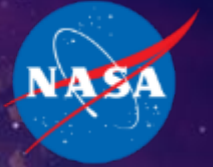


National Aeronautics and  
Space Administration



# EXPLORE SOLAR SYSTEM & BEYOND

## **NASA Program Update**


**Astronomy and Astrophysics Advisory Committee**

**March 2022**

**Paul Hertz**

Director, Astrophysics Division

Science Mission Directorate

 [@NASAUniverse](https://twitter.com/NASAUniverse) [@NASAExoplanets](https://twitter.com/NASAExoplanets)



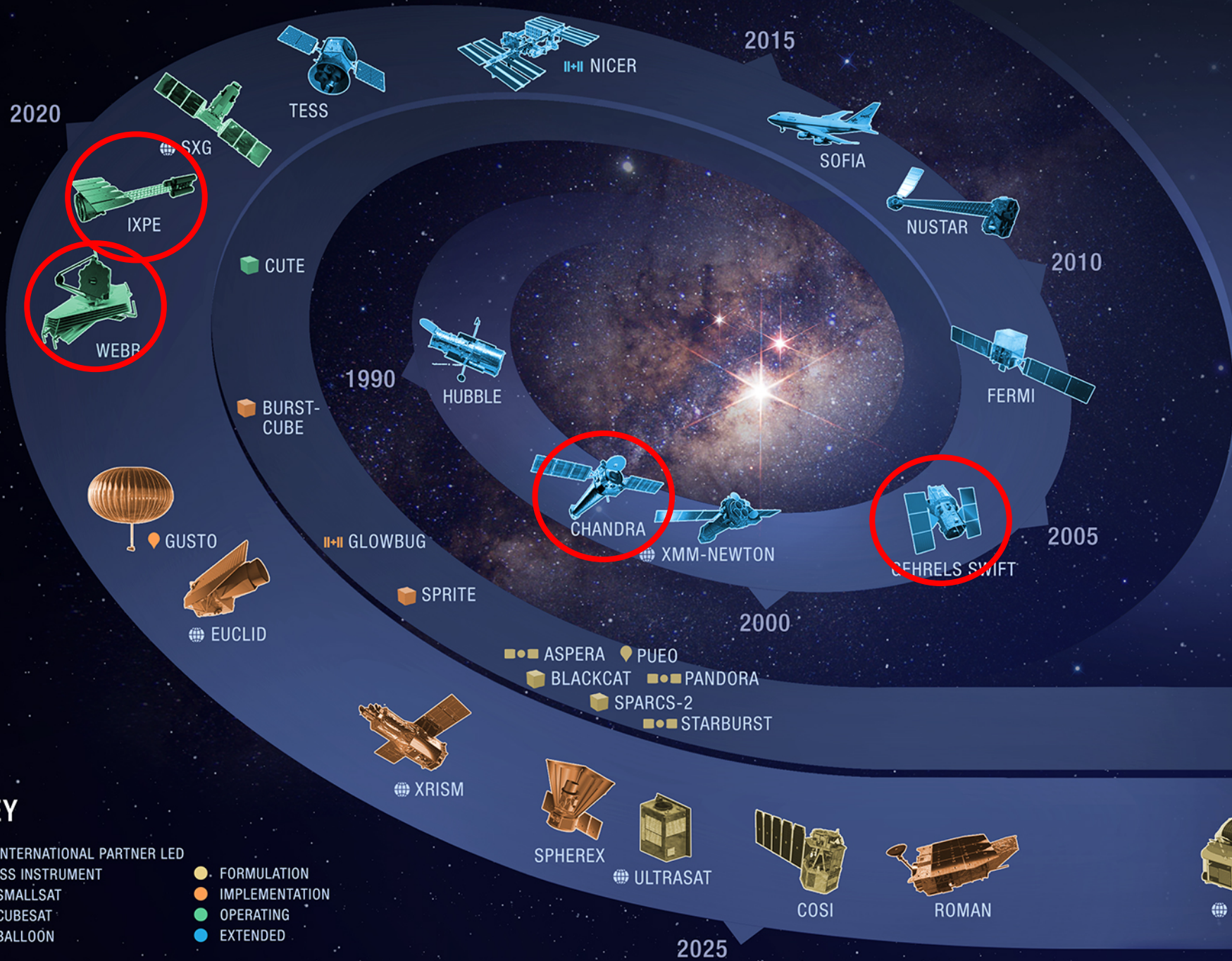
# ASTROPHYSICS FLEET

## PRE-FORMULATION

- MIDEX/MO 2028
- PROBE ~2030
- ATHENA EARLY 2030s
- LISA MID 2030s

## VERY SMALL MISSIONS

## TRADITIONAL MISSIONS



### KEY

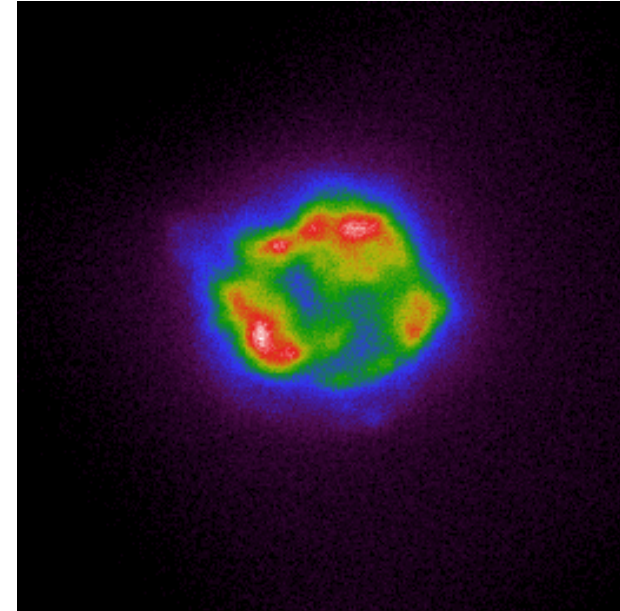
- INTERNATIONAL PARTNER LED
- ISS INSTRUMENT
- SMALLSAT
- CUBESAT
- BALLOON
- FORMULATION
- IMPLEMENTATION
- OPERATING
- EXTENDED

# Imaging X-ray Polarimetry Explorer (IXPE)

Principal Investigator- Martin Weisskopf (MSFC)



*A SpaceX Falcon 9 rocket launches with NASA's Imaging X-ray Polarimetry Explorer spacecraft onboard from Launch Complex 39A, Dec. 9, 2021, at KSC in Florida. Image Credit: NASA/Joel Kowsky*

