

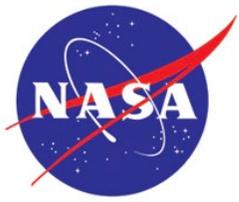
The Physics of the Cosmos Program Office @XR SIG

Francesca Civano and Brian Humensky

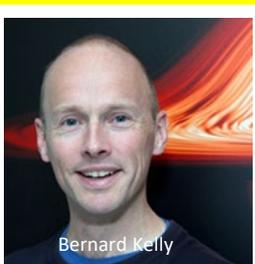
PhysCOS Chief Scientists

NASA – GSFC





PhysCOS @HEAD



HQ Program Executive: Shahid Habib
 HQ Program Scientist: Valerie Connaughton
 HQ Dep. Program Scientist: Sanaz Vahadinia

Program Management
Program Manager: Barbara Grofic
Deputy Program Manager: Cathy Barclay
Program Business Manager: Tracy Felton-Robinson
Administrative Assistant: Susan Wright



Resources Management Group
Deputy Program Business Manager: Patricia Smith
Programmatic Officer: Patricia Butler*
Resource Analyst: Jessie Hughes*
Resource Analyst: Ryan Bradley*

Procurement Support:
 Dean Patterson

Program Support
IPTL: Colleen Ponton*
PSM: Mary Morrow*

Program Technology & Systems Engineering
Program Systems Engineer: Dr. Mark Matsumura^
Technology Development Manager: Rachel Rivera
Chief Technologist: Jason Derleth (detail)
Program Technologist: Dr. Opher Ganel*



Program Science
PhysCOS Chief Scientists: Dr. Francesca Civano, Dr. Brian Humensky
COR Chief Scientist: Dr. Peter Kurczynski
PhysCOS/COR Sup.Scientists: Bernard Kelly*, Ron Gamble*
PhysCOS/COR Science PSM: Stephanie Clark*

Strategic Studies & Implementation

ULTRASat Study
Project Manager: Barbara Grofic
Deputy Project Manager: Cathy Barclay
Project Scientist: Dr. James Rhoads
System Engineer: Dr. Mark Matsumura

LISA Study
Study Manager: Terry Doiron
Study Scientist: Dr. Ira Thorpe
System Engineer: Norman Rioux^

Decadal Studies
TDAMM Study
Study Managers: Dr. Chris Roberts
Study Scientists: Dr. Brian Humensky
Study Systems Engs: Dr. Mark Matsumura
Study Technologist: Jason Derleth

^Independent Technical Authority
 *Contractor



Search NASA



Physics of the Cosmos



- About PhysCOS
- PhysPAG
- Mission Studies
- Technology
- Documents

About Physics of the Cosmos

The Physics of the Cosmos is NASA's **Astrophysics Division Exploration Program (ExEP)**. It is to explore some of the most fundamental questions in the universe: the validity of Einstein's General Theory of Relativity, the nature of matter and energy in extreme environments, the evolution of the universe, and the nature of dark matter and dark energy.

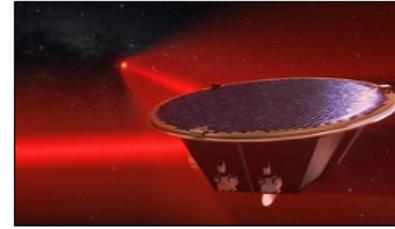
Located at the Goddard Space Flight Center, the Physics of the Cosmos Office supports, tracks, and enables a suite of science missions and enabling technology topics. PhysCOS activities include:

- Facilitating the **PhysCOS Program Analysis Group (PhysPAG)**, which comprises standing Science Interest Groups (SIGs) and Science Analysis Groups (SAGs) convened to address related science and technology topics.
- Keeping its members informed of upcoming developments and funding opportunities, both within NASA and at other agencies engaged in science and technology activities.
- Soliciting, and prioritizing community-identified technology gaps that must be closed to enable or enhance future strategic Astrophysics missions with benefits to PhysCOS science. This technology gap prioritization informs APD's strategic technology development solicitation, selection, and funding.
- Managing funded technology projects with benefits to PhysCOS science.

- SIGs and SAGs
- Executive Committee
- Meetings
- Events Calendar
- IP SIG
- CoS SIG
- CR SIG
- GR SIG
- GW SIG
- XR SIG
- AWESOM
- GTN SAG
- MMA SAG
- NGO SAG
- Tech SAG

focused programs contained within the **Origins (COR)** and the **Exoplanet** programs. Its purpose is to explore the physical forces and laws of the universe, the nature of spacetime, the behavior of matter and energy in extreme environments, the parameters governing inflation and the evolution of the universe, and the nature of dark matter and dark energy.

