

D.18 XRISM GENERAL OBSERVER – CYCLE 1

NOTICE: Amended January 11, 2024. This opportunity was released based on the assumption that the XRISM Resolve instrument's Gate Valve (X-ray aperture door) would be open as planned for the Cycle 1 program. The Gate Valve has not opened after multiple attempts thereby blocking soft X-rays, shifting Resolve's energy band from 0.3 - 12 keV to 1.7 - 12 keV, and lowering the effective area. While the XRISM team will continue to assess different approaches to opening the Gate Valve, the General Observer Cycle-1 program will be carried out with the closed Gate Valve configuration. Since the Resolve instrument's effective area is less than anticipated, longer exposures may be needed for some observations, which will affect the number of proposals selected for Cycle 1, leaving the distribution of funding for Type-1 vs. Type-2 proposals less certain. Proposals must justify the science case given the closed Gate Valve and shift in energy band. The relevant response function files and technical information are provided at <https://heasarc.gsfc.nasa.gov/docs/xrism/>

The due date remains the same: Type-1 (Phase-1) observing proposals are to be submitted via ARK/RPS by 4:30 pm eastern time and Type-2 proposals are to be submitted via NSPIRES by 11:59 pm eastern time April 4, 2024. New text is in bold and deleted text is struck through.

Amended December 15, 2023. This Amendment delays the due date for this program element. Notices of intent are not requested, and proposals are now due April 4, 2024. Also, the planning start date in Section 3 has been delayed to August 1, 2023

Amended December 12 2023. This Amendment presents a new program element in ROSES-2023. Notices of intent are not requested and proposals are due ~~March 21, 2024~~. There are two types of proposals with different page limits, contents, and submission procedures: Type-1 Phase-1 proposals are due at 4:30 p.m. Eastern time via ARK/RPS whereas Type-2 proposals must be submitted by the proposing organization via NSPIRES by 11:59 pm.

XRISM General Observer (GO) proposals, both Type-1 and Type-2, will be evaluated via dual-anonymous peer review and must be prepared following the guidelines in Section 2.1 and 2.2. Due to the nature of the proposed investigations, Type-1 Observational proposals do not include an "Open Science and Data Management Plan".

1. Scope of Program

1.1 Overview

This program element solicits proposals for participation in the NASA program for the conduct of space science observations using the X-ray Imaging and Spectroscopy Mission (XRISM) and for related supporting atomic physics investigations. The XRISM mission is led by the Institute of Space and Astronautical Science of the Japanese

Aerospace Exploration Agency (ISAS/JAXA), with significant contributions from NASA and ESA. The primary goal of the XRISM mission is to investigate the nature 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, supernova remnants, and clusters of galaxies.

NASA is responsible for allocating the U.S. and Canadian share of XRISM observing time during the mission via this and subsequent solicitations. Following the completion of the Performance Verification (“PV”) phase, all U.S.-allocated observing time (except for international Science Team PV-phase observations carried over to Cycle 1, see Section 1.2.2) will be awarded competitively. Allocation of the JAXA observing time, including that fraction allocated to the other nations, will be the responsibility of ISAS/JAXA. Allocation of time awarded to proposers from European Space Agency (ESA) member state countries will be the responsibility of ESA.

This call solicits two types of proposals with different page limits, contents, and submission procedures. Type-1 proposals (see Section 1.3.1) for observations using one or both XRISM scientific payload instruments are solicited from U.S. and Canadian-based Principal Investigators (PIs). Type-2 proposals for investigations of atomic physics processes critical to enabling the fullest exploitation of the data expected from the Resolve instrument are solicited from U.S. PIs (see Section 1.3.2). Proposals requesting support of complementary observations using other space-based or ground-based observatories are not solicited.

For Type-1 proposals, proposal submission and review will be conducted in two phases. Anonymized Phase-1 proposals submitted via ARK RPS will be peer reviewed for scientific and technical merit (see Section 2.1.2). Proposals from U.S.-based PIs selected based upon the results of the Phase-1 review will be invited to submit a cost proposal via NSPIRES for Phase-2 review by NASA (see Section 2.1.3). Proposals from PIs based at Canadian institutions selected in Phase-1 through this process may seek financial support from the Canadian Space Agency (CSA).

For Type-2 proposals, to be eligible, a proposal must be submitted through NSPIRES and anonymized following the guidelines in Section 2.2.

