

## **XRISM General Observer – Cycle 3**

### **Scope of Program**

#### **1.1. Overview**

This program element solicits proposals for participation in the Institute of Space and Astronautical Science of the Japanese Aerospace Exploration Agency (ISAS/JAXA) program for the conduct of space science observations using X-Ray Imaging and Spectroscopy Mission (XRISM). The XRISM mission is led by ISAS/JAXA, with significant contributions from NASA and ESA. The primary goal of the XRISM mission is to investigate the nature and physics of astrophysical objects as revealed through detailed observations of their high-energy emission. A broad range of astrophysical sources will be studied, including stars, X-ray binaries, diffuse galactic emission, active galactic nuclei, and clusters of galaxies.

JAXA is responsible for allocating the Japanese share of XRISM observing time during the mission via this and subsequent solicitations. Following the completion of the Performance Verification (“PV”) phase, all JAXA-allocated observing time, including that fraction allocated to the other nations, will be awarded competitively. Allocation of the U.S. observing time will be the responsibility of NASA. Allocation of time awarded to proposers from European Space Agency (ESA) member state countries will be the responsibility of ESA. This Call solicits proposals for observations using one or both instruments comprising the XRISM scientific payload.

#### **1.2 The XRISM Mission**

##### **1.2.1 Overview**

XRISM, seventh Japanese X-ray Astronomy satellite, is a collaborative mission between ISAS/JAXA and GSFC/NASA, with contributions from over 70 institutions in Japan, the U.S., Canada, and Europe. XRISM, with the unprecedented combination of spectral resolution of the Resolve instrument and the wide field of view of the Xtend instrument, will execute a diverse and exciting program of astrophysical research.

The overall condition of the spacecraft system and onboard instruments remains generally good. However, the Resolve Gate Valve (X-ray aperture door) has not yet been opened, although an opening operation was conducted in September 2025. As a result, Resolve still lacks sensitivity to soft X-rays. Therefore, as in the previous cycles, this AO will solicit science programs that can be conducted with the Gate Valve closed. The possibility of attempting another Gate-Valve opening operation is currently under discussion within the project.

Cycle 3 of XRISM General Observer (GO) observations will commence on about June 1, 2026, and last for a period of approximately 12 months. Following the completion of Cycle 3, subsequent observing cycles of 12-month durations each are planned to be carried out through the end of the mission.

### 1.2.2 The XRISM Observatory

The XRISM scientific payload is composed of a suite of two co-aligned instruments: the Resolve Soft X-ray Spectrometer and the Xtend Soft X-ray Imager. These instruments are placed on the focal plane of the X-ray Mirror Assemblies (XMAs), lightweight foil telescopes similar in design to those flown on ASCA and Suzaku, but with an improved half-power diameter (HPD) of  $\sim 1.3$  arcmin. The cryogenically cooled  $6 \times 6$  microcalorimeter array of Resolve covers a field of view (FOV) of  $3.1 \times 3.1$  arcmin<sup>2</sup> with a spectral resolution of approximately 5 eV over its 1.7 -12 keV bandpass. This spectral capability is the best yet achieved at energies above 3 keV for observations of celestial sources outside the Solar System; in addition, unlike grating instruments, Resolve can observe spatially extended X-ray sources with the same spectral resolution across the FOV. The CCD-based Xtend at the focus of the second XMA has a wide ( $38.5 \times 38.5$  arcmin<sup>2</sup>) FOV over the 0.4 -13 keV energy range with a spectral resolution of 180 eV at 6 keV. The Xtend detector also has a low, stable background across its entire FOV.

Resolve was originally designed to observe in the 0.3-12.0 keV energy band; however, because the Gate Valve remains closed, it cannot detect X-rays below 1.7 keV and lowering the effective area. The Cycle-3 program will be carried out under the assumption that the Gate Valve will remain in the closed configuration. The relevant response files and technical information are provided via the XRISM website at <https://xrism.isas.jaxa.jp/research/proposer/index.html>

For a detailed description of the XRISM mission, including technical information about the instruments and the currently available data relevant to their in-orbit performance, and observation feasibility, proposers should consult the XRISM Proposer's Observatory Guide, which will be accessed at the JAXA XRISM website for proposers (<https://xrism.isas.jaxa.jp/research/proposer/POG/index.html>).

