NASA's Physics of the Cosmos Program X-Ray Science Interest Group

Splinter Session at AAS 247

XR SIG co-chairs: Breanna Binder (Cal Poly Pomona), Chien-Ting Chen (USRA/MSFC), Steven Ehlert (MSFC), Fabio Pacucci (CfA), David Pooley (Trinity / Eureka Sci.)

New website

https://science.nasa.gov/astrophysics/programs/physics-of-the-cosmos/community/xr-sig/

Science Interest Group

X-Ray

The X-Ray Science Interest Group (XR SIG) serves as an active communication forum for X-Ray astrophysics. XR SIG is open to the scientific community.

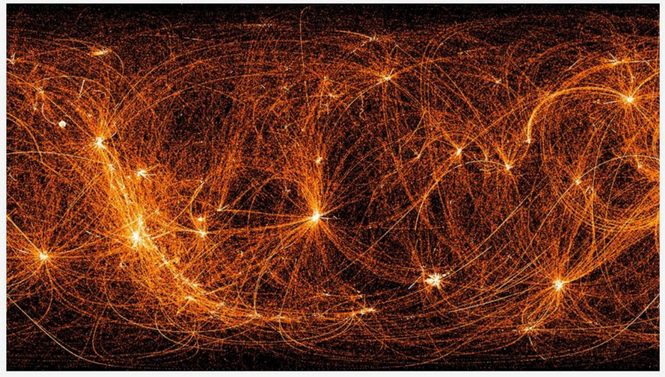
About
Leadership
Documents
Join the X-Ray SIG Email LIst
News & Events

About XR SIG

Supporting Mission Studies and Concept Development for Future X-Ray Observatories

The X-Ray Science Interest Group (XR SIG) will provide quantitative metrics and assessments to NASA with regard to future X-Ray observatories.

XR SIG will track and analyze evolving science goals and requirements in X-Ray astronomy, especially as current hot topics evolve. XR SIG will also analyze technology development and prioritization plans and assist the Physics of the Cosmos Program Analysis Group in determining technology needs.



This image of the whole sky shows 22 months of X-ray data recorded by NASA's Neutron star Interior Composition Explorer (NICER) payload aboard the International Space Station during its nighttime slews between targets. NICER frequently observes targets best suited to its core mission ("mass-radius" pulsars) and those whose regular pulses are ideal for the Station Explorer for X-ray Timing and Navigation Technology (SEXTANT) experiment. One day they could form the basis of a GPS-like system for navigating the solar system.
Credits: NASA/NICER

The X-Ray Sky

Agenda

Focus on SAG Updates & Plans

- Overview / Motivation / History — David Pooley (Trinity University & Eureka Scientific, Inc.)

- BBX SAG — chairs Chien-Ting Chen (USRA/MSFC), Kristin Madsen (GSFC), Daniel Stern (JPL/Caltech)
- Lynx 2030+ SAG — chairs Steven Ehlert (MSFC), Fabio Pacucci (CfA | Harvard & Smithsonian)
- HiReX SAG — chairs Breanna Binder (Cal Poly Pomona), Herman Marshall (MIT), Mark Schattenburg (MIT), Kim Weaver (GSFC)

- Q&A

Motivation / History

ensure a viable and exciting future for X-ray astrophysics

- August 2023: APD Director informs *Chandra* Users' Committee about coming cuts; magnitude uncertain
- February 2024: NASA immediately cuts *Chandra* funding; GO budget reduced by 30%
- March 2024: NASA portion of FY25 PBR effectively cancels *Chandra* mission (confirmed by OPCR)
- August 2024: under Congressional pressure, NASA keeps *Chandra* operating; GO funding eventually restored
- Winter 2024: initial thinking about Astro2030 prep begins; three SAGs envisioned to start in early 2025
- February 2025: NASA PAGs and subsidiary groups (including XR SIG) pause activities; DOGE arrives at NASA
- March 2025: NASA's Astrophysics Advisory Committee (APAC) is abolished (no longer a clear way to start a SAG)
- April 2025: "skinny budget" leaked with proposed 66% cuts to APD (all science in U.S. faces existential threat)
- Summer/Fall 2025: Senate and House approps bills support science in general, APD and *Chandra* in particular
- October 1 to November 12, 2025: longest government shutdown in history
- Now: appropriations bills still not passed; budget uncertainty continues

Throughout 2025: almost no direction from APD on Astro2030 preparations because of uncertainty.

