NASA's Astrophysics Pioneers

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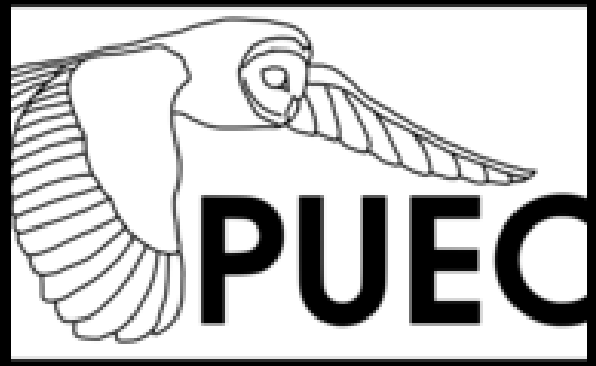
Tuesday, 25 August 2026

Program Scientist (Balloons): *Thomas Hams*
Program Executive (Balloons): *E. Lucien Cox*
Program Executive (SmallSats): *Rosa V. Avalos-Warren*
S3PO Portfolio Manager: *John D. Hudeck Jr.*

Astrophysics Pioneers Overview

- Pioneers solicits proposals that are greater in cost, scope, and capability than what is possible within APRA, but lower in cost than what is possible within the Explorers programs.
- NPR 7120.8 requirements with light touch management oversight
- Pioneers can use a variety of platforms: e.g. CubeSats (including constellations), other SmallSats, major balloon missions. ISS and CLPS payloads allowed.
- Primary review critierion for selection is merit of the proposed science
- Technology development and maturation is allowed but should be minimal. Use of higher TRL COTS and commercial services encouraged
- Early career development is a goal
- PI-led missions, $20M cost cap, 5 years duration, including build, fly, reduce, publish
- Lauch costs covered by the program

NASA Astrophysics Pioneers (2021-2026)



- Payload for Ultrahigh Energy Observations (PI: A. Vieregg, U. of Chicago)
- Stratospheric balloon launched 12/25 to study ultra-high energy neutrinos and cosmic rays.



- Gamma-ray ASM, Simultaneous detection of N/NS mergers with LIGO (PI: D. Kocevski, NASA MSFC)
- SFL bus, ESPA-G, LRD 01/28



- Multiwavelength (VIS + IR) characterization of exoplanets and their host stars (PI: E. Quintana, NASA GSFC).
- BCT bus, 250kg, Launch 01/26.
- Talk @ SmallSat, Mon, 11:45



- Absolute stellar photometry (PI: P. Plavchan, GMU)
- GEO, < 36 kg, LRD 01/29
- Talk @ SmallSat, Mon, 14:00



- IGM inflow/outflow from galaxies via OVI emission line imaging (PI: C. Vargas, U. of Arizona)
- SFL bus, 60 kg, LRD 01/27.



- High Resolution tomography in proto-planetary disks (PI: G. Stacey, Cornell)
- ULDB, LRD 12/29, McMurdo, Antarctica

Pioneers-24 Selections

PUFFINS, PI R. Anche (U of Arizona)

PI, Ramya M Anche is a postdoctoral researcher at the University of Arizona Space Astrophysics Lab (UASAL), Steward Observatory since 2021,with 10 years of experience in astronomical optical polarimetry and high-contrast imaging. She finished her PhD at the Indian Institute of Astrophysics, India, in Jan 2020.