### 1.2.3 Science Operations

The XRISM spacecraft has a mass of 2,300 kg and was launched on September 7, 2023, from Tanegashima Space Center (TNSC) in Japan. A JAXA H-IIA rocket placed the observatory into an approximately circular orbit with an inclination of  $\sim 31$  degrees and an altitude of  $\sim 575$  km, which has since decreased to approximately 540 km. XRISM operations are managed by scientists and engineers at ISAS/JAXA. The operations team is responsible for scheduling of the observations, command/control of the satellite, collection of the data, and monitoring of the health of the spacecraft and scientific payload. The operation team will contact the Principal Investigator (PI) prior to the start of the observation to coordinate the detailed observing plan. Spacecraft operations are carried out from the Uchinoura Space Center (USC) in Japan, where direct contact with the satellite is possible for five orbits per day. The onboard data recorder has a capacity of 12 Gbits, and telemetry can be downlinked to USC at a rate of 8 Mbps for approximately 500 s per contact. The data are routed to ISAS/JAXA, where pre-processing tasks are performed, including FITS conversion and generation of orbit and attitude files. The resultant data are transmitted to the processing pipeline at GSFC/NASA, where calibration data will be applied to the pre-processed science data. Subsequently, the processed data will be copied to identical mission archives at ISAS/JAXA and GSFC/NASA in an encrypted form, at which time their address and the decryption key will be made available to the PI of the observation. At the end of the 1-year

proprietary period, the associated data files in the archive will be decrypted and made publicly accessible. It is anticipated that XRISM will generate ~1 Tbyte of data per year, although the total daily data volume rate may approach 8 Gbytes.

### 1.3 XRISM Cycle 3 GO Program

- (1) Individuals affiliated with Japanese institutions at the time of the proposal deadline are invited to submit, as PIs, proposals for science observations using the XRISM instruments by responding to this solicitation. If a proposer is affiliated with multiple institutes, the eligibility for being a PI of Japanese investigation is determined based on her/his *primary affiliation*. For professors, postdocs, or any other research staff, an institute which pays at least 50% of their salary is defined (within this solicitation) as their primary affiliation. Any temporary or remote status, such as visiting professor or visiting research fellow, is not considered as a primary affiliation status.
- (2) Individuals affiliated with institutions outside Japan, US/Canada, or ESA member states in Europe at the time of the proposal deadline are also eligible to submit proposals as PIs. In such case, however, the proposers *must* designate a co-PI who is affiliated with Japanese institutes. Note also that the relative time allocation for PIs affiliated with institutions outside Japan is limited to no more than 4% of the total GO time, and these proposals are not subject to international merging.

The relative time allocations for the various categories of Cycle 3 observing time (after accounting for the carryover of remaining Cycle 2 observations) are as follows:

- Observatory time (Calibration, Director's Reserve, Director's Discretionary Time for unpredictable events with unknown sky coordinates)- 10%;
- GO time - 90%.

The Cycle 3 allocation of GO time among the mission partners is as follows:

- Japanese investigations (including other partners) - 48%.
- U.S. investigations (including Canadian partners) - 44%;
- ESA investigations – 8%;

Each recommended GO target will be assigned a priority grade of A, B, or C by the International Panel based on the recommendation by the Science peer review panel. Note that multiple targets (or multiple pointings/phases) accepted through a single proposal may be assigned different priority grades. Priority A and B targets are guaranteed to be observed; best efforts will be made to schedule such targets within the Cycle 3 period. Those Priority A/B targets that cannot be scheduled during Cycle 3 will automatically be carried over to the subsequent cycle. Note, however, that this carry over does not apply to TOO targets: observations of such targets that are unable to be scheduled during Cycle 3 must be re-proposed to a future observing cycle if needed. Priority C targets will have lowest priority for scheduling; observations of such targets that are not scheduled during Cycle 3 will be cancelled; if observations are still desired, they must be resubmitted to a future observing cycle. The available Cycle 3 GO time will be allocated as

follows: Priority A = 50%, Priority B = 40%, and priority C = 50%, resulting in an oversubscription of 40% of the nominal total GO time, to allow for a pool of targets to be used if needed. Accordingly, C targets will nominally have a 20% probability of being observed during a given cycle.

Note that, as a general policy, proposals for observations of targets that have been previously observed in any phase of the mission are permitted. Such proposals must provide a convincing justification of the need for additional observations of the target, e.g., observations during a different binary phase or source state, or of different locations within extended sources. Similarly, proposers may request multiple observations of the same target for a specific investigation. However, such requests will be approved only if a clear scientific and logistical justification of the need for separate observations is provided in the proposal. Targets that have been observed and are planned to be observed during Cycle 2, calibration target candidates for a year including Cycle-3 phase as well as the required tools for searching the observation database, are (or will be) available from the XRISM homepage

<https://xrism.isas.jaxa.jp/research/proposer/approved/index.html>.

