National Aeronautics and Space Administration

Cosmic Origins Program Analysis Group (COPAG) Report to Astrophysics Advisory Committee (APAC) June 28, 2023

Dr. Shouleh Nikzad
Chair, COPAG Executive Committee
COPAG UVSTIG Leadership Member

COPAG EC Overview
- Charge and Organization
- Membership & Staffing; SIG/STIG Structure

COPAG Activities
- Community Engagement and Cross PAG activities ongoing and in planning:
  - Mini Workshop (COR and Exoplanet) present on May 10th at Keck Center Think Tank
  - AAS splinter discussion, Cross PAG discussion, pending PAGs Chair meeting
  - Planning Town Hall with community
  - Science Gap Activities
- SIG and STIG Activities

UV Working Group
- Objective
- Planned Activities

Strategic Plan for the next two years and beyond

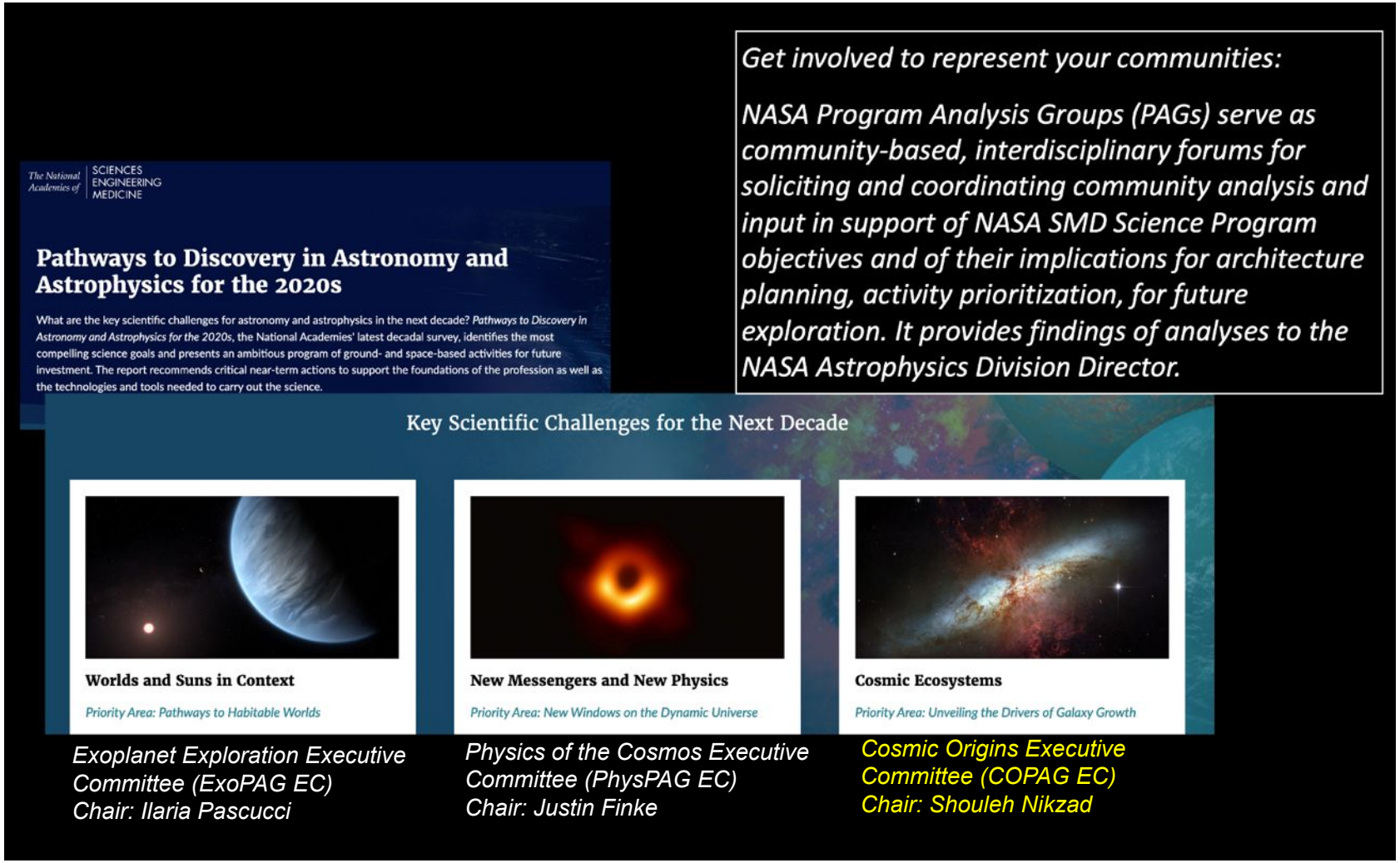
COSMIC ORIGINS EXECUTIVE COMMITTEE: Review of charge and organization

