Physics of the Cosmos

X-ray Science Interest Group

Ryan Hickox
Dartmouth College

Jillian Bellovary
CUNY - Queensborough
Community College

Grant Tremblay
CfA | Harvard & Smithsonian

APS April Meeting
19 April 2020

Please submit questions in the live chat on the APS live stream window.

If you can’t see the live chat, try turning off VPN!

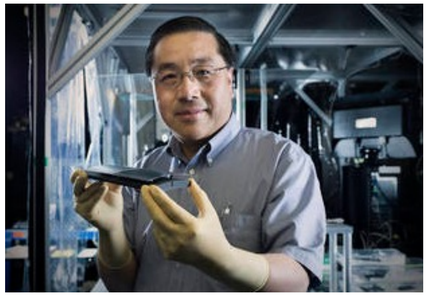
If that still doesn’t work, you can email questions to:

grant.tremblay@cfa.harvard.edu

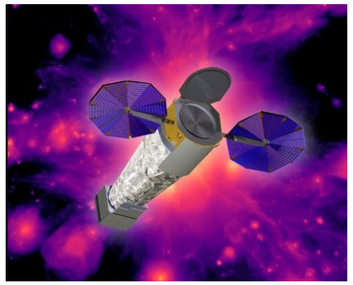
Schedule for this session

6:30pm Intro and Overview of X-Ray Astrophysics Missions and Astro2020, and Discussion: **XRSIG co-chairs**

6:45pm The X-Ray Imaging Spectroscopy Mission (XRISM): **Brian Williams**



7:10pm Progress on Silicon Metashell High-Resolution X-Ray Optics: **Will Zhang**



7:35pm Science with the Lynx X-ray Mission Concept: **Ryan Hickox**

Intro to XRSIG

X-ray Science Interest Group

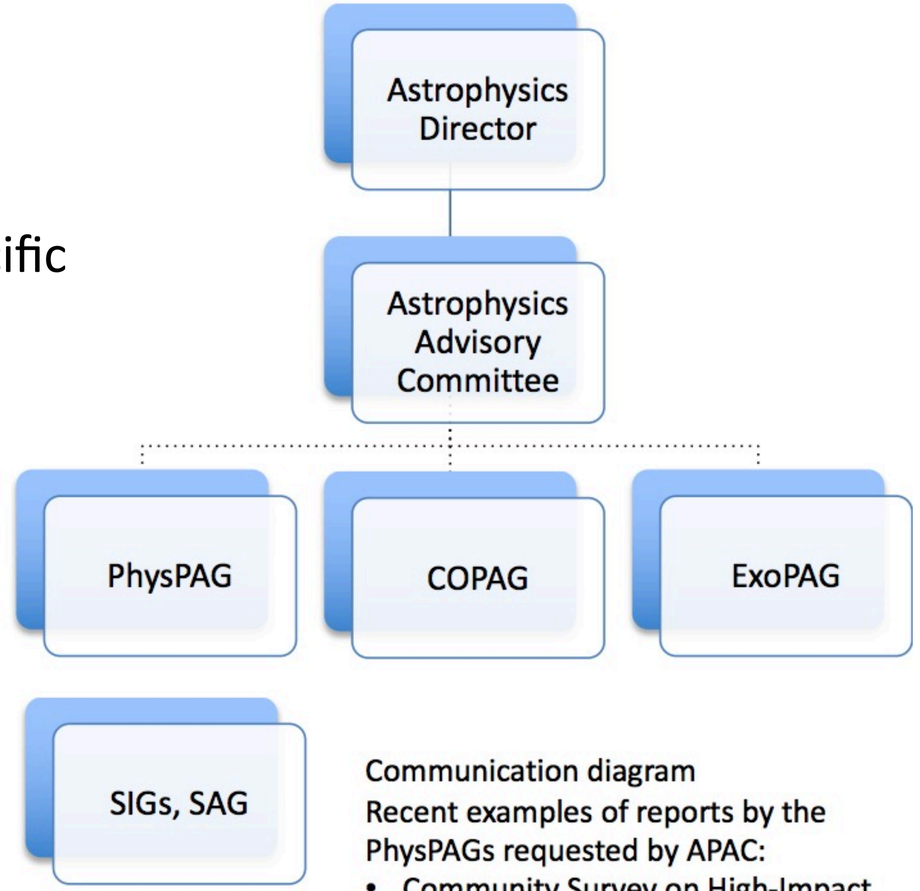
The goal of the X-ray Science Analysis Group (XRSIG) is to provide quantitative metrics and assessments to NASA in regard to future X-ray observatories. Specifically, the XRSIG will

- Track and analyze evolving science goals and requirements in X-ray astronomy, especially as current "hot" topics evolve.
- Provide an active communication forum for X-ray astrophysics (e.g., via town hall meetings at venues such as AAS and APS meetings).
- Support mission studies and concept development for future X-ray observatories.
- Analyze technology development and prioritization plans with respect to redefined science goals and the evolution of mission concepts (i.e., the XRSIG will aid the PhysPAG in analyzing technology needs).

