.cosmos.int)).

#### 4.10. Previously observed targets

Prospective proposers should contact the CHEOPS PS ([cheops-support@cosmos.esa.int](mailto:cheops-support@cosmos.esa.int)) in cases where the target of interest is not reserved, but for which there are existing observations in the CHEOPS archive mission (even if proprietary). Justification for the additional observations beyond those in the archive needs to be included in the observing proposal.

#### 4.11. Coordinated observations with other facilities

Coordinated observations with other facilities are not routinely feasible with CHEOPS, given the small mission size, available resources, and operational constraints. However, they may be considered in exceptional cases and executed on a best-efforts basis.

#### 4.12. Solar system objects

Solar system objects may be observed with CHEOPS, however there are important caveats:

- CHEOPS uses sidereal tracking only and thus cannot track Solar System objects. The resulting static coordinates (in RA and Dec) that are needed to prepare the detailed observation requests mean that such observations can become highly time-critical and limit significantly the period for which such observations can be executed.
- Observations of stellar occultations by, e.g., trans-Neptunian objects, are possible, however require a very precise knowledge of the position of the occultation in the sky relative to the CHEOPS orbit. It is the responsibility of the proposer to determine this. Such programmes introduce significant complexities and will be done on a best-effort basis.

### 5. PHASE 1 PROPOSAL PREPARATION

The content of a Phase 1 proposal has been designed to enable a thorough scientific and technical evaluation of the proposed observations to be made. A short summary of the tools and documents available to support proposal preparation is provided in Section 5.1. This is followed by a detailed description of each Section/component of a Phase 1 proposal in Section 5.2.

All material must be written in English using a minimum font size of 10 pt, A4 portrait paper format and 1.5 line spacing. Where applicable, page limits for the individual components are noted in Section 5.2. All documents need to be submitted as PDF files, where individual files must not exceed 10 MB. Note that non-compliance with instructions given in this Section will result in rejection of the proposal on formal grounds.

Word templates for the scientific justification, and for the technical justification and implementation can be found on the webpage for the AO. The equivalent formats should be used when preparing proposals using any other software package.

## 5.1. Step-by-step guide: tools, aids and documentation

The proposal submission has been streamlined into 7 easy-to-follow steps, which are outlined below.

Several tools and documents have been developed by ESA and the CMC to facilitate preparation of proposals. A summary of these, together with some AO specific material and overview presentations, is given in Table 3.

Details on technical aspects are given in the [Observers' Manual](#), which provides a pivotal point of reference for all aspects of the mission. It includes a comprehensive overview of CHEOPS, a detailed description of the instrument and operations, and examples of several tools and techniques.

Step	Description
1. <a href="#">Registration</a>	As your very first step, you must register for the GO Programme. As all registrations are manually reviewed, please register at least 1 week ahead of the proposal deadline.
2. <a href="#">Coordinates</a>	All coordinates must be in (J2000, ICRS). This is the most common source of error in proposals, and can lead to severe delay or missed opportunities. Please read the regulations carefully.
3. <a href="#">Visibility Checks</a> <ul style="list-style-type: none"> <li><a href="#">Visibility Tool</a></li> <li><a href="#">Scheduling Feasibility Checker (SFC)</a></li> </ul>	<p>With these tools you can check whether and when a target is visible to CHEOPS. You can also assess the impact that interruptions due to passage through the South Atlantic Anomaly and Earth Occultation have on your targets' visibility and observing efficiency. Note that the actual level of interruptions can differ from these estimates due to changes in orbital parameters.</p> <p>Details of the periods of target visibility need to be included in the Technical Justification.</p>
4. <a href="#">Target Status Checks</a> <ul style="list-style-type: none"> <li><a href="#">Target Checker</a></li> <li><a href="#">Mission Archive</a></li> </ul>	<p>With the start of EM1, the GTO Programme's RTL contains only up to 50 targets. All other targets are open for GO proposals.</p> <p>Use these tools to verify the status of all targets. The Target Checker indicates whether a target is on the RTL, part of an existing programme but unreserved (i.e., open for GO proposals), or not part of any existing programme (i.e., open for GO proposals). The Mission Archive gives you an overview of all previous observations and existing data on your proposed targets, including public and proprietary data.</p> <p>With both tools, SIMBAD can be used to retrieve/resolve the coordinates from target names. However, always double-check the targets' status by using the target coordinates, not the target name, as not all target names (e.g., TESS Objects of Interest) are resolvable.</p>