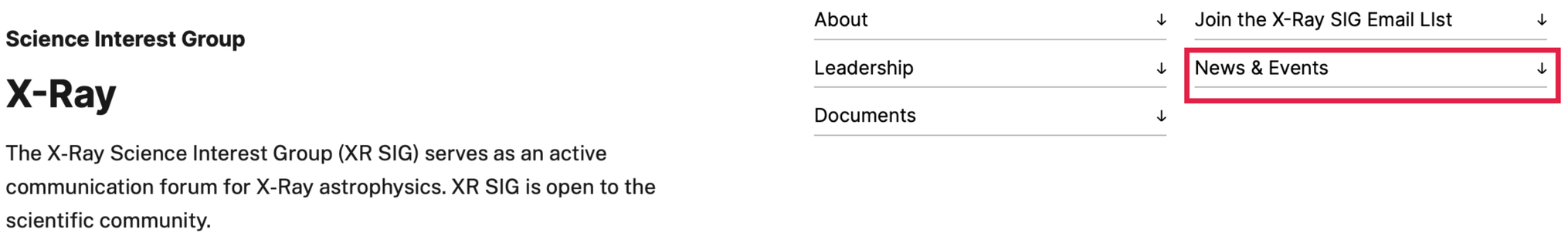
Motivation / History

ensure a viable and exciting future for X-ray astrophysics

- Early in 2025, we realized that we could not afford to wait for clarity; too much time would be lost.
- April 2025: drafted Terms of Reference for three SAGs (despite no APAC)
- Reasoning: without clear direction from APD on whether there would be full STDTs for mission concepts, we realized we could use the framework of the PhysPAG to lay the groundwork for future mission studies.
- The PhysCOS Program Office cannot support a full STDT, but it can support the XR SIG forming focused SAGs.
- These SAGs will deliver reports to the APD Director, and those will help inform APD activities for Astro2030.
- We also began the Future of X-ray Astrophysics online seminar series (roughly biweekly, started 2025 Aug 8)

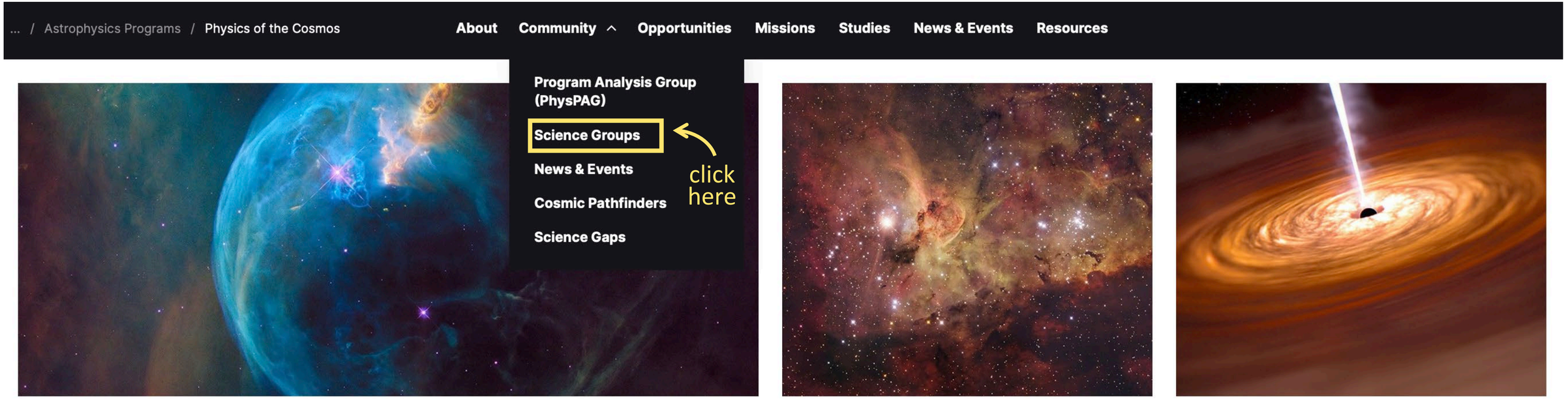
https://science.nasa.gov/astrophysics/programs/physics-of-the-cosmos/community/xr-sig/

recordings and slides here



More Information on SAGs

go to https://science.nasa.gov/astrophysics/programs/physics-of-the-cosmos/



Physics of the Cosmos

The Physics of the Cosmos (PhysCOS) Program seeks to answer some of the deepest questions about the universe. How do matter and energy behave in the most extreme corners of the cosmos — near black holes, neutron stars, and the first moments after the Big Bang? What forces set the universe in motion and continue to shape its growth? What are the hidden ingredients — dark matter and dark energy — that make up most of the universe but remain invisible to us? PhysCOS seeks to uncover these mysteries, helping us better understand the cosmos and our place within it.

More Information on SAGs

each SAG page has detailed information, including how to join