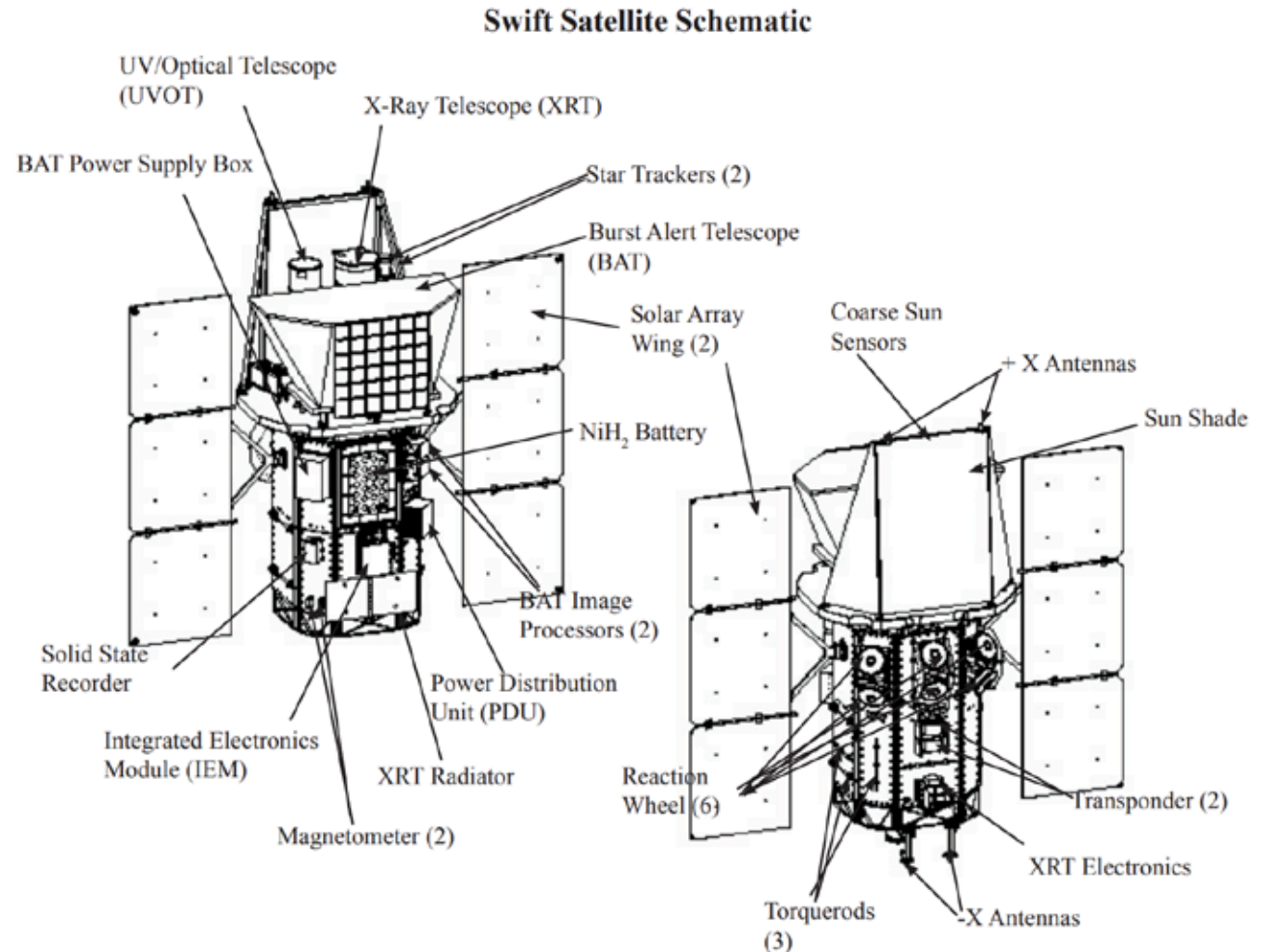


*The supernova remnant Cassiopeia A. Colors ranging from cool purple and blue to red and hot white correspond with the increasing brightness of the X-rays. The image was created using X-ray data collected by IXPE between Jan. 11-18, 2022. Credit: NASA*

<https://ixpe.msfc.nasa.gov/>

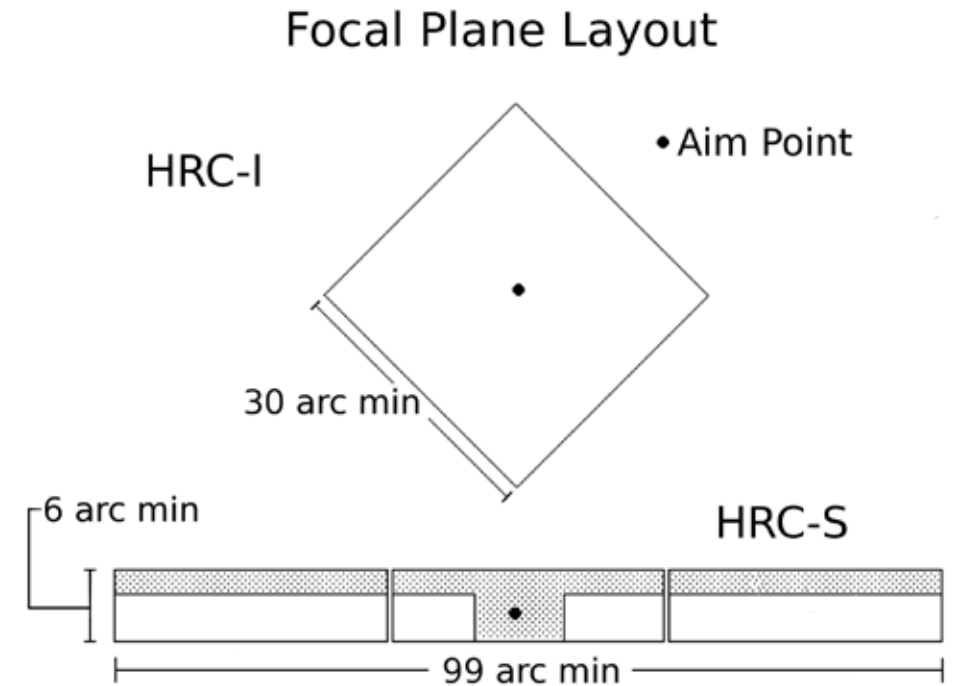
# Swift Anomaly Resolved

- Swift entered safehold on Jan 18 due to a failure of reaction wheel 5.
- Recovery plan included updated operation using 5 operational reaction wheels and a possible attempt at restoring mechanical operation of reaction wheel #5 (after successful return to science and 1-month elapse of time since anomaly).
- 5-wheel configuration parameters provided on Jan 27.
- Updated configuration uploaded on Feb 8.
- **Swift started its return to science on Feb 17, slewing between planned targets.**
- **Systems, operations and science appear nominal with new operating parameters.**
- Instrument performance in 5-wheel operation expected to meet original operating requirements from 17 years ago.