<b>5. <a href="#">Exposure Time Calculation</a></b> <ul style="list-style-type: none"> <li><a href="#">Exposure Time Calculator (ETC)</a></li> </ul>	This tool calculates the predicted photometric precision that can be achieved in a given integration time. The results can be exported to a PDF file and are required input to PHT1.
<b>6. <a href="#">Proposal Templates</a></b>	The available proposal templates allow you to directly fill in your content.
<b>7. <a href="#">Submission: Phase 1</a></b> <ul style="list-style-type: none"> <li><a href="#">Proposal Handling Tool for Phase 1 (PHT1)</a></li> </ul>	Now you are ready to submit all your proposals and information. The tool will allow you to enter all required PI and co-I information, provide your target input, and upload your files. You can still edit proposals up to the deadline.

Additional tools, aids, and documentation are accessible via the [Mission Website](#) and [GO Programme Website](#), respectively. A selection of these is also listed in this document's appendix and we strongly recommend familiarising yourself with these during your proposal preparation.

## 5.2. Components of a Phase 1 proposal

### 5.2.1. Team Expertise & Management Plan (non-anonymous) – PDF file #1

The Team Expertise & Management Plan document is the only non-anonymous document and is only visible to the CHEOPS PS. Details are not revealed to the TAC before their scientific evaluation is concluded.

The Team Expertise & Management document must provide a concise summary of (max. ½ page):

- Team background: List of co-Is (including name, institution, country) together with a short description of the track records of the team.
- Team roles: Description of the tasks to successfully complete the science objectives, together with assignment of team roles and responsibilities of each member.

### 5.2.2. Scientific Justification (anonymous) – PDF file #2

The main part of the Scientific Justification document must be strictly anonymous to enable double-anonymous peer-review. No information that could identify the proposing team's names, affiliations, or other characteristics is allowed. References must be given in a neutral way, e.g., instead of "We have previously shown..." one should use "XYZ et al., 2023, have previously shown..."

The Scientific Justification document shall include the following information, in distinct sections:

- Description of the proposed programme (max. 2 pages), to include:
  - Title of the proposal\*
  - Science goals: questions to be addressed by the observations proposed, to include a clear description of how CHEOPS observations will advance the state of knowledge in the area covered by the proposal.

- c. Why CHEOPS: a clear description and justification of the functionality and performances that will enable the science goals of the programme to be achieved.
- An additional max. ½ page is allowed solely for tables and figures, if required.
- A concise description of the data reduction/analysis plan (max. 1 page)

The completed file needs to be uploaded into PHT1 in the form of a PDF file no larger than 10 MB (strictly enforced). All items marked with an asterisk (\*) must match the PHT1 inputs exactly.

Note that proposals exceeding the limits noted above will be rejected on formal grounds and will not be reviewed further.

### 5.2.3. Technical Justification & Implementation (anonymous)

The Technical Justification & Implementation documentation is made up of three individual PDF files described below. These need to be uploaded into the PHT1 tool, each with a file size no larger than 10 MB (files larger than this will be rejected by the tool). All items marked with an asterisk (\*) must match the PHT1 inputs exactly.

#### 5.2.3.1. Technical Justification & Implementation Case – PDF file #3

The main part of the Technical Justification & Implementation document must be strictly anonymous to enable double-anonymous peer-review. No information that could identify the proposing team's names, affiliations, or other characteristics is allowed. References must be given in a neutral way, e.g., instead of "We have previously shown..." one should use "XYZ et al., 2023, have previously shown..."