<https://xrism.isas.jaxa.jp/research/observers/index.html> (Check the observation log)

Prospective proposers should consult this database to ascertain if their targets of interest have previously been (or are scheduled to be) observed.

In cases where the same target is selected in more than one national program (JAXA, NASA, ESA), the feasibility of merging the investigations will be explored. The decision will be made by the International Merging Panel. The eligibility for merging will be determined on a case-by-case basis in situations where the target is spatially extended, and the proposed coordinates do not coincide, or where a specific phase of a point source has been designated. In all instances where feasible, a single observation of the target will be awarded to all proposing teams, a single, Prime PI (PPI) will be designated, and the time will be accounted for based on the Agency to which the PPI proposed the observation. The PPI will assume responsibility for coordinating observation planning, and all merged PIs will have access to the processed data. Alternatively, PIs have the option of indicating on their proposal that they do not wish their proposed observation to be merged. In such cases, if at least one accepted proposal is so marked, only one will be selected for observation. The priority given by the national reviews, as well as the lengths of the accepted observations, will be considered. Proposals with PIs affiliated with institutions outside Japan or those with scientific justifications written in Japanese are not subject to joint observations.

Investigators whose observing proposals are selected for implementation will receive the resultant data in a form suitable for analysis. As agreed to in the NASA/JAXA Memorandum of Understanding PIs will be granted exclusive access to the data resulting from their approved observations for a period of one year. Subsequently, the data will be placed in a public archive and made available publicly.

All proposals submitted to JAXA will be evaluated in a single peer review. Note that a target form providing details of the requested observation, including the source coordinates, required exposure time, instrument mode, any observing constraints, etc., must be completed for each target to be observed as part of the proposed investigation. Positional accuracy of targets (for the aimpoint of Resolve) must be specified to an accuracy of better than 1'. Observations of planets, comets, and

other Solar System objects are also accepted. For time-critical observations or ToO observations (see below), detailed observing conditions must be provided in the “Target Remarks” field of the proposal form. (If such information is included only in the Scientific Justification, it places a substantial burden on the mission planning team.)

### 1.3.1. Observing Constraints

Proposals may be submitted for investigations requesting observations that can be executed within the 12-month period of Cycle 3 (from around June 1, 2026, to around the end of May 2027); proposals for investigations requiring observations beyond the period of Cycle 3 will not be accepted under this solicitation. In addition, if, due to scheduling constraints or other operational reasons, the observation of an approved target is divided into multiple intervals, the proprietary period for the data will be defined based on the date of the final observation.

It is anticipated that XRISM will typically perform one pointing every a few days (typical exposures of ~50 - 200 ks). This constraint is primarily driven by the need to collect a sufficient number of photons to take advantage of Resolve’s high spectral resolution. In order to maintain a satellite observing efficiency of ~50%, the minimum allowable observing time on a particular target is 10 ks (~4 orbits). To maximize the breadth of scientific investigations undertaken with XRISM during Cycle 3, observations will be limited to 500 ks per pointing with the total not to exceed 1000 ks per proposal; it is anticipated that these restrictions will be relaxed over succeeding cycles. Subject to the above constraints, individual proposals may be submitted for observations of a single pointing with a requested observing time of 10 - 500 ks, or for a larger program including multiple targets or pointings with an observing time request not to exceed 1000 ks.

Note that as the XRISM Project gains experience in operating the observatory and its instruments, additional operational constraints/clarifications regarding the scheduling of Cycle 3 observations may be issued. In such cases, the change(s) will be posted on the XRISM website.

### 1.3.2 Time-constrained observations

Time-constrained observations, that is, observations with scheduling constraints imposed either by the nature of the target (for example, a source must be observed at a specific phase, or a particular roll angle is necessary) or the requirement for coordination with other ground- or space-based observatories, place a special burden on XRISM mission planning. (For further discussion of such observations, see the XRISM Proposer’s Observatory Guide, available from the JAXA XRISM page for proposers (<https://xrism.isas.jaxa.jp/research/proposer/POG/index.html>). The additional constraints associated with the scheduling of an excessive number of time-critical observations would compromise the capability of the mission planning and operations team to effectively execute the complete set of approved programs.

Due to the additional complexity associated with the scheduling of observations of time-constrained, TOO targets and joint observations with other observatories, a limit of no more than 20% of the available Cycle 3 time will be imposed on the total time awarded to such observations. Of that 20%, only half (10% of the total Cycle 3 time) may be awarded to TOO observations.

To maintain the number of such observations at a manageable level, targets requiring time-constrained observations must receive the highest scheduling and scientific priority. Consequently, time-constrained observations must be designated Priority A or B, and TOO observations must be designated as Priority A.