All eligible proposals submitted to this GO Program, both Type-1 and Type-2, will be evaluated following a dual-anonymous peer review process. Proposals must be prepared following the guidelines in their respective sections (2.1 and 2.2).

1.2 The XRISM Mission

1.2.1 *Overview*

XRISM is a collaborative mission between ISAS/JAXA and GSFC/NASA, with contributions from over 70 institutions in Japan, the U.S., Canada, and Europe. As the host country, Japan provided the spacecraft, launch, operations, and one of the two scientific instruments. XRISM is Japan's seventh X-ray Astronomy mission and the fifth for which NASA has provided a significant element of the scientific payload. XRISM, with the unprecedented combination of spectral resolution/sensitivity of the Resolve instrument, will execute a diverse and exciting program of astrophysical research.

The mission is divided into three distinct operational phases: In-orbit Checkout (“IOC”; ~4 mos.) and calibration of the spacecraft and the instruments, Performance Verification (“PV”; ~6 mos.) which is reserved time for the XRISM Science Team (XST) to observe astrophysical sources of interest, and the third phase (GO program, see Section 1.3.1) which begins approximately 10 months after launch and runs until the end of the mission.

At the time of issue of this solicitation, the mission is in the IOC phase. Upon its completion, the international XRISM Science Team will execute the PV observing program, followed by initiation of the Cycle 1 GO program. Contingent upon the successful completion of the IOC and PV phase activities, Cycle 1 will commence on or about July 1, 2024 and last for a period of approximately 12 months.

1.2.2 *The XRISM Observatory*

The XRISM scientific payload is ~~comprised~~ **composed** of a suite of two co-aligned instruments covering the energy band between ~ 0.3 – 12 keV: the Resolve Soft X-ray Spectrometer and the Xtend Soft X-ray Imager. The U.S. led the design and construction of the Resolve instrument and the two X-ray Mirror Assemblies (XMAs). The latter, one for Resolve and one for Xtend, are lightweight foil telescopes similar in design to those flown on ASCA and Suzaku, but with an improved half-power diameter (HPD) of ~1.3 arcmin. The cryogenically cooled 6 x 6 microcalorimeter array of Resolve covers a field of view (FOV) of 3 x 3 arcmin² with a spectral resolution of approximately 5 eV over its 0.3 -12 keV bandpass. The latter 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 x 38 arcmin²) FOV over the 0.3 -12 keV energy range.

The XRISM Resolve instrument’s Gate Valve (X-ray aperture door) has not opened, thereby shifting Resolve’s energy band from 0.3 - 12 keV to 1.7 - 12 keV and lowering the effective area. The Cycle-1 program will be carried out with the closed Gate Valve configuration. The relevant response files and technical information are provided via the XRISM website at <https://heasarc.gsfc.nasa.gov/docs/xrism/> [Added January 11, 2024]

For 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 Proposers’ Observatory Guide, which may be accessed at the NASA XRISM Guest Observer Facility (GOF) website: <https://heasarc.gsfc.nasa.gov/docs/xrism/proposals/index.html>

1.2.3 *Science Operations*

The XRISM spacecraft has a mass of 2,300 kg and was launched on September 7th, 2023 from Tanegashima Space Center (TSC) in Japan. A JAXA H-IIA rocket placed the observatory into an approximately circular orbit with an inclination of ~31 degrees and an altitude of ~575 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. 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. It is anticipated that typical observations will last 1 – 2 days. 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 NASA/GSFC, 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 NASA/GSFC 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 1 GO Program

Individuals affiliated with U.S. institutions are invited to submit proposals for basic research in the following two modes: (1) investigations requesting observations of celestial targets using one or both of the XRISM scientific instruments (“Type 1”); and, (2) theoretical and/or experimental investigations of atomic physics processes critical to enabling the fullest exploitation of the high-quality spectral data expected to be obtained with the Resolve instrument (“Type-2”). Individuals affiliated with Canadian institutions are eligible to submit Type-1 proposals only.

1.3.1 *Type-1 Investigations*

Proposals for investigations based upon observations of celestial sources utilizing the XRISM observatory will be solicited and executed on an annual basis. Cycle 1 observations will be initiated on or about July 1, 2024 and will last for a period of approximately 12 months.