The page limit is max. 1 page excluding target details. To include:

- Title of the proposal
- Observing strategy, including overall strategy and target selection criteria.
- Target details: Names; Coordinates RA (J2000, ICRS) and Dec (J2000, ICRS) in decimal format up to 6 and 5 digits, respectively; GAIA G band magnitudes, spectral types, number of orbits per visit, and number of visits per target.
- Time request: Total observing time requested (in orbits), together with a full calculation justifying the need for the time requested. This must include a reference to the ETC results to demonstrate that the precision to achieve the science objectives can be met within the time requested. Time requests must allow for time lost due to interruptions (see ETC documentation), but not for slewing.
- Any special requirements/constraints and justifications for these: e.g., observing efficiency, the criticality of start and stop times of observation requests, the need for simultaneous observations with other observatories, visits longer than 100 orbits etc.
- Proof that either the new Visibility Tool (available via Python script and Jupyter Notebook) or the Scheduling Feasibility Checker (SFC; available via Docker) has been used to verify the feasibility of all proposed observations, together with dates or intervals for which the target can be observed with the required efficiency. If many observing opportunities are available (e.g., observations of the transit of a very short period exoplanet), a summary and shortened selection is sufficient (e.g., the earliest and latest availability dates).

An additional max. 1 page is available for tables containing scheduling and target details, if required.



### 5.2.3.2. Visibility Checks – (included above)

Proposer must verify if and when their target is observable, and proof that they can achieve a sufficiently high observing efficiency. For these, you can choose between two tools in Phase 1:

- Either the new [Visibility Tool](#) (available as a Python script and a Jupyter Notebook);
- Or the modernised [Scheduling Feasibility Checker](#) (SFC; available via Docker).

The results of either of these tools must be included in the Technical Justification & Implementation Case PDF file (described above).

### 5.2.3.3. Target Status Checks – PDF file #4

Proposer must check and confirm that:

- a. The target is not already reserved. Check using the [Target Checker](#) and RTL. Proposers must check whether a target is eligible by using the target coordinates, not the target name. SIMBAD is used to retrieve/resolve the coordinates of named targets, however not all targets (e.g., TESS objects of interest) are resolvable.
- b. The target has not already been observed. Proposers must verify this via the [Mission Archive](#).

Note that both tools are sensitive to dashes and spaces. Thus, please not only query the archive using target names, but also try (in a separate query) target coordinates.

You must take screenshots of both tools' results for all targets in your proposal, with individual results concatenated into a single PDF file containing the Target Checker and Mission Archive information. The concatenated PDF file needs to be uploaded as part of the proposal (see below).

### 5.2.3.4. Exposure Time Calculation – PDF file #5

Proposers must use the online [Exposure Time Calculator \(ETC\)](#) to estimate the relevant parameters for their observation and show that they can indeed achieve the necessary signal-to-noise for their science. The ETC produces a PDF file of the calculation, which includes both the input and output parameters for a single target. This PDF file needs to be uploaded as part of the proposal (see below).

## 6. PHASE 1 PROPOSAL SUBMISSION

The proposal submission requires user credentials for the GO Programme via the ESA Cosmos system. Users must register and login via the [GO Programme Website](#) to verify this.

Proposals must be submitted to ESA using the [Proposal Handling Tool for Phase 1 \(PHT1\)](#). Submission via email or other means is not possible. The [PHT1](#) requires a combination of online input and the upload of the five PDF files described above. The detailed content and format of the uploaded files must be in line with the guidelines provided above, which will be strictly enforced.

Users must submit the following mandatory information for each proposal:

- Principal Investigator details;
- Equivalent details of an additional contact
  - *This person can consult PHT2 inputs and has access to this programme's proprietary data in the [Mission Archive](#);*
- Names and institutes of co-Is;
- Title (max. 200 characters);
- Abstract (max. 1500 characters);
- Science classification
  - (Exoplanet Science, Stellar Science, Other);
- Team Expertise & Management Plan (PDF file #1)
- Scientific Justification (PDF file #2)
- Technical Justification & Implementation Case (PDF file #3)
  - *This must include the results of the Visibility Checks*
- Target Duplication Checks (PDF file #4)
- Exposure Time Calculation & Noise Estimation (PDF file #5)
- Target information:
  - Target name
  - Coordinates: RA (J2000, ICRS) and Dec (J2000, ICRS) in decimal format up to 6 and 5 digits, respectively
    - *The most common errors are related to incorrect coordinate formats. This can lead to severe delays and observations not being scheduled, even if time is awarded. Please carefully consult the detailed recommendations on our [Coordinates](#) webpage.*
  - GAIA magnitude
  - Confirmation that the target is not reserved
  - Time-critical (e.g., exoplanet transits) or non-time-critical (e.g., activity monitoring)
  - Requested observing time
    - Number of CHEOPS orbits requested per target visit
    - Total number of visits per target
    - *Requested observing time needs to be provided in units of orbits and visits, and must include time for interruptions due to passage through the South Atlantic Anomaly and Earth occultation. Time to slew, to point, and to acquire targets must not be included in the time request.*
    - *The total number of orbits and visits requested in a proposal will be calculated automatically based on the inputs provided for the individual targets and will be included in the proposal template accordingly.*
  - Additional information time-critical observations: orbital period, transit duration and mid-transit time