# Chandra Anomaly Current Status

- Science observations from Chandra have been halted since the High-Resolution Camera (HRC) power supply anomaly on Feb 9.
- Plans to return the Advanced CCD Imaging Spectrometer (ACIS) to operations were reviewed and approved at a Go/No Go meeting on Tuesday Feb 15.
- **Science restarted on Tuesday, February 22 on ACIS only with the HRC continuing to be powered off.**
- Radiation monitoring for the ACIS is provided by several methods - the Ground, ACIS and HRC.
- Since HRC is powered off several new precautions will be uploaded to Chandra.



## High Resolution Camera (HRC)

The HRC comprises two micro-channel plate imaging detectors, and offers the highest spatial (<0.5 arc second) and temporal (16 msec) resolutions. The HRC-I has the largest field-of-view (31x31 arc minutes) available on Chandra. The HRC-S is most commonly used to read out the dispersed spectrum from the LETG.

# Webb Space Telescope



Launched - Christmas Day 2021

Completed deployments – January 8, 2022

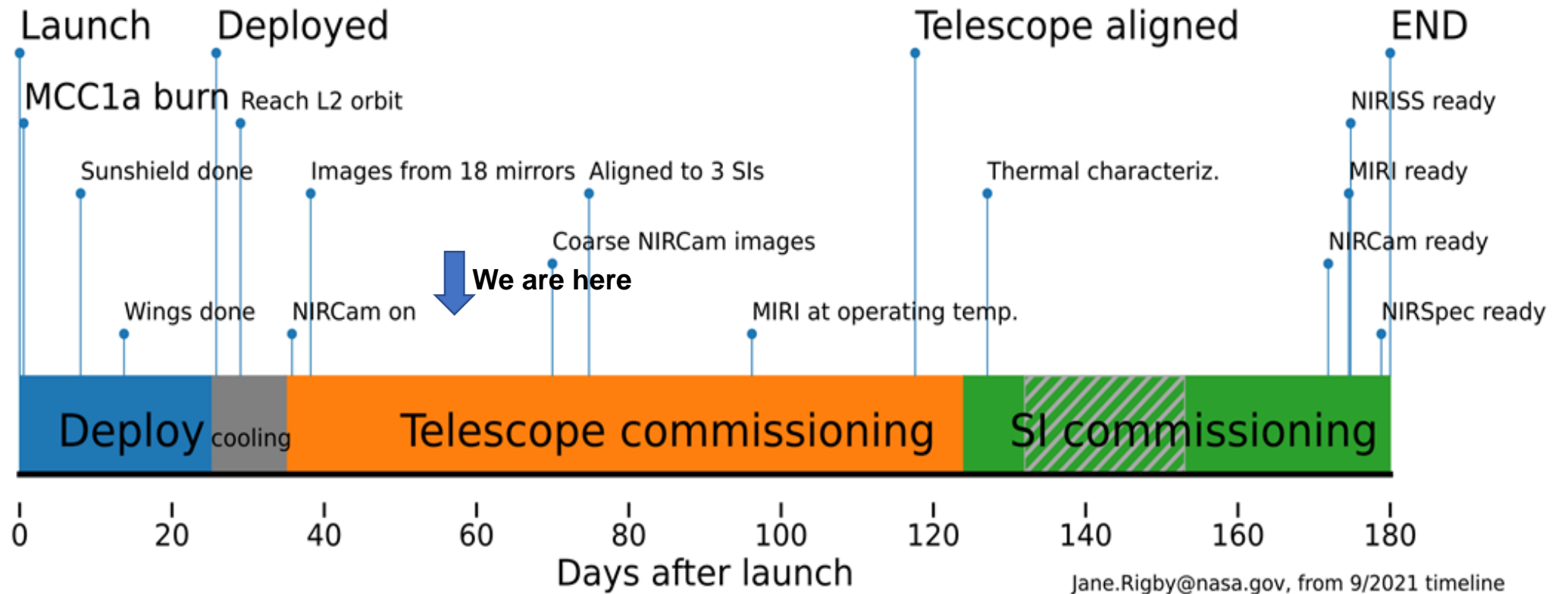
L2 insertion – January 24, 2022

First Segmented Mirror images –  
February 2, 2022

Next several weeks:

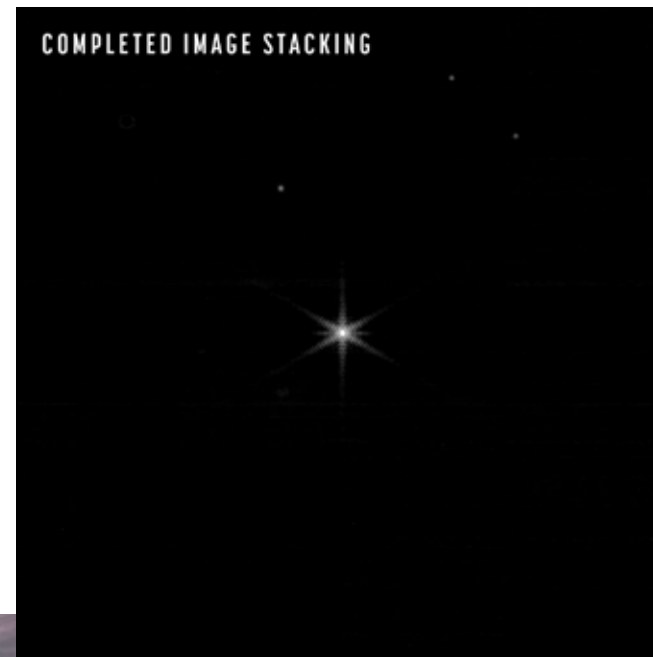
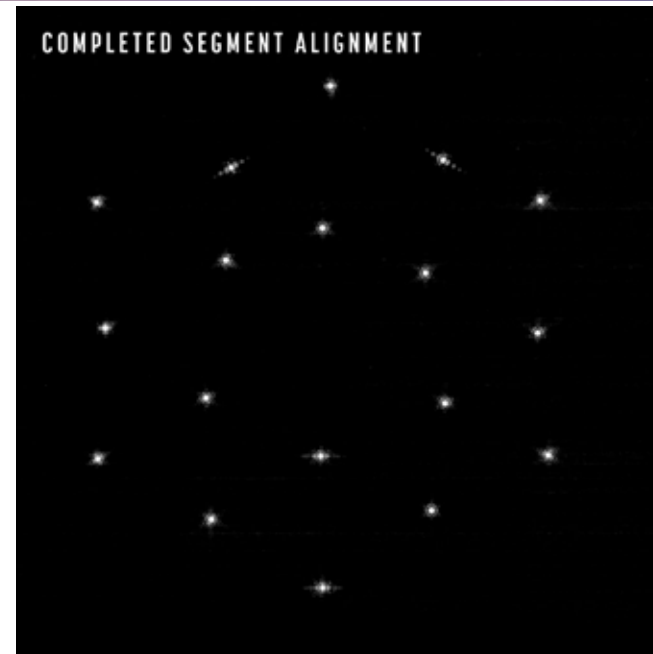
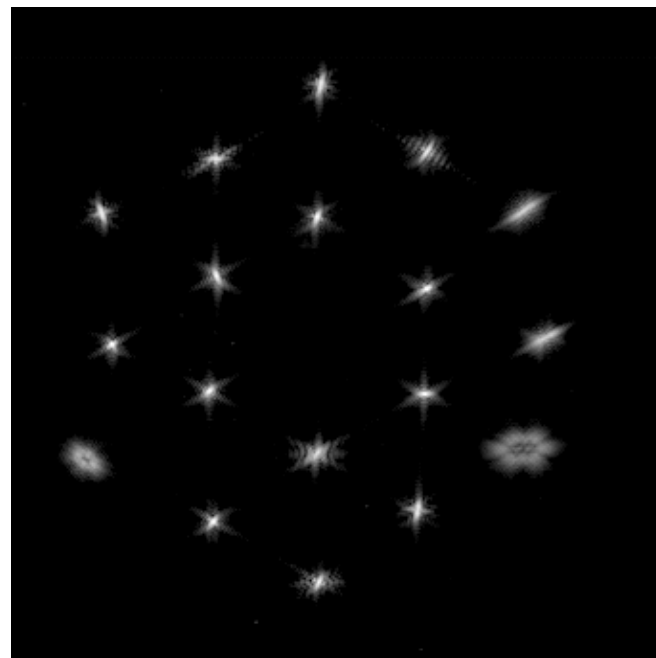
- L+ ~75 d: NIRCam-only alignment of mirrors
- L+ ~120 d: All-instrument mirror alignment/transition to instrument commissioning