COPAG EC lead analysis and coordinate PAG activities; members should span breadth of COR science, technology

Program Support Manager: Stephanie Clark

COR Chief Scientist: Peter Kurczynski
COR Deputy CS: Swara Ravindranath

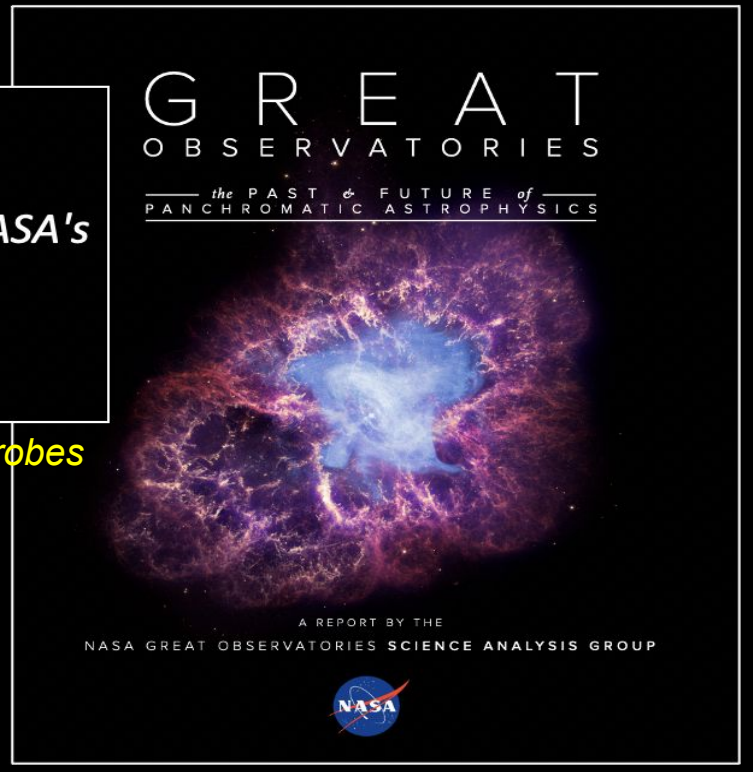
Program Scientist: Manuel Bautista



COPAG prior activities of note

SAG-10: Great Observatories 2019 Report

- identify gaps in wavelength coverage and scientific capabilities anticipated over next 10–20 years as NASA's current space observatories age/decommission (2) analyze how this will affect progress in a rapidly changing scientific landscape.



COPAG Response to Charge on Probes

COVID Impact on NASA Cosmic Origins Research: Request for Input on ADAP

The NASA Cosmic Origins Program Analysis Group Executive Committee (COPAG EC; https://cor.gsfc.nasa.gov/copag/), is soliciting input on the impacts of COVID-19 on NASA astrophysics research, with special focus on the preparation and submission of proposals for the Astrophysics Data Analysis Program (A

The goal of this 5-1(the Astrophysics Div the survey data will the ExoPAG and Phy community.