The relative time allocations for the various categories of Cycle 1 observing time are as follows:

- Observatory time (Calibration, Director’s Reserve, Target of Opportunity (TOO)- 10%;
- Science Team (Carryover of remaining PV observations from Phase 1) - 15%; and,
- GO time - 75%.

The Cycle 1 allocation of GO time among the mission partners is as follows:

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

Each recommended GO target will be assigned a priority grade of A, B, or C by the International Merging Panel based on the recommendation by the Phase 1 (Science) peer review panel (see 2.2.1). Note that multiple targets 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 1 period. Those Priority A/B targets that cannot be scheduled during Cycle 1 will automatically be carried over to the subsequent cycle. Note, however, that this practice does not apply to TOO targets: observations of such targets that are unable to be scheduled during Cycle 1 must be re-proposed to a future observing cycle. Priority C targets will have lowest priority for scheduling; observations of such targets that are not scheduled during Cycle 1 must be resubmitted to a future observing cycle. The available Cycle 1 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, although the actual fraction may be greater if the observing efficiency is higher than predicted.

The Phase 1 (PV) target list was published in February 2021 and is available at: <https://heasarc.gsfc.nasa.gov/docs/xrism/timelines/pvtargets.html>. It is anticipated that the Science Team carryover time during Phase 2 will be dedicated primarily to the completion of observations of targets initiated during Phase 1. A small number of PV targets have been designated Priority C for which scheduling of the corresponding observations is not guaranteed. General Observers may propose to observe unscheduled Priority C PV targets during Cycle 1; however, if the observation is subsequently scheduled during Phase 1, the data rights will remain with the Science Team.

Note that, as a general policy, proposals for scheduled observations of PV Phase A or C targets 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.

In cases where the same target is selected in more than one national program (JAXA, NASA, ESA), the feasibility of merging the two investigations will be explored. In all instances where feasible, a single observation of the target will be awarded to both 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 the responsibility for planning of the observation and both teams 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 merged. In such cases, if one or both of the accepted proposals are 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. The decision will be made by the International Merging Panel.

Following the completion of Cycle 1, subsequent 12-month observing cycles will be carried out through the end of the mission.

It is anticipated that investigations will be selected that request observations of a range

of targets, including Solar System objects, stars, X-ray binaries, supernova remnants, galaxies, active galactic nuclei, clusters of galaxies, and the diffuse X-ray background. Targets that are planned to be observed during Phase 1, as well as the required tools for searching the observation database, are available from the XRISM homepage (<http://go.nasa.gov/xrism>). Prospective proposers should consult this database to ascertain if their targets of interest have previously been (or are scheduled to be) observed. In such cases, the scientific justification for additional observations of those sources must be addressed in the proposal.

All U.S. and Canadian proposals 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.

1.3.1.1 *Observing Constraints*

Type-1 proposals may be submitted for investigations requesting observations that can be executed within the one-year period of Cycle 1; proposals for investigations requiring observations beyond the period of Cycle 1 will not be accepted under this solicitation. 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.

It is anticipated that XRISM will typically perform one pointing every 1 – 2 days (exposures of ~50 - 100 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 pointing or target is 10 ks (~4 orbits). To maximize the breadth of scientific investigations undertaken with XRISM during Cycle 1, observations will be limited to 200 ks per pointing with the total not to exceed 600 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 - 200 ks, or for a larger program including multiple targets or pointings with an observing time request not to exceed 600 ks. **These rough guidelines are unchanged despite the new closed gate valve configuration. [Added January 11, 2024]**

Positional accuracy of targets (for the aimpoint of Resolve) must be specified to an accuracy of better than 1'.

Note that as the XRISM Project gains experience in operating the observatory and its instruments, additional operational constraints/clarifications regarding the scheduling of Cycle 1 observations may be issued. In such cases, the change(s) will be posted on the XRISM GOF homepage.

1.3.1.2 *Time-constrained observations*

Time-constrained observations, that is, observations with scheduling constraints imposed either by the nature of the target or the requirement for coordination with other

ground- or space-based observatories, place a special burden on XRISM mission planning. 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. 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.

1.3.1.3 *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 1. The turnaround time for such observations is 48 hours. 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 1. Details regarding the criteria for “triggering” a requested TOO observation, as well as an estimate of the trigger probability during Cycle 1, 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 1, 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 600 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 1 will *not* be carried over to Cycle 2.

