National Aeronautics and Space Administration

Intro to the ASTRA Initiative

Jessica A. Gaskin
Associate Director for Concept & Technology Development
Astrophysics Division
NASA Science Mission Directorate
June 2, 2026

The Astrophysics Strategic Technology & Research Accelerator (ASTRA) Initiative

ASTRA is the superhighway to cosmic discovery. A multi-mission concept and technology incubator that accelerates the time from innovation to exploration (CML 3, MRL 4, TRL 5 (Goal)).

The ASTRA Initiative:

- Defines mission concepts and matures technologies for multiple strategic astrophysics missions.
- Embraces Astro2020 recommendations, emerging industry and other capabilities, and strategic NASA documents.
- Ensures continuous, programmatically responsible, groundbreaking astrophysics discovery.

Celeriter ad ASTRA!

Westerlund 2 is a multi-wavelength view of a cluster of young stars located~20,000 light years from Earth. Credit: X-ray: NASA/CXC/SAO/Sejong Univ./Hur et al; ; Optical: NASA/STScI

Preparing for the Future

THEN

HabEx, LUVOIR, Lynx, Origins
Flagship Mission Concept Studies
Input into Astro2020

NOW

X-Ray, Far-IR Flagship, and 4-6 (>$1B)
Mission Concepts for Study
Input into Next Decadal

APD is asking the community to provide a *small* set (4 to 6) of candidate large strategic (>$1B) mission concepts to study as entrants into the ASTRA Initiative.

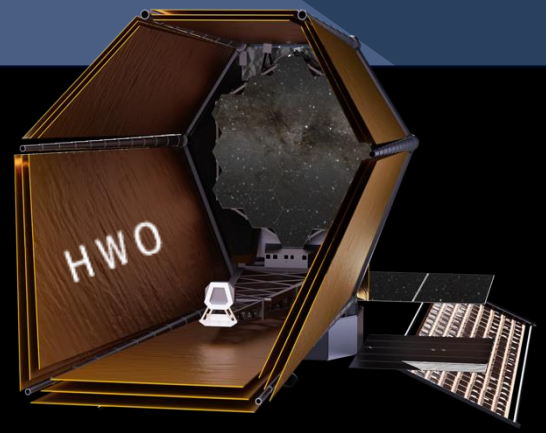
APD is encouraging traditional & non-traditional architectures, that may include:

- Single observatories that support generations (e.g., Hubble, Chandra, JWST, HWO)
- Constellations of suites of smaller missions, that span broad wavelength coverage, while collectively providing Flagship-scale science
- Space-based (and lunar) mission concepts (e.g. radio)

Selected mission concepts will be funded for study:

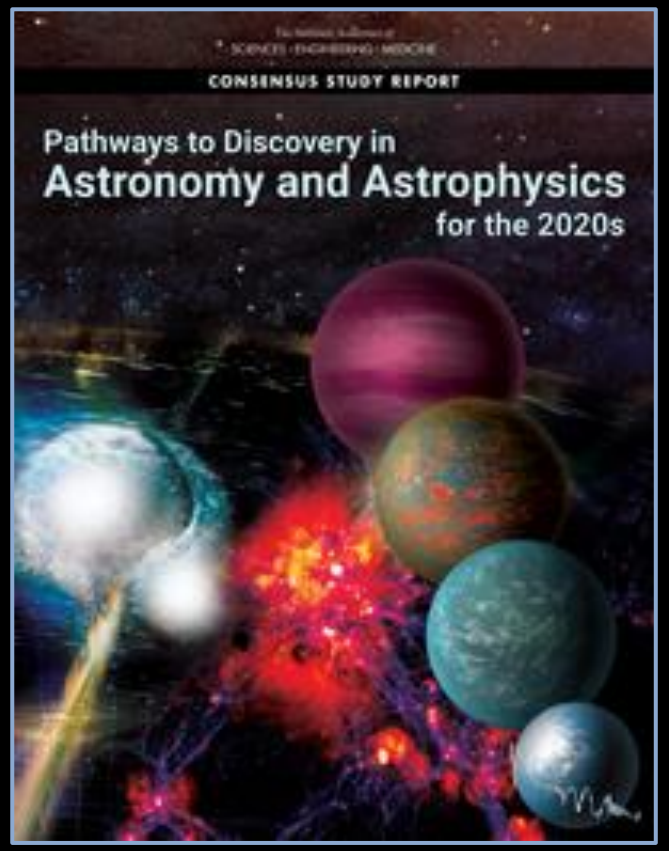
- To advance the concepts ahead of formal pre-Phase A activities
  - Concept Maturity Level 3 – defining science and mission architecture trade space, not a point design
  - Maturation Readiness Level 3 – defining early industry involvement and feasibility
- Identify tall-pole technology development needs – advancing technology to accelerate mission readiness

Astro2020 Recommendation



Selected mission concepts are in addition to:

- X-Ray flagship study (which is ramping up now)
- Far-IR flagship study



"The **Great Observatories Mission and Technology Maturation Program** (Table S.5) would provide significant early investments in the co-maturation of mission concepts and technologies, with appropriate decadal survey input on scope, and with checks and course corrections along the way. Inspired by the vision of searching for signatures of life on planets outside the solar system, and by the transformative capability such a telescope would have for a wide range of astrophysics, the survey recommends that the first mission to enter this program is a **large (~6 m aperture) infrared/optical/ultraviolet (IR/O/UV) space telescope**....