PhysCOS Office supports, tracks, and enables a suite of science missions and enabling technology topics. PhysCOS activities include:



PhysCOS News

See our new [Events Calendar](#)

Program News and Announcements

- [Sign up for PhysCOS News and Announcements](#)

1 March
PhysCOS Announces New PhysPAG Executive Committee Members » [Details](#).

1 March
PRIMA Science Community Workshop from 21–22 March 2023 » [Details](#).

1 March
The AGN Vision Series » [Details](#).

1 March
ROSES-23 Released » [Details](#).

7 February



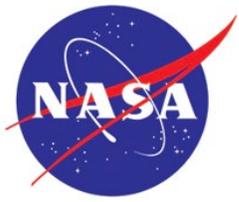
Strategic Technology Development



- The Program Office monitors and manages the PhysCOS and COR Strategic Astrophysics Technology (SAT) and direct-funded technologies
- Astro2020 related technology development (FGOs, Probes)
- Conduct Technological Readiness Level (TRL) assessments

- PhysCOS/COR Technology Website <https://apd440.gsfc.nasa.gov/technology.html>
 - Updated with 2022 SPIE and AAS papers
- AstroTech Database <http://www.AstroStrategicTech.us/>
 - Published Annual Reports 2022
- Astrophysics Biennial Technology Report (ABTR) 2022





FGO Precursor Science



Precursor Science: Science investigations that will inform mission architectures and trades with the goal of reducing mission design and development cost, scope, and risk where possible.

- Two workshops during 2022 (April and October 2022)
 - Community effort to work on science gaps for the three Future Great Observatory concepts identified in the Astro2020 Decadal Survey Report.
 - Community science gap lists are available on workshop website.
 - Chief Scientists of Program Offices distilled a set of science gaps from community draft; NASA HQ revised list for ROSES Call on Precursor Science.
- **Three Astro science gaps in the ROSES call are related to the X-ray FGOs concept.**
- **XR SIG community to think more about X-ray FGO precursor science gaps**

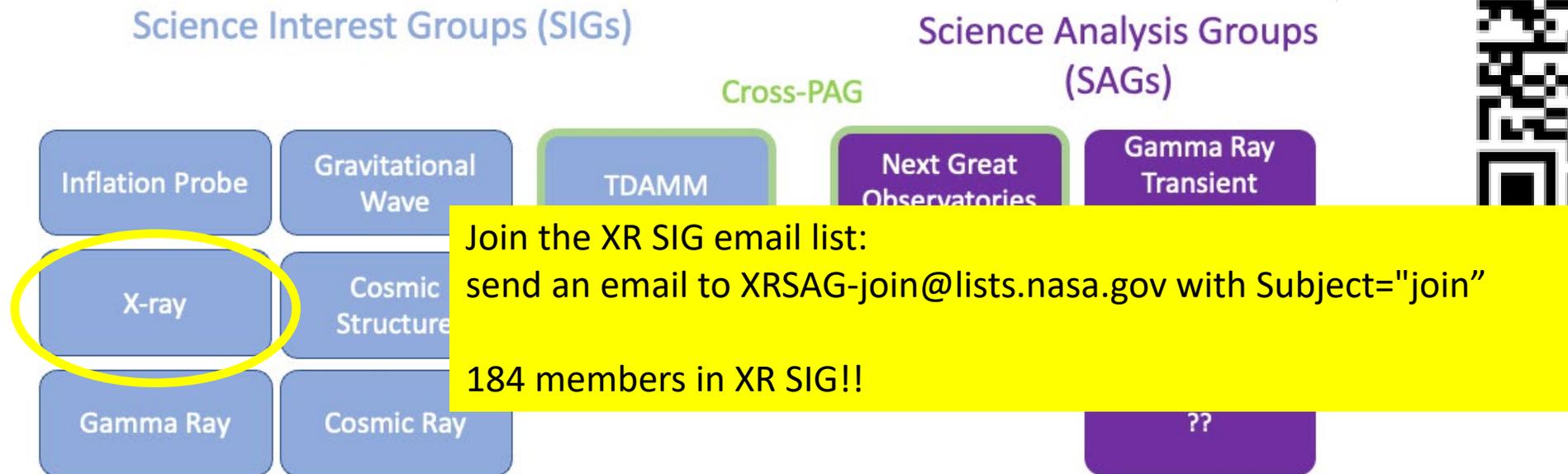




How YOU can get involved



- Join our mailing list: PCOS-News-join@lists.nasa.gov with Subject="join"
- Join the PhysPAG Executive committee
- Join the Science Groups:

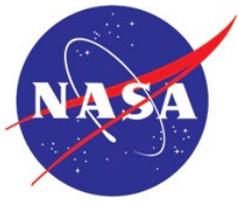




SIG Support from Program Office

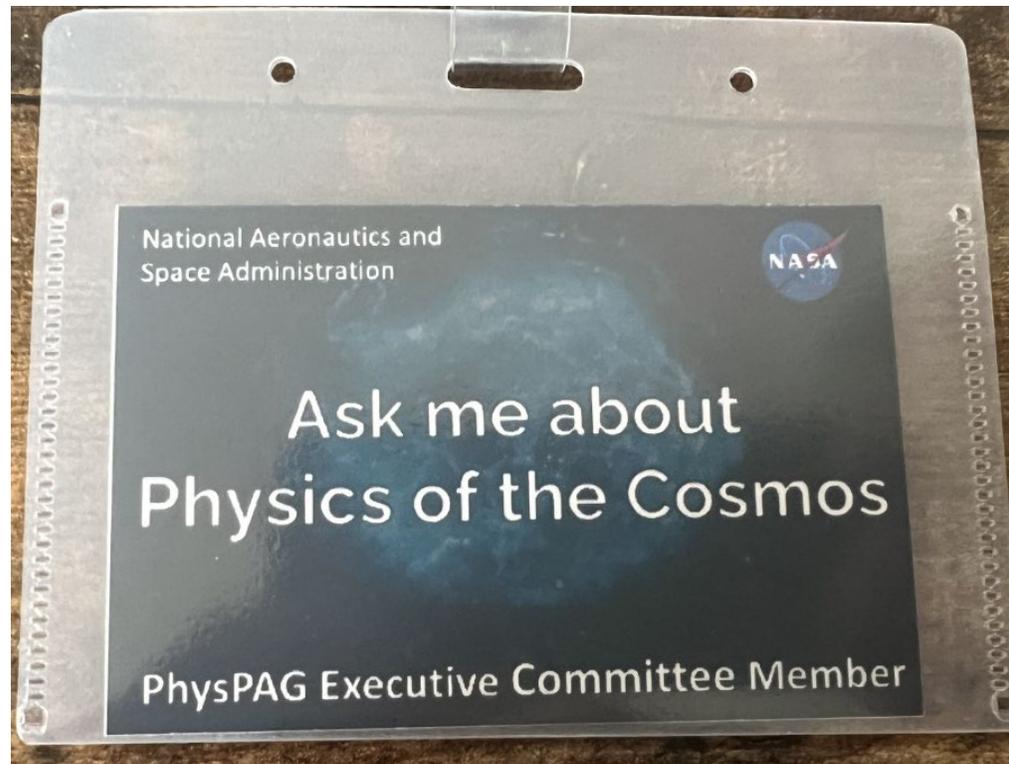


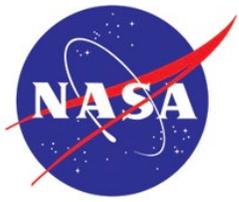
- Assistance publicizing activities via PhysCOS News mailing list and at conferences
- Supporting ALL the **Probes**
 - including through the prioritization of tech gaps
 - advertising of workshops and other activities via our news email
- Webex available for virtual meetings or forums
- Web page maintenance, including slides, recordings, documents
- Dedicated workshop support (some fundings might be available)



Get in touch!!

- Myself and Brian Humensky
- Any EC member with a PhysCOS badge





THANKS



Great Observatories Maturation Program



GOMAP: I

Stage 1: HQ Preparation

Establish GOMAP plans and policies

Stage 2: Habitable Worlds Observatory Concept Maturation Study

Analyze architecture options; Mature enabling technologies;

Stage 3: Evolved Pre-Phase A for Habitable Worlds Observatory

*Establish mission architecture; Execute design trades; Mature technologies;
Maintain technical capabilities for Future Great Observatories (FGOs)*

Stage 2: HWO Concept Maturation Study

GOMAP HQ Leadership Team

Independent Consultants

Habitable Worlds Observatory

Selection of Science, Technology, Architecture Review Team (START)

- Members selected from US science and technology communities
- Explore Astro2020 science objectives; break down one or more levels
- Analyze mission architecture options
- International ex-officio representatives included
- Support available for START members in recognition of community service
- Logistical support provided by NASA Program Offices
- Engineering / science analysis support provided by NASA & Science Centers

Community

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- DCL will be released soon
- Contact person: Julie Crook