Due to the additional complexity associated with the scheduling of observations of time-constrained and TOO targets, a limit will be imposed on the total time awarded to such observations (currently expected to be ~10%). It is anticipated that this limit will be adjusted during future observing cycles as experience in the scheduling of observations is gained over the course of the mission

In the case of truly unpredictable events, e.g., outburst of a hitherto unknown X-ray transient, a real-time request for a TOO observation may be submitted. Such requests are *not* solicited under the Cycle 1 call; if accepted, the resulting observing time will be charged to the Observatory Time allocation (10%). The procedure for requesting such observations and the relevant data rights policy can be found at <https://xrism.isas.jaxa.jp/research/proposer/index.html>

1.3.2 Type-2 Investigations – Supporting Atomic Physics Investigations

With its groundbreaking energy resolution, Resolve will detect spectral features (e.g., emission and absorption lines) produced by a wide variety of astrophysical processes. It is anticipated that some of these features may either not have been previously observed or adequately characterized in atomic data tables or by laboratory astrophysics measurements. In recognition of the potential need for improvements in the accuracy of the existing knowledge of atomic features to fully exploit the richness of the Resolve data, proposals from U.S. PIs for atomic physics investigations that directly support the interpretation of one or more classes of Resolve-measured spectra are solicited under this call.

To be eligible, a proposed Type-2 Supporting Atomic Physics (SAP) investigation must be well defined and must address an atomic physics issue expected to be encountered in a potential Resolve observation. It can be a theoretical (e.g., calculation of atomic cross sections or collision strengths) and/or an experimental (e.g., EBIT measurements of particular ionization states) investigation. SAP investigations may request support for a period of up to three years in duration. Note that proposals with a more general scientific relevance, i.e., in which the direct relevance of the investigation is only partially/marginally applicable to the interpretation of Resolve spectral data, are *not* solicited under the XRISM GO program. Proposals deemed by NASA to be in the latter category will not be considered for evaluation. Prospective proposers desiring to submit such proposals are referred to the Laboratory Astrophysics category of the Astrophysics Research and Analysis (APRA) program element (ROSES-2023 D.3).

2. Programmatic Information

Individuals affiliated with U.S. and Canadian institutions are invited to submit proposals for investigations based upon observations using one or more of the XRISM scientific instruments (Type-1). Additionally, U.S. institutions may also propose theoretical and/or experimental investigations of atomic physics processes of clear and direct relevance to the interpretation of data expected to be obtained from the Resolve instrument (Type 2; U.S. proposers only). It is anticipated that up to \$6.5M will be available for the support of XRISM investigations during Cycle 1; ~~of this amount, \$6M will be reserved for the support of Type-1 investigations, with the remaining \$500K available for Type-2 investigations.~~ **[Deleted, January 11, 2024]** Note that funding is available only to individuals who are identified as Principal Investigators affiliated with U.S. institutions. XRISM Science Team members and scientists participating in the mission may submit Type-1 and/or Type-2 proposals in response to this Call. To be eligible for support under XRISM GO, proposals for investigations from such individuals must clearly demonstrate that the proposed investigation is not redundant with their XRISM Science Team responsibilities.

2.1 Type-1 (Observational) Proposals

The observational investigation portion of the XRISM GO program will utilize a two-phase proposal process. Phase-1 proposals shall provide a detailed description of the proposed investigation, including the requested XRISM observation(s) and associated scientific/technical justification. All Phase-1 proposal materials shall be written in an anonymous format and submitted electronically, as specified below. The page limit for

the entire Type-1, Phase-1 proposal is 4 pages, including, e.g., text, figures, tables, and references.

U.S. PIs of Phase-1 proposals assigned a Priority A/B rating by the International Merging meeting will be invited to submit a Phase-2 (cost) proposal; U.S. PIs whose Phase-1 proposals are assigned a Priority C rating will be invited to submit a Phase-2 proposal only after execution of the corresponding Phase-1 proposal observations. Phase-2 proposals must include a detailed budget and accompanying narrative, providing a detailed description of how the requested funds will be used to achieve the goals outlined in the proposal. It is nominally expected that the PI of the Phase-1 proposal will serve as the Phase-2 proposal PI; however, for administrative purposes, an alternate individual from the Phase-1 PI's institution may serve as PI on the Phase-2 proposal.