# Webb Space Telescope



Commissioning begins at launch and is ~ 180 days\* long

# Webb Space Telescope



# 2022 Astrophysics Research Program Elements

## ROSES-22

### Supporting Research and Technology

- Astrophysics Research & Analysis (APRA) \*
- Strategic Astrophysics Technology (SAT) \*
- Theoretical and Computational Astrophysics Networks (TCAN) \*
- Roman Technology Fellowships (RTF)
- Precursor Science Investigations for Astro2020 DS \*/\*\* **New**

### Data Analysis

- Astrophysics Data Analysis (ADAP) \*\*
- GO/GI programs for Fermi, Swift, NuSTAR, TESS, NICER \*\*

### Mission Science and Instrumentation

- Astrophysics Pioneers (suborbital science investigations) \*
- Suborbital payloads solicited through APRA \*
- LISA Preparatory Science \*
- Roman Research and Opportunities (moved from ROSES-2021) **New**
- XRISM Guest Scientist (XGS, moved from ROSES-2021) \*\* **New**

### Cross Divisional

- Exoplanets Research Program (XRP) \*\*
- Topical Workshops, Symposia and Conferences (TWSC)
- Citizen Science Seed Funding Program
- Graduate Student Research Awards (FINESST)

## Solicited Separately

- GO/GI/Archive/Theory programs for Hubble, Chandra, SOFIA, Webb \*\*
- NASA Hubble Fellowship Program (NHFP)
- NASA Postdoctoral Program (NPP)
- Support for XMM-Newton U.S. PIs selected by ESA

## Not solicited in ROSES-22

- Astrophysics Theory Program (ATP), every other year
- Astrophysics Explorers U.S. PIs (APEX USPI) is no longer solicited separately, now part of Astrophysics Research & Analysis (R&A)

### Notice:

ROSES-22 released on February 14  
(ROSES for the community on Valentines Day)

\* Proposals will require an inclusion plan for creating and sustaining a positive and inclusive working environment.

\*\* Proposals evaluated using dual-anonymous peer reviews

# ROSES Inclusion Plans

Inclusion plans are required with selected ROSES elements.

## Year 1 – ROSES-21

- Only Astrophysics Theory Program & PRISM (inclusion plan pilot)
- Inclusion plans evaluated for adequacy and completeness; feedback provided to the proposers; feedback not folded into the adjectival ratings or selection recommendations
- White paper published (<https://science.nasa.gov/astrophysics/documents>)

## Year 2 – ROSES-22

- Seven astrophysics ROSES elements + at least one in each division
- Inclusion plans evaluated for adequacy and completeness; feedback provided to the proposers; feedback not folded into the adjectival ratings or selection recommendations; selected proposals will not be funded until unacceptable inclusion plans are remedied

## Year 3 – ROSES-23

- Inclusion plans evaluated for adequacy and completeness; feedback provided to the proposers; feedback not folded into the adjectival ratings; proposals with unacceptable inclusion plans will not be selected

“NASA ... should consider including diversity ... in the evaluation of funding awards ... .”  
(Astro2020, page 3-30)

# Decadal Survey Implementation Update

Page	Recommendation	NASA Actions
3-22	IDEA workforce	SMD bridge program proposed for FY22
3-23	Postdoc fellowships	<a href="#">Independent review</a> conducted of NASA Hubble Fellowship Program to improve inclusion and diversity
3-29	Proposal demographics	National Academies study on the “ <a href="#">Foundation for Assessing the Health and Vitality of the NASA Science Mission Directorate’s Research Communities</a> ” will be completed Spring 2022
3-30	IDEA evaluation criteria	Inclusion plans required in 7 astrophysics ROSES elements
5-12	SOFIA	SOFIA withdrawn from 2022 Senior Review
6-8	Balloon program review	An APAC task force will be discussed at upcoming APAC meeting
7-11	Great observatories program	Precursor science workshop planned for April 2022
7-19	Time domain program	Time domain workshop planned for August 2022
7-20	Astrophysics probes	<a href="#">AO announced for early 2023</a>
7-35	Roman science program review	<a href="#">CAA working group</a> is conducting a non-advocate review