

## **Astrophysics Explorers Announcement of Opportunity Community Announcement**

The NASA Science Mission Directorate (SMD) has released a Community Announcement on <https://beta.sam.gov/> under Notice ID NNH20ZDA015L concerning its intention to solicit investigations for the Astrophysics Explorers Program. The Astrophysics Explorers Program conducts Principal Investigator (PI)-led space science investigations to advance NASA's strategic goals in astrophysics, which are to discover the origin, structure, evolution, and destiny of the Universe and search for Earth-like planets. Additional information concerning these areas of investigation is provided at <https://science.nasa.gov/astrophysics>.

Current planning calls for NASA SMD to release an AO in the fall of 2021 to solicit proposals for the Astrophysics Medium Explorers (MIDEX) Announcement of Opportunity (AO) to accomplish Astrophysics Explorer Program science objectives. NASA also plans to release simultaneously a solicitation for Astrophysics Explorer Missions of Opportunity (MO) through the NASA Announcement of Opportunity NNH17ZDA004O, Third Stand Alone Missions of Opportunity Notice (SALMON-3). A draft MIDEX AO and draft SALMON-3 Program Element Appendix (PEA) are expected to be ready for release for comment in the fall of 2020 through the NASA Solicitation and Proposal Integrated Review and Evaluation System (NSPIRES) at: <https://nspires.nasaprs.com/>

The AO cost cap for an Astrophysics MIDEX mission is expected to be no greater than \$290M in fiscal year (FY) 2022 dollars, not including any contributions, or the cost of AO-provided access to space. NASA will provide standard launch services on an expendable launch vehicle, outside the AO cost cap. PI-provided alternative access to space may not be proposed.

NASA expects to solicit MO science investigations that are defined in the SALMON-3 AO as Small Complete Mission MOs, including investigations requiring flight on the International Space Station (ISS). Partner MOs and New Missions using Existing Spacecraft MOs will not be solicited. Small Complete Mission MOs are solicited at two cost caps. Standard-class MOs will be defined by a PEA cost cap that is expected to be no greater than \$80M in FY 2022 dollars. SmallSat-class MOs will be defined by a PEA cost cap that is expected to be no greater than \$40M in FY 2022 dollars.

For all MOs requiring flight on the ISS, PEA-provided access to space is outside the PEA cost cap. For MOs not requiring flight on the ISS, PI-provided alternative access to space is permitted.

PEA-provided rideshare access to Low Earth Orbit (LEO) or Geostationary Transfer Orbit on an Evolved Expendable Launch Vehicle Secondary Payload Adapter (ESPA) or ESPA Grande is

available. For Standard-class MOs, the PEA cost cap will be adjusted downwards by \$4.2M for each port required on an ESPA and by \$6.5M for each port on an ESPA Grande. For Standard-class MOs using PEA-provided access to space with standard launch services on a Venture Class Launch Vehicle with capability to lift ~150kg to LEO, the PEA cost cap will be adjusted downwards by \$12M. For SmallSat-class MOs, PEA-provided rideshare access to Low Earth Orbit or Geostationary Transfer Orbit on an ESPA or ESPA Grande is provided by NASA outside the PEA cost cap. For SmallSat-class MOs, PEA-provided rideshare access to cislunar space for 12-U or 27-U CubeSats is provided by NASA outside the PEA cost cap. For SmallSat-class MOs using PI-provided alternative access to space, the PEA cost cap will be adjusted upwards by \$4.2M.

#### **Cost-Cap Estimates for the Explorer MO Investigations Repeated in A Side-by-Side View**

|                                                          | SmallSat MO | Standard MO                                   |
|----------------------------------------------------------|-------------|-----------------------------------------------|
| PEA cost cap (FY 2022 dollars)                           | \$40M       | \$80M                                         |
| Adjustment to Cost Cap for AA2S*                         | +\$4.2M     | \$0                                           |
| Adjustment for PEA-provided rideshare                    | \$0         | -\$4.2M/ESPA port<br>-\$6.5M/ESPA Grande port |
| Adjustment for PEA-provided Venture Class Launch Vehicle | N/A         | -\$12M                                        |

\*AA2S = Alternative Access to Space

MIDEX missions are expected to be managed as Class C missions, while Small Complete Mission MOs are expected to be managed as streamlined Class D missions.