Individuals submitting Phase-1 proposals to the Cycle 1 XRISM GO Program must adhere to the following proposal submission procedures:

- Proposers must submit their Phase-1 proposals (including the accompanying target forms) electronically through the ARK/RPS website at <http://heasarc.gsfc.nasa.gov/ark/rps/>. Instructions for submitting proposals via ARK/RPS are provided at the HEASARC XRISM web site <https://heasarc.gsfc.nasa.gov/docs/xrism/proposals/index.html>
- Due to the nature of prospective GO investigations within the XRISM GO program, the Scientific/Technical/Management section of proposals is limited to 4 pages, in lieu of the default 15 pages specified in the *NASA Proposer's Guide*. The requirement for a table of contents in the body of the proposal is waived. No supporting material (Curriculum Vitae, pending/current support) is required or allowed;
- An optional LaTeX template for the Scientific/Technical/Management section is provided at <https://heasarc.gsfc.nasa.gov/docs/xrism/proposals/index.html>
- The Scientific/Technical/Management section and the "Expertise and Resources Not Anonymized" documents must be uploaded to the RPS website as PDF files.

In order to be included in the review of Type-1 proposals for this cycle of the XRISM GO Program, all Phase-1 proposal materials must be submitted electronically by 4:30 p.m. Eastern Time on the due date provided in the ROSES tables of due dates.

2.1.1 Type-1 Phase-1 Proposal Anonymization

The overarching objective of dual-anonymous peer review (DAPR) is to reduce unconscious bias in the evaluation of the merit of a proposal. Under this system, not only are proposers unaware of the identity of the members on the review panel, but the reviewers do not have explicit knowledge of the proposal teams. For more about DAPR please see <https://science.nasa.gov/researchers/dual-anonymous-peer-review/>.

Please consult the "Type-1 Phase-1 DAPR instructions" document in the "Other Documents" section on the NSPIRES of this program element for instructions on preparing Type-1 Phase-1 proposals for dual-anonymous peer review. Do not follow the instructions for Type-2 proposals if you are preparing a Type-1 Phase-1 proposal for submission via ARK/RPS.

A summary of the key factors for PIs to keep in mind are:

- Proposals must eliminate language that identifies the proposers or institutions, as discussed in the "Type-1 Phase-1 DAPR instructions".
- NASA understands there may be occasional slips in writing anonymized proposals. However, NASA reserves the right to return without review proposals that egregiously fail to anonymize.
- PIs are required to upload a brief "Expertise and Resources Not Anonymized" PDF through ARK as a separate upload when submitting the science justification. Generally, one page is sufficient; a maximum of three pages is allowed. The "Expertise and Resources Not Anonymized" document must not be anonymized.

Table D.18-1 Type-1 Proposal Anonymization

Item	Requirement
Anonymization	For Type-1 proposals, Phase-1 proposals must be anonymized. Phase-2 (cost) proposals are not anonymized.
Submission	For Type-1 proposals, Phase-1 proposals are submitted through ARK/RPS. Phase-2 (cost) proposals are submitted through NSPIRES.
References	References should be in the [1], [2] format.
Budget	Not required for Type-1 proposals.
Separate "Expertise and Resources Not Anonymized" document	This document provides a list of all team members, their institutional affiliations, roles, expertise, and contributions to the work. The document should also discuss any specific resources that are key to completing the proposed work.

2.1.2 Type-1 Phase-1 Proposal Evaluation

Type-1 Phase-1 GO Proposals will be peer reviewed versus the criteria defined in Appendix D of the *NASA Proposer's Guide*, where intrinsic merit includes:

- The suitability of using the XRISM observatory and associated data products for the proposed investigation, including the degree to which the investigation exploits the unique capabilities of XRISM;
- The feasibility of accomplishing the objectives of the proposed investigation with the requested observations, including the degree to which the proposal satisfies XRISM observational constraints and the feasibility of the proposed analysis techniques;
- The extent to which the proposed investigation complements and enhances the anticipated science return from the XRISM mission;
- The degree to which the proposed observation(s) places demands upon mission resources.