The XRSIG is open to all members of the community.
If you are interested in contributing to the work of the XRSIG, please subscribe using the link below. For other inquiries, e-mail co-chairs Ryan Hickox at **ryan.c.hickox@dartmouth.edu**, Jillian Bellovary at **jbellovary@amnh.org**, and Grant Tremblay at **grant.tremblay@cfa.harvard.edu**

Communicating with NASA Astrophysics via the Program Analysis Groups (PAGs)

- The Physics of the Cosmos Program Analysis Group (PhysPAG) coordinates input and analysis from the scientific community in support of the PCOS program objectives.
- Study Analysis Groups (SAGs) conduct specific analyses. For example, **PCOS has recently closed a SAG focused on Multimessenger Astrophysics (MMASAG)**
- Science Interest Groups (SIGs) are longer-standing discipline fora.
  - IPSIG
  - GWSIG
  - XRSIG
  - GammaSIG
  - CRSIG
  - CoSSIG



Communication diagram
Recent examples of reports by the PhysPAGs requested by APAC:

- Community Survey on High-Impact Research Science
- Community Survey on Possible Delay in 2020 Decadal Survey

Overview of APC White Papers submitted Astro2020

- Track and analyze **evolving science goals and requirements in X-ray astronomy**, especially as current "hot" topics evolve.

- Provide an **active communication forum** for X-ray astrophysics (e.g., via town hall meetings at venues such as **AAS** and **APS** meetings).

- Support **mission studies and concept development** for future X-ray observatories.

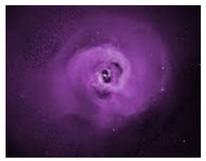
- Analyze **technology development and prioritization plans** with respect to redefined science goals and the evolution of mission concepts (i.e., the XRSIG will aid the PhysPAG in analyzing technology needs).

Overview of APC White Papers submitted Astro202

See Co-Chair Fiona Harrison's overview during yesterday's PCOS/PhysPAG Town Hall

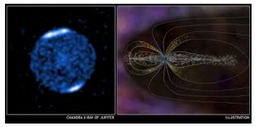
>50 Science White Papers

AGN/SMBHs (14)

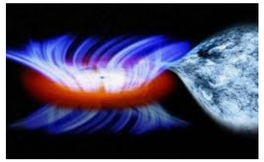


Galaxies, CGM, Groups, Clusters (9)

ISM/Star Formation/Stellar activity (9)

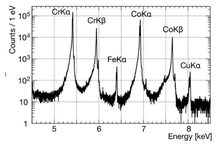


Exoplanets/Solar System (4)



Stellar Black Holes/Neutron Stars (12)

Supernovae/SNRs (3)



Lab Astrophysics (1)

Mission concepts

Vikhlinin, Alexey	Lynx X-ray Observatory
Camp, Jordan	Transient Astrophysics Probe
Mushotzky, Richard	The Advanced X-ray Imaging Satellite
McEntaffer, Randall	The X-ray Grating Spectroscopy Probe
Madsen, Kristin	HEX-P: The High-Energy X-ray Probe
Heyl, Jeremy	The Colibrì High-Resolution X-ray Telescope
Jahoda, Keith	The X-ray Polarization Probe mission concept
Ray, Paul	STROBE-X: X-ray Timing and Spectroscopy on Dynamical Timescales from Microseconds to Years

Supporting activities

Nave, Gillian	Atomic data for astrophysics: Needs and challenges
Smith, Randall	Laboratory Astrophysics Needs for X-ray Grating Spectrometers
Kallman, Timothy	Laboratory Astrophysics Needs for X-ray Calorimeter Observatories

Madsen, Kristin	Securing The Infrastructure of High-Energy Cross-Calibration
Jahoda, Keith	Cal X-1: an absolute in-orbit calibrator for current and future X-ray observatories

Chen, Weibo	Advanced Mechanical Cryocooler Technology Maturation
Havey, Keith	Low Strain Mounting Techniques for Lynx X-ray Optics

Some generally applicable WPs

Barry, Richard	Advanced Astrophysics Discovery Technology in the Era of Data Driven Astronomy
Kollmeier, Juna	Theoretical Astrophysics 2020-2030
Szalay, Alexander	The Emergence of Long-Lived, High-Value Data Collections
Peek, Joshua	Robust Archives Maximize Scientific Accessibility
Levenson, Nancy A.	Scientific Advancement through Flagship Space Missions
Elvis, Martin	The Case for Prob-Class NASA Astrophysics Missions
Ardila, David	SmallSats for Astrophysics

Some questions for XRSIG

Based on discussions in the PhysPAG EC (e.g., Graça Rocha's talk yesterday at the PCOS/PhysPAG Town Hall):

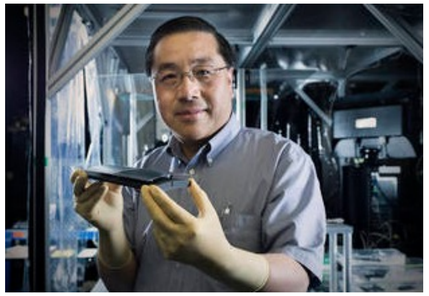
- **Improve access for (researchers at) under-resourced institutions** – Discussing the 'How' – how to ascertain the needs of under-resourced institutions and how to proceed to improve access

- **Assess Usability/Accessibility of data analysis tools and data representation** – Assess the need for implementation as an integral part of technology development

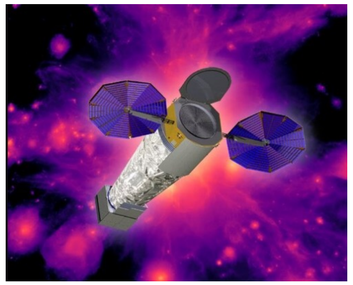
Schedule for this session

6:30pm Intro and Overview of X-Ray Astrophysics Missions and Astro2020, and Discussion: **XRSIG co-chairs**

6:45pm The X-Ray Imaging Spectroscopy Mission (XRISM): **Brian Williams**



7:10pm Progress on Silicon Metashell High-Resolution X-Ray Optics: **Will Zhang**



7:35pm Science with the Lynx X-ray Mission Concept: **Ryan Hickox**