The currently approved Astrophysics Explorer Program planning budget is sufficient to select and execute one MIDEX mission and one or two MO missions, depending on cost.

The selection process's current plan has two steps. In Step 1, it is anticipated that two or three MIDEX mission proposals and one to three MO mission proposals may be selected for nine-month Phase A concept studies. Each MIDEX concept study could be funded up to \$3M in real year dollars, and each MO concept study could be funded up to \$750K in real year dollars. For Step 2, NASA will conduct a review of the Phase A concept study reports. As a result of this second evaluation, NASA expects to select one MIDEX mission and one or two MO missions to proceed into Phase B and subsequent mission phases. However, at the end of the first step NASA may choose to select without further competition an MO proposal(s) that is sufficiently compelling without high technical risk for development. NASA desires to launch the MOs before December 2027 and the MIDEX mission before December 2028.

Proposals for U.S. Participating Investigator (USPI) investigations on a space mission to be built and flown by a sponsor agency other than NASA, which address NASA's astrophysics

objectives, are not solicited in calls for Explorer missions. USPI investigations will be solicited separately on a 2-year cycle, with the next call expected in 2022.

Proposals in response to the forthcoming Astrophysics Explorers AO will be due 90 days after its formal release. Participation will be open to all categories of U.S. and non-U.S. organizations, including educational institutions, industry, not-for-profit organizations, Federally Funded Research and Development Centers, NASA Centers, and other Government agencies.

The schedule for the solicitation is intended to be:

|                                            |                                  |
|--------------------------------------------|----------------------------------|
| Release of draft AO:                       | Late CY 2020 (target)            |
| Release of final AO:                       | Fall 2021 (target)               |
| Preproposal conference:                    | ~ 3 weeks after final AO release |
| Proposals due:                             | 90 days after AO release         |
| Selection for competitive Phase A studies: | Fall 2022 (target)               |
| Concept study reports due:                 | Spring 2023 (target)             |
| Down-selection:                            | Fall 2023 (target)               |

The Astrophysics Explorer Program MIDEX AO and SALMON-3 PEA may contain provisions that differ substantially from this preliminary notice, in which case the provisions in the AO and SALMON-3 PEA will take precedence. The Astrophysics Explorer AO will be based on the Standard PI-led Mission AO Template available at [http://soma.larc.nasa.gov/standardao/sao\\_templates.html](http://soma.larc.nasa.gov/standardao/sao_templates.html). Proposers must read carefully the Draft and Final Astrophysics MIDEX AO and SALMON-3 PEA when they are released on NSPIRES.

Further information will be posted on the Explorer Program Acquisition website at <https://explorers.larc.nasa.gov/2021APMIDEX/> as that information becomes available. Please address questions or comments about this intention to release an Astrophysics MIDEX AO and to solicit Explorer Missions of Opportunity through SALMON-3 by email only to the Astrophysics Explorers Program Scientist: Dr. Linda S. Sparke at [linda.s.sparke@nasa.gov](mailto:linda.s.sparke@nasa.gov) (subject line to read "Astrophysics MIDEX AO"). Emails received by December 15, 2020 will be acknowledged, and responses to inquiries will be posted at the Questions and Answers (Q&A) location on the Explorer Program Acquisition website. Anonymity of persons or institutions submitting questions will be preserved.

NASA has not approved the issuance of the Astrophysics Medium Explorer (MIDEX) Announcement of Opportunity (AO) or Third Stand Alone Missions of Opportunity (SALMON-3) Program Element Appendix (PEA), and this email does not obligate NASA to issue the

announcements and solicit proposals. Any costs incurred by prospective investigators in preparing submissions in response to this email are incurred completely at the submitter's own risk.

Technical Note: This NSPIRES email will be reformatted to show any tables and will be posted and available for download on the Explorer Program Acquisition website at:

<https://explorers.larc.nasa.gov/2021APMIDEX/>