2.1.3 Type-1 Phase-2 Proposals

Subject to the availability of funding, select U.S. proposers of Phase-1 Type-1 observing proposals will be invited to submit a Phase-2 (cost) proposal. Phase-2 Type-1 proposers must follow the instructions for submitting a Phase-2 proposal given in the selection notification letter from the Phase-1 review. Phase-2 proposals must be

submitted through the NASA NSPIRES electronic proposal website (<http://nspires.nasaprs.com>) by an Authorized Organizational Representative (AOR) of the proposing organization following the instructions in the *Summary of Solicitation* of this NRA. The cost proposal shall consist of a "Budget Details" section (maximum of two pages) and a "Budget Narrative" section (maximum of two pages) with a detailed justification of all proposed items for funding. The proposal content must remain consistent between Phase-1 and Phase-2 proposals. PIs should notify the Program Scientist for this program element (see Section 3) if they wish to change the list of Co-Is.

NASA program personnel (as opposed to peer reviewers) will evaluate the Phase-2 (cost) proposals for cost reasonableness and compare the proposed cost to available funds, as allowed by Section V(a) of [the ROSES-2023 Summary of Solicitation](#).

Note that since the Phase-2 proposals will not be peer reviewed, the requirement to redact the budget information (per Section IV(b)(iii) of [the ROSES-2023 Summary of Solicitation](#)) is waived. All costs must be included in the Phase-2 proposal. Proposers should note that Phase-2 (cost) proposals must not be anonymized.

2.2 Type-2 SAP Proposals

The laboratory/theoretical investigation portion of the XRISM GO program, Type-2 (= SAP) proposals are submitted via a single phase proposal process to NSPIRES. Type-2 Proposals shall provide a detailed description of the proposed investigation, including the proposed techniques and associated scientific/technical justification. Compliant proposals will be evaluated by a panel of qualified experts in these subject areas. Proposed investigations must be well defined, and must address an atomic physics issue expected to be encountered in an anticipated (or class of) XRISM Resolve observation. It may be a theoretical (e.g., calculation of atomic cross sections or collision strengths) and/or experimental (e.g., EBIT measurements of particular ionization states) investigation. It is expected that competitive proposals will provide discussions of the following in the body of the proposal:

- The specific atomic physics issue(s) to be addressed, and its expected contribution to enhancing the scientific return from one or more of the expected classes of Resolve observations;
- A quantitative description of the anticipated product(s) of the proposed research (e.g., expected improvement in the accuracy of line energies, widths, interaction cross sections, etc.); and,
- The facilities and methodology to be employed in carrying out the investigation (i.e., the facilities to be used to perform the proposed measurement(s), and/or the atomic codes that will be used to perform the calculations).

Type-2 proposals may request support for a period of up to three years in duration.

Outside of the 10-page S/T/M section, Type-2 Proposals must include an open Science and Data Management plan of up to two pages, immediately following the references and citations for the S/T/M section. The OSDMP must address how any data or software will be made publicly available. For more information see Section 1.1 of [D.1](#)

[Astrophysics Research Program Overview](#). This is only required for Type-2 proposals, not Type-1 observing proposals.

Type-2 proposals must include all of the standard sections of a normal ROSES-2023, proposal, but prepared as instructed for dual-anonymous peer review, see below.

Outside of the 10-page S/T/M section, Type-2 Proposals must include a detailed budget and accompanying narrative, providing a detailed description of how the requested funds will be used to achieve the goals outlined in the proposal. Budget numbers in the uploaded proposal PDF are not to include salary, fringe, or overhead, see Section IV(b)iii of the *ROSES-2023 Summary of Solicitation* and the [walkthrough on ROSES budget redaction](#). There will be a separate Total Budget file which provides the redacted details.

All proposal materials shall be submitted electronically, adhering to the following proposal submission procedures:

Type-2 proposals must be submitted through [NSPIRES](#) by an Authorized Organizational Representative (AOR) of the proposing organization, see Section IV(b) of the *ROSES-2023 Summary of Solicitation* and [NSPIRES Online Help](#). Due to the nature of prospective SAP investigations within the XRISM GI program, the Scientific/Technical/Management section of proposals is limited to 10 pages (not including references, OSDMP, and budget), in lieu of the default 15 pages specified in ROSES. Optional LaTeX and MS Word templates for the Scientific/Technical/Management section are provided at <https://heasarc.gsfc.nasa.gov/docs/xrism/proposals/index.html>.

In order to be included in the review of proposals for this cycle of the XRISM GO Program, all Type-2 proposal materials must be submitted electronically by 11:59 p.m. Eastern Time on the due date given in the bold notice and in Tables [2](#) and [3](#) of ROSES.