### 1.3.3 Target-of-Opportunity (TOO) observations

Observations of classes of targets involving outbursts from previously identified transient sources or changes in the intensity or spectral state of previously identified persistent sources (designated “pre-approved” Target-of-Opportunity observations) constitute another special category of XRISM observations. Proposals for observations of such targets will be permitted in Cycle 3. The turnaround time for such observations is 48 hours during weekdays and 72 hours during weekends. However, proposals for observations of previously unknown sources, designated as “generic” TOOs, e.g., a previously unknown X-ray nova or Local Group supernova, are not solicited in Cycle 3. Details regarding the criteria for “triggering” a requested TOO observation, as well as an estimate of the trigger probability during Cycle 3, must be provided in the scientific justification and summarized on the target form.

To assist the XRISM team in estimating the total exposure time of approved TOO observations during Cycle 3, the product of the requested exposure time and the trigger probability will be used. Proposers may request observations for up to 10 candidate targets, where the proposed and/or accepted number of triggers need not be identical to the total number of candidate objects (e.g., proposers may request “up to three of the following 10 X-ray transients in outburst”). In such cases, the 1000 ks limit on the total requested observing time per proposal refers to the total actual observing time that might be incurred, and for which the trigger probability of interest is not that for individual targets, but rather the aggregate probability of all candidate targets in a proposal. Note that, as with time-critical observations, TOO targets must be assigned a rating of Priority A to be eligible for scheduling. Approved TOO targets that are not triggered or otherwise unable to be scheduled due to observatory constraints during Cycle 3 will *not* be carried over to Cycle 4.

In case of truly unpredictable events, e.g., supernovae or outburst of a hitherto unknown X-ray transient, a real-time request for a TOO observation may be submitted. If accepted, the resulting observing time will be charged to the Director’s Discretionary Time, and the obtained data will go to public immediately. The procedure for requesting such observations and the relevant data rights policy can be found at <https://xrism.isas.jaxa.jp/research/proposer/too/index.html>

### 1.3.4 Joint Observations

In addition to time on XRISM, time may be requested and awarded in Cycle 3 on other observing facilities, where such time is required to meet the scientific objectives of the proposal. Joint proposals are not necessarily simultaneous or coordinated between facilities; any such constraints must be separately specified and justified in the observing proposal.

Submitting a single joint proposal avoids the risk of having to submit proposals to two separate competitive reviews, where each might recommend first obtaining time on the other. Time on

other observatories is only awarded to highly-ranked XRISM proposals, and such time will be subject to approval by the relevant office of the partner observatory. For approved joint observations, each observatory will carry out a detailed technical review and reserves the right to cancel any approved observation which is determined to be infeasible.

Joint observing time will be awarded only for highly ranked proposals that require use of both observatories and shall not apply to usage of archival data. The only criterion above and beyond the usual review criteria is that all sets of data are required to meet the primary science goals. Proposers should take special care in justifying both the scientific and technical reasons for requesting observing time on both missions. It is not essential that the observations are simultaneous, but if simultaneity is required, it must be justified. TOO observations are allowed.

#### 1.3.4.1 XRISM / NuSTAR Observations

The XRISM Project may award up to 500 ks of NuSTAR time. Proposers should take special care in justifying both the scientific and technical reasons for requesting time on both missions. The minimum response time for NuSTAR TOO observations is 48 hours. The minimum exposure that can be requested for any NuSTAR observation is 20 ksec. A technical description of NuSTAR, and considerations important for proposers can be found at [https://heasarc.gsfc.nasa.gov/docs/nustar/nustar\\_prop.html](https://heasarc.gsfc.nasa.gov/docs/nustar/nustar_prop.html).

Proposers must provide the following additional NuSTAR-related information as part of their XRISM proposal:

- the total requested NuSTAR observing time
- the expected NuSTAR count rates based on simulations
- an evaluation of possible stray light contamination obtained by using the NuSTAR target constraint check available on the NuSTAR SOC website  
[https://nustarsoc.caltech.edu/NuSTAR\\_Public/NuSTAROperationSite/Home.php](https://nustarsoc.caltech.edu/NuSTAR_Public/NuSTAROperationSite/Home.php).

If the latter target stray light evaluation indicates "Potential Issues" then proposers may submit a request for a feasibility analysis to the NuSTAR SOC at [nustar-help@srl.caltech.edu](mailto:nustar-help@srl.caltech.edu). The request should include the target name and/or J2000 RA Dec coordinates for the observation.