This survey deadline

The plan is to prese (https://science.nas schedule for June 2

* Required

Astrophysics Data Analysis Program (ADAP)

COVID Impact on NASA Cosmic Origins Research: Request for Input on ADAP
Janice C. Lee & Misty Bentz on behalf of COPAG EC

Main Results:

"Overall, on a scale from 1 to 5, how do you think the change in ADAP solicitation cadence impact your research. (1=negative impact; 3=no impact; 5=positive impact)."

Demographic	N	Net Negative	Net Positive	Neutral
All	169	59%	11%	30%
Male	68%	53%	11%	36%
Female	32%	76%	9%	15%
Early career/ non-tenured	27% (44% female)	64%	11%	25%

Majority response is that change in solicitation cadence will negatively affect resea **women, early-career researchers, and those without job security expect to be ev negatively impacted** than the general population of ADAP proposers.

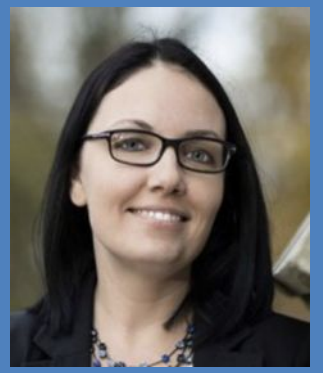
COVID/ADAP 2020 Community Survey

- Indicated women and early-career scientists may be disparately impacted by COVID shutdown
- Helped guide decision to reverse cancellation of FY21 ADAP solicitation

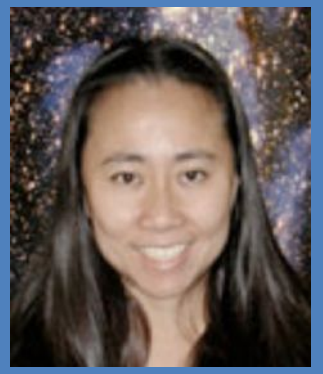
COSMIC ORIGINS EXECUTIVE COMMITTEE:
Review of charge and organization

Member	Term	Institution
Shouleh Nikzad, Chair	April 2022-October 2024	Jet Propulsion Laboratory
Stephan McCandliss	November 2018-October 2024	Johns Hopkins University
Christine Chen	November 2020-January 2024	Space Telescope Science Institute
Chris Hayward	November 2020-January 2024	Flatiron Institute
Sabrina Stierwalt, Vice Chair	November 2020-January 2024	Occidental College
Hsiao-Wen Chen	April 2022-October 2024	University of Chicago
Enrique Lopez Rodiguez	April 2022-October 2024	Stanford University
Rachal Beaton	January 2023-October 2025	Space Telescope Science Institue
Sanchayeeta Borthakur	January 2023-October 2025	Arizona State University