2.2.1 Type-2 SAP Proposal Anonymization

The overarching objective of dual-anonymous peer review (DAPR) is to reduce unconscious bias in the evaluation of the merit of a proposal. Under this system, not only are proposers unaware of the identity of the members on the review panel, but the reviewers do not have explicit knowledge of the proposal teams. For more about DAPR please see <https://science.nasa.gov/researchers/dual-anonymous-peer-review/>.

Please consult the "Type-2 SAP DAPR instructions" document in the "Other Documents" section on the NSPIRES of this program element for instructions on preparing Type-1 Phase-1 proposals for dual-anonymous peer review. Do not follow the instructions for Type-2 proposals if you are preparing a Type-1 Phase-1 proposal for submission via ARK/RPS.

A summary of the key factors for PIs to keep in mind are:

- Proposals must eliminate language that identifies the proposers or institutions, as discussed in the "Type-2 SAP DAPR instructions".
- NASA understands there may be occasional slips in writing anonymized proposals. However, NASA reserves the right to return without review proposals that egregiously fail to anonymize.

- PIs are required to upload an “Expertise and Resources Not Anonymized” PDF via NSPIRES as a separate upload. The “Expertise and Resources Not Anonymized” document must not be anonymized.

A summary of the key requirements for preparing and submitting anonymized proposals is provided in Table D.18-2 below.

Table D.18-2: Requirements for Preparing Anonymized Type-2 (NSPIRES) Proposals

Item	Requirement
Proposal Document PDF file	In addition to anonymizing the content including headers and footers, ensure that any PDF bookmarks are anonymous and the document properties do not reveal names of author or organization.
Science-Technical-Management (S/T/M) section of proposal	The 10-page S/T/M section must be anonymized. Omit all names of team members and names of their organizations.
References	Reference callouts must be in numerical format (e.g., [1], [2], etc.).
OSDMP	Anonymized 2-page section included in the main proposal document but outside of the S/T/M section, see Section 2.2.
Biographical Sketches	Do not include in main proposal document. Include in separate "Expertise and Resources Not Anonymized" document.
Table of Personnel and Work Effort	Include in an anonymized fashion (e.g., PI; Co-I#1; Co-I#2) in the main proposal document and in non-anonymized fashion in the separate "Expertise and Resources Not Anonymized" document.
Current and Pending Support	Do not include in main proposal document. Include in separate "Expertise and Resources Not Anonymized" document.
Letters or Statements	All Statements of Commitment and Letters of Support, Feasibility or Endorsement are to be included in the separate "Expertise and Resources Not Anonymized" document
Redacted Budget and Narrative	Include both redacted budget and narrative in proposal document in an anonymized format.
Facilities and Equipment	The Facilities and Equipment Section is to be placed only in the separate "Expertise and Resources Not Anonymized" document. However, the S/T/M Section of the anonymized proposal should address the need for and capabilities of facilities and equipment necessary for the proposed research in an anonymized fashion. Any unique/identifying descriptions of facilities and evidence of access to or affiliation with facilities are to be included in the separate "Expertise and Resources Not Anonymized" document.

<p>Separate "Expertise and Resources Not Anonymized" document</p>	<p>Upload as a separate document in NSPIRES. Choose Attachment Type = "Expertise and Resources Not Anonymized". This document provides:</p> <ol style="list-style-type: none"> 1. A list of all team members, their affiliations and roles (e.g., PI, Co-I, collaborator), and their contributions to the work; 2. Brief descriptions of the scientific and technical expertise each team member brings, emphasizing the experiences necessary to be successful in executing the proposed work. 3. A description of the contribution that each team member will make to the proposed investigation. 4. A discussion of specific resources ("Facilities and Equipment", e.g., access to a laboratory, observatory, specific instrumentation, etc.) that are required to perform the proposed investigation. 5. The not-anonymized Table of Work Effort; 6. Biographical Sketches/CVs for the PI and all Co-Is on the proposal (limit 2 pages for the PI, 1 page for others); 7. Statements of Current and Pending Support for the PI and all Co-Is; 8. A discussion of any specific resources that are key to completing the proposed work; 9. Letters of commitment from any archives, specialized facilities, foreign institutions, etc. that will support the proposed investigation.
<p>Total Budget</p>	<p>Upload as a separate document in NSPIRES. Choose Attachment Type = Total Budget. The mandatory total budget file is full and complete with all costs for those at U.S. organizations, including those at government laboratories. It is not redacted or anonymized.</p>
<p>High-End Computing (HEC) request</p>	<p>Submit optional not-anonymized PDF HEC form as attachment type "Optional HEC request" in NSPIRES. The S/T/M section in the main proposal must state that a HEC request is included and must provide an outline of the computing resources required in an anonymized fashion.</p>