An email will be sent to the PI to acknowledge proposal submission, containing the proposal number and other important information.

Proposals can be updated at any time up to the AO closure (see table in Section 1). This can be done by clicking on the “Update” button in the proposal submission tool. Whatever is in [PHT1](#) at the time of closing will be considered as final input.

When submitting a given proposal for the first time you must read and agree to the [Data Privacy Notice](#) that governs ESA's use of personal data in the Guest Observers Programme.

The PI of a proposal is responsible for ensuring that they have the consent from team members to use the personal data of the team members in proposals.



## 7. PROPOSAL EVALUATION AND SELECTION

Proposals submitted via the [PHT1](#) by the time of the AO closure will be evaluated by the CHEOPS TAC. The TAC and TAC Chair are scientists from the European exoplanet community, appointed by ESA in consultation with the CHEOPS PI. Additional scientists may be called upon in case of need. The CHEOPS PS will be the secretary to the TAC but does not evaluate/grade/rank the proposals for scientific merit.

The technical feasibility for each proposal will be reviewed by the CHEOPS PS, considering:

- Overall feasibility and technical merit;
- Appropriate determination and justification of the observing time requested, on per-target and per-proposal levels;
- Any target duplication with other proposals or ongoing programmes;
- Confirmation that no targets are already reserved.

The CHEOPS PS will provide a short summary of the assessment to the TAC members before the TAC meeting.

The TAC members will individually evaluate proposals and rank them according to:

- Scientific excellence and relevance of the proposed observations;
- The uniqueness and applicability of CHEOPS to achieve the proposed scientific objectives of the proposal;
- Technical feasibility and robustness of the proposed observations and data analysis.

The management plan will also be taken into consideration in the overall evaluation.

During the TAC meeting, evaluations of proposals by individual TAC members will be discussed, and the recommendation on which proposals are to be awarded time will be consolidated. Targets in proposals that are recommended for award of time will be given a priority of 1, 2 or 3, which will be used by the science planning tool to prioritize the scheduling of observations.

A technical check of all proposals recommended for execution will be made by members of the Science Operations Centre (SOC), and any found to be unfeasible will be rejected. It should be noted that establishing the technical feasibility of a proposal is the responsibility of the PI of the proposal, and it is not foreseen that many (if any) proposals will be rejected at this stage.

ESA's Director of Science will receive the recommendations of the CHEOPS TAC and take the final decision on the award of observing time.

PIs of all proposals – including those not awarded time – will be informed of the results of the proposal evaluation process by email. A list of all successful proposals, including the PI name, proposal title, and time awarded for each proposal will be made available on the [Mission Website](#) and on the PHT2 platform. It is possible that the target lists and proposal abstracts will also be made public via the same channels.

After this step, a target from successful GO proposals cannot be added to GTO programmes until all GO observations are concluded. The only exception is that the target was already previously part of an active GTO programme but unreserved, and thus both parties now share this target – see Section 4.8.

Other GO proposals (e.g., via the DP) may still propose different science cases for targets in active GO programmes if and only if the CHEOPS PS agrees.

Observers are reminded that whilst every attempt will be made to schedule observations of proposals that have been awarded time, for operational reasons there is no guarantee that this will be possible.

## 8. PHASE 2 DATA ENTRY

PIs of accepted proposals will be required to follow Phase 2 of the proposal preparation. The purpose of Phase 2 is to provide the detailed information required to schedule observations, in the form of observation requests (ORs).