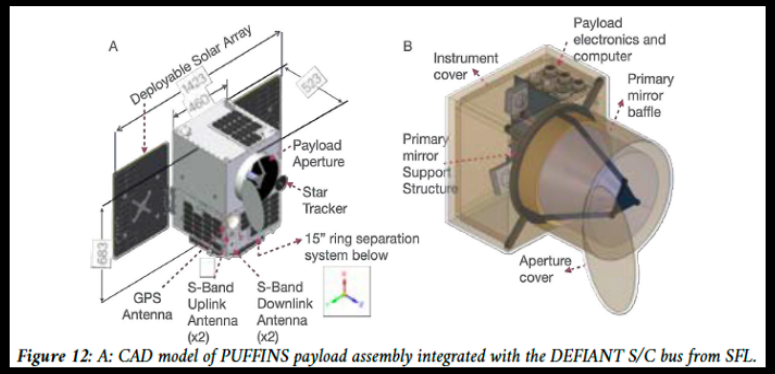


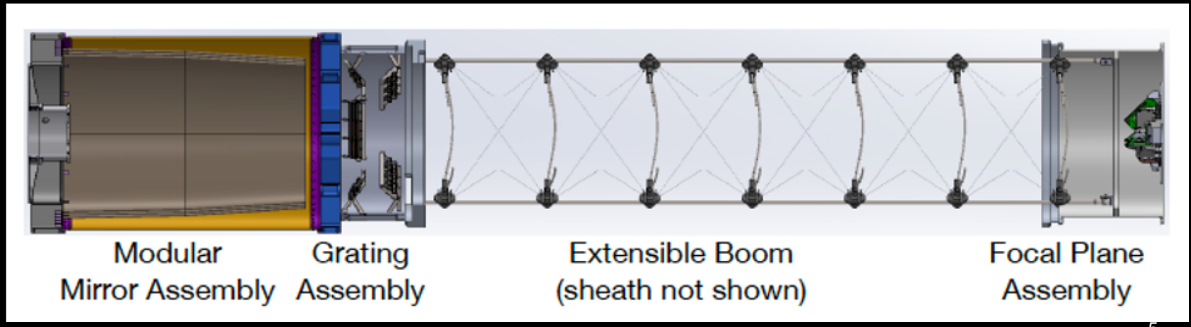
Figure 12: A: CAD model of PUFFINS payload assembly integrated with the DEFIANT S/C bus from SFL.

PUFFINS will be the first UV Polarimeter in orbit since WUPPE, over 30 years ago. It will dramatically improve our understanding and modeling of dust composition, which represents a fundamental limit to measurements of the Cosmic Microwave Background (CMB). PUFFINS will provide valuable information regarding the structure of the magnetic field and also improve our understanding of star formation.

GOSox, PI H. Marshall (MIT)

Dr. Herman L. Marshall is the PI of REDSoX, a GOSoX precursor with many common elements. REDSoX is now ~3 years into a 5 year development program. Dr. Sarah Heine (an Early Career Researcher, ECR) is Deputy PI of both the REDSoX and GOSoX teams.

The proposed Globe Orbiting Soft X-ray Polarimeter (GoSox) aims to build and operate the first spectropolarimeter in the soft X-ray range (0.2-0.4 keV). The mission aims to explore a new frontier in astrophysics by providing polarimetric measurements in this previously inaccessible energy range, complementing the capabilities of missions like the Imaging X-ray Polarimetry Explorer (IXPE, 2-8 keV). Science includes jets in AGN, QED, NS EOS.



PIONEER	START Year	PI Institution	Other	Status
PUEO	2021	U. Chicago	GSFC (HEASARC)	Launched 12/25, data analysis in progress
Pandora	2021	NASA GSFC	ARC (Deputy PI), LLNL	Launched 1/26, commissionin g
Aspera	2021	U. Arizona	GSFC, JPL (coatings), GSFC (HEASARC)	Observatory I&T Lauch NET 01/27
Starburst	2021	NASA MSFC	GSFC (SCaN, HEASARC)	Observatory I&T Launch NET 2028
TIGERISS	2023	Wash. U.	GSFC	Discontinued

Recent and Upcoming Pioneers Solicitations

- Pioneers-24 selections just had their kick-off meetings
- Pioneers-25 proposals being evaluated. Selections expected soon.
- Pioneers-26 proposals expected to be due in early 2027
  - Mandatory NOIs probably due in February 2027
  - Proposals probably due in April 2027
- What's new in Pioneers-26:
  - Moved CubeSats (previously in APRA) into Pioneers solicitation
  - Merged Review: can review all in appropriate subject matter together; must have scientific merit (can have technology demonstration); early career researchers included
  - Range of cost caps (<$10M, ≤16U or <$20M, ≤27U).
  - Development of lunar or cis-lunar science payloads is supported within Pioneers, as well as science payloads hosted on the International Space Station (ISS)


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