If the NuSTAR time is approved, the observer will be contacted by the NuSTAR Science Operations Center for further details, including observing strategy and other relevant constraints. Proposals deemed infeasible at this stage will be dropped.

#### 1.3.4.2 XRISM / XMM-Newton Observations

By agreement with XMM-Newton, the XRISM TAC will be able to award up to 200 ks of XMM-Newton observing time. Proposers should take special care in justifying both the scientific and technical reasons for requesting time on both missions. It is not essential that the project requires simultaneous XMM-Newton and XRISM observations. No XMM-Newton observations with a reaction time of less than five working days from the trigger date can be considered. It is the responsibility of the PI to inform both observatories immediately if the trigger criterion is

fulfilled. Proposers requesting joint XRISM/XMM-Newton observations must provide a full and comprehensive technical justification and feasibility for the XMM-Newton portion of their program, including: the choice of prime instrument, the requested exposure time, justification for the exposure time, target count rates, and assumptions made in their determination, information on whether the observations are time-critical. Proposers requesting joint XRISM/XMM-Newton observations must also specify whether they were awarded time in a previous XMM-Newton or XRISM AO for similar or related observations.

Technical documentation about XMM-Newton is available from the XMM-Newton webpage: [<https://www.cosmos.esa.int/web/xmm-newton>]. All standard observing restrictions apply to joint proposals. For proposals that are approved, the XMM-Newton project will perform detailed feasibility checks; they reserve the right to reject any approved observation that is in conflict with safety or schedule constraints, or is otherwise deemed to be non-feasible. ESA's XMM-Newton SOC will contact successful PIs after the XRISM peer review results have been announced to specify observational details.

## **2. Programmatic Information**

### **2.1 Submission and Evaluation of XRISM GO Proposals**

Proposals shall provide a detailed description of the proposed investigation, including the requested XRISM observation(s) and associated scientific/technical justification. All proposal materials shall be submitted electronically, as specified below.

Individuals submitting proposals to the Cycle 3 XRISM GO Program must adhere to the following proposal submission procedures:

- Proposers must submit their proposals (including the accompanying target forms) electronically through the ARK/RPS website at <https://xrsvl.isas.jaxa.jp/ark/>. Instructions for submitting proposals via ARK/RPS are provided at the same website.
- Due to the nature of prospective GO investigations within the XRISM GO program, the Scientific/Technical/Management section of proposals, including figures and references, is limited to **4 pages, with a font size of 11pt or larger**.
- The Scientific/Technical/Management section should be written in English, if PI has a master's or higher-level degree or if the PI accepts international merging. Otherwise, proposals written in Japanese is accepted.
- The Scientific/Technical/Management section must be uploaded to the RPS website as a PDF file.

In order to be included in the review of proposals for this cycle of the XRISM Guest Investigator Program, all proposal materials must be submitted electronically by 4:30 p.m., Japan Standard Time on the due date provided in Section 3 of this program element appendix.



GO Proposals will be evaluated by a science peer panel based on criteria that include the following factors:

- The scientific significance of the proposed observations (background and objectives)
- The suitability of using the XRISM observatory
- The feasibility of observations and rationale for required exposure times

## 2.2 Supplemental Information

Further details concerning the proposal submission requirements and process can be found at the JAXA XRISM website for proposers (<https://xrism.isas.jaxa.jp/research/proposer/index.html>) This website provides instructions for completing the required proposal forms. A detailed description of the XRISM mission, including technical information relevant to the observatory, instruments, and observation feasibility can be found at the same website. Answers to frequently asked questions can be found at (<https://xrism.isas.jaxa.jp/research/helpdesk/index.html>).

## 3. Summary of Key Information

Due date for proposals	4:30 p.m. JST, 27 February 2026 Proposals will not be replaced after the due date
Page limits for Scientific/ Technical/Management section	4 pages, pdf file, including figures and references.
Submission medium	Electronic proposal submission is required in PDF format; no hard copy is required.
Website for submission of proposal and required forms	<a href="https://xrism.isas.jaxa.jp/ark/">https://xrism.isas.jaxa.jp/ark/</a> (Assistance for technical questions is available at the Help Desk <a href="https://xrism.isas.jaxa.jp/research/helpdesk/index.html">https://xrism.isas.jaxa.jp/research/helpdesk/index.html</a> )
Eligibility	At the time of the proposal deadline, PI primary affiliated with Japanese institutions. If PIs affiliated with institutions outside Japan, NASA, and ESA, a Co-PI affiliated with institutes in Japan must be designated, and the proposal will not subject to the international merging.
Language used in proposals	English for PI with a master's degree or at higher level or for PI accepts international merging. Otherwise, Japanese is accepted.