Target information (including coordinates) together with the time awarded for each target will be sent by ESA to the SOC, based on the inputs given to PHT1 and the time and priority levels awarded. This will be used to pre-populate the ORs and will not be changeable. Access to the tool will require user credentials, which will be provided by the SOC to the proposal PI and the additional contact shortly before the tool is made available.

The timelines for the Phase 2 opening, OR creation, review, and submission are given in Table 1. PIs of proposals awarded observing time must plan accordingly and provide their inputs as part of the multi-step process within the relevant timeframe.

The [Proposal Handling Tool for Phase 2 \(PHT2\)](#) allows you to generate and submit detailed observation requests, if and only if proposals that have been awarded time. Details of how to use the PHT2 are provided in the [Observers' Manual](#), and additional instructions will be provided to PIs of accepted proposals.

Once submitted, the ORs will be added to those from all other GO Programmes and from the GTO Programme as input to the mission planning tool used to generate the weekly activity plans (observing schedules).

## 9. DATA PRODUCTS AND PROPRIETARY PERIODS

CHEOPS has the following level data products:

- Level 0: Received at the SOC from the Mission Operations Centre. Includes science data, as well as housekeeping and auxiliary data. The data format is either telemetry packets (as downlinked from the spacecraft) or XML or plain ascii files as produced by the MOC;
- Level 0.5: Output of the preprocessing step at SOC. All data are time-tagged with UTC and MJD. Telemetry, science and housekeeping data are converted into FITS files at the level of visits and passes, and housekeeping data are converted into physical values;
- Level 1: Calibrated and corrected science images (full-array images as well as sub-array images) as produced by the Data Reduction Pipeline. Engineering meta-data are associated to the science data. Data are time tagged with UTC, MJD and BJD.

- Level 2: Photometric time series (light curves) and associated meta-data resulting from processing of the Level-1 images.

Further details can be found in the [Observers' Manual](#), with descriptions of the individual products (including metadata and contents) detailed in the Data Product Description Document (DPDD) which is available from the webpage for the AO.

All data products are ingested into the [Mission Archive](#), together with an automatically generated report detailing the data processing that is produced by the data reduction pipeline. Details of examples of CHEOPS observations and data products can be found on the [Data & Analysis Webpage](#): Data from all GTO programmes and GO observations granted time through AOs will be subject to an initial proprietary period of 1 year. The proprietary period will be set at the level of observation requests: it will begin after the last visit of a given observation request has been made and declared complete following quality checks of the data at SOC. The proprietary period will not exceed a period of 1.5 years that starts from the time of successful completion of the first visit of the observation request.

The proprietary period for observations that are obvious extensions of proposals already awarded observing time in the GO Programme may be substantially shorter than 1/1.5 years.

Only the PI of the proposal associated with an observation, together with the additional contact detailed in the Phase 1 proposal, will be able to access proprietary data and associated reports.

Tip for your data analysis: the [In-Orbit Updates](#) Webpage contains technical news, instrument performance, data systematics, and tips from the CHEOPS Science Team. This includes, e.g., target window locations on the CCD; how to calculate the time required for CHEOPS observations; how to structure visits; empirical analyses of combining multi-epoch data; or how to handle systematic features and get a clear transit signal.

## 10. USE OF DATA IN CHEOPS OBSERVING PROPOSALS

### 10.1. Personal data

The ESA Framework on Personal Data Protection (PDP) strives to ensure a high level of protection. For this, ESA implements appropriate measures to preserve the rights of data subjects, to ensure the processing of personal data for specified and legitimate purposes, in a not excessive manner, as necessary for the purposes for which the personal data were collected or for which they are further processed, in conditions protecting confidentiality, integrity and safety of personal data, and generally to implement the principles set forth in the Framework. Please consult the applicable [Data Privacy Notice](#) for further information.

### 10.2. Scientific/intellectual data

Both the proposal submission and evaluation process, and execution of operational activities have been devised to minimise the exchange of non-public information between the GO Programme and the CMC. All parties at ESA and in the CMC who handle information relating to the GO programme are subject to confidentiality agreements.