To prepare for future large, strategic missions, 5 years after beginning the maturation program for the IR/O/UV mission, the survey recommends commencing **mission and technology** maturation of both a **far-IR and an X-ray large strategic mission**..."

ASTRA PROCESS

APD is encouraging the community to consider the following when prioritizing concepts for study:

- Industry and commercial capabilities, international partners, public/private partnerships,
- and the current and planned international fleet of missions.

- NASA's foundational strategic documents.

- Technology advancement needs over the next decade.

How to Participate:

- Through the PAGs!
  - Cosmic Origins (COPAG)
  - Exoplanet Exploration (ExoPAG)
  - Physics of the Cosmos (PhysPAG)

Each PAG may solicit the astronomy and astrophysics community for mission concept ideas. To accomplish this, each PAG is empowered to envision and use its own process.

May 27-28, 2026
Hopkins Bloomberg Center
555 Pennsylvania Ave NW
Washington, DC

Summary in Work!

The landscape that enables space exploration is rapidly transforming.

- Commercially capabilities are accelerating mission timelines and reducing costs
- New public-private partnerships are emerging
- The Artemis program is creating fresh opportunities to do astrophysics from lunar and cis-lunar platforms

This workshop, will bring together the brightest minds from NASA, the space industry, other government agencies, non-profits, and the scientific community to reimagine what's possible in this new landscape.

https://nexsci.caltech.edu/conferences/2026/innovation2026/

Strategic Mission Study Selection Schedule

March 2026	**Community Announcement Release**. The Astrophysics Division released an announcement to the astronomy and astrophysics community trequesting feedback on large strategic (>$1B) mission concepts to study.
May 2026	**Workshop on Innovation for Astrophysics Missions**. A presentation will be provided to the community prior to the Community Science Ad ASTRA Workshop.
June 2026	**248th AAS Meeting**. An overview of the ASTRA Initiative will be presented in a Special Session, invited talks from the APD Division Director and others, followed by a panel Q&A session.
September 2026	**NASA Community Science Ad ASTRA Workshop**. A presentation will be provided to the community by the end of the year.
December 2026	**Joint PAG Virtual Presentation**. A public presentation will be given by PAG representatives to provide community input to the NASA Astrophysics Division Director regarding which mission concepts to study*.
January 2027	**249th AAS Meeting**. Mission concept study selections will be announced by the NASA Astrophysics Division Director during the Town Hall.

***Study process details will be provided at later date.**

ASTRA Initiative

National Aeronautics and Space Administration

The Future of NASA Astrophysics

Find out more about the Astrophysics Strategic Technology & Research Accelerator (ASTRA) Initiative.

Explore Search... News & Events Multimedia NASA+ LIVE

... / Cosmic Origins Studies / The ASTRA Initiative

About Community Opportunities Missions Studies News & Events Resources

Cosmic Origins Science

The Astrophysics Strategic Technology & Research Accelerator (ASTRA) Initiative

To maintain US leadership, NASA's Astrophysics Division (APD) is launching the Astrophysics Strategic Technology and Research Accelerator (ASTRA) Initiative.

About
Get Involved
Stay Connected
News & Events
Documents
Additional Resources
Technology

About the ASTRA Initiative

How does the universe work? How did we get here? Are we alone?

At every stage, NASA will collaborate with industry, academia, and international partners to advance necessary technologies, manufacturing capabilities, and reduce costs.

ASTRA aims to reduce the total cost, time-to-science, and schedule risk of future strategic missions, aligning with the guidance from Astro2020, LSSM, and AMP.

This is an artist's impression of how the very early universe (less than 1 billion years old) might have looked when it went through a voracious onset of star formation, converting primordial hydrogen into myriad stars at an unprecedented rate. Back then the sky would have looked markedly different from the sea of quiescent galaxies around us today. The sky is ablaze with primeval starburst galaxies; giant elliptical and spiral galaxies have yet to form. Unlike today there is very little dust in these galaxies, because the heavier elements have not yet been cooked up through nucleosynthesis in stars. Recent analysis of Hubble Space Telescope deep sky images supports the theory that the first stars in the universe appeared in an abrupt eruption of star formation, rather than at a gradual pace.
Credit: NASA, STScI A. Schaller