2.2.2 Type-2 SAP Proposal Evaluation

Type-2 SAP proposals will be evaluated by a science peer panel with respect to the criteria defined in Appendix D *NASA Proposer's Guide*, where intrinsic merit includes:

- The scientific and technical relevance of the proposed investigation to the interpretation of the spectra of celestial sources expected to be obtained with the XRISM Resolve instrument;
- The extent to which the proposed investigation complements and enhances the existing body of atomic physics data and/or theoretical understanding of the underlying physical processes directly relevant to enabling the fullest exploitation

of high-resolution spectral data of celestial sources over the energy range ~0.3 – 12 keV;

- The feasibility of accomplishing the objectives of the proposed investigation within the specified timeframe using the proposed technique(s).

NASA will evaluate the requested budget for cost realism and reasonableness. Comparison of the proposed cost to available funds. Upon completion of the review process, proposers will be notified regarding the status of their proposal. Successful PIs will be notified of the award amount for their Cycle 1 investigation(s) by NASA.

3. Summary of Key Information

Expected program budget for first year Cycle 1 awards	Type-1: \$6.0M Type-2: \$0.5M Up to \$6.5M [Updated January 11, 2024]
Expected number of new awards pending adequate proposals of merit	Type-1: 40 – 70 Type-2: 2 – 4
Maximum duration of awards	Type-1: 1 year Type-2: 3 years
Due date for Notice of Intent to propose (NOI)	No Notices of Intent are requested for this program element.
Due date for Type-1/Phase-1 proposals via ARK/RPS	4:30 pm eastern time on the date given in Tables 2 and 3 of this ROSES NRA
Due date for Type-2 proposals via NSPIRES (or Grants.gov)	By 11:59 pm eastern time on the date given in Tables 2 and 3 of this ROSES NRA
Planning date for start of investigation	July August 1, 2024 [Amended December 15, 2023]
Page limit for entire Type-1/Phase-1 proposal, including text, figures, tables, and references.	4 pages, see Section 2.1
Page limit for the central Science-Technical-Management section of Type-2 (NSPIRES) proposal	10 pages, see Section 2.2
Relevance	This program is relevant to the Astrophysics questions and goals in the NASA Science Plan. Proposals that are relevant to this program are, by definition, relevant to NASA.
General information and overview of this solicitation	See the ROSES-2023 Summary of Solicitation .
Detailed instructions for the preparation and submission of proposals	For Type-1 Phase-1 proposals see Section 2.1 For Type-2 Proposals see Section 2.2
Submission medium	Electronic proposal submission is required in PDF format; no hard copy is required.
Web site for submission of Notice of Intent to propose (NOI)	No Notices of Intent are requested for this program element.

Website for submission of Type-1 Phase-1 proposals and required forms	https://heasarc.gsfc.nasa.gov/ark/xrism/ Help Desk available at https://heasarc.gsfc.nasa.gov/ark/rps/help/
Website for submission of Type-1 Phase-2 budget proposals	https://nspires.nasaprs.com/ ; See Section 2.2.1
Website for submission of Type-2 proposals via NSPIRES	https://nspires.nasaprs.com/ (help desk available at nspires-help@nasaprs.com or (202 479-9376)
Website for submission of Type-2 proposals via Grants.gov	https://www.grants.gov/ (help desk available at support@grants.gov or (800) 518-4726)
Funding opportunity number for downloading an application package from Grants.gov	NNH23ZDA001N-XGO
Programmatic information may be obtained from the XRISM Program Scientist	Sanaz Vahidinia Astrophysics Division Science Mission Directorate NASA Headquarters Washington, DC 20546-0001 Telephone: 202-510-1982 Email: sanaz.vahidinia@nasa.gov
Technical questions concerning this program element may be directed to the XRISM Guest Observer Facility	Koji Mukai X-ray Astrophysics Laboratory NASA GSFC Greenbelt, MD 20785 Email: koji.mukai-1@nasa.gov