Sabrina



Christine

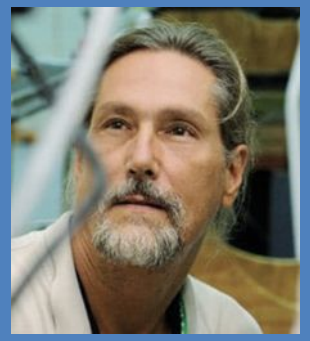


Chris

Nov' 20 - Jan '24

Shouleh

Steve



Hsiao-Wen

Enrique

Apr' 22 - Oct '24

Rachal

Sanch

Jan' 23 - Oct '25

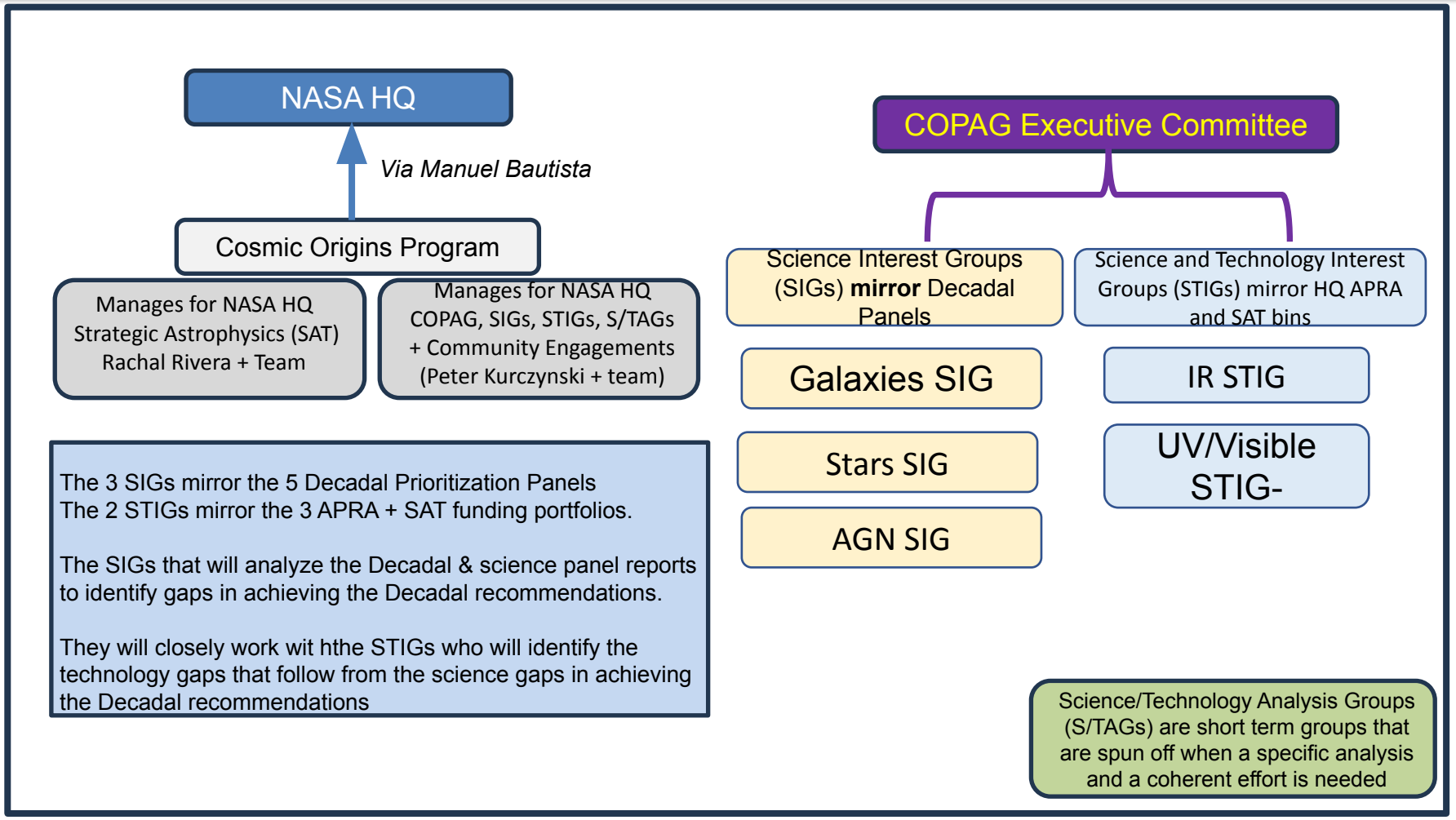
IR and UV STIGS: active since 2000s; established networks and participation

New SIGS proposed by former EC Chair Meixner to prepare for analysis of Astro2020

- Galaxies, Stars active
- New AGN SIGs activated by Cosmic Origins Program Office

New SIGs proposed and formed in the last year

- Diffuse Gas in Cosmic Ecosystems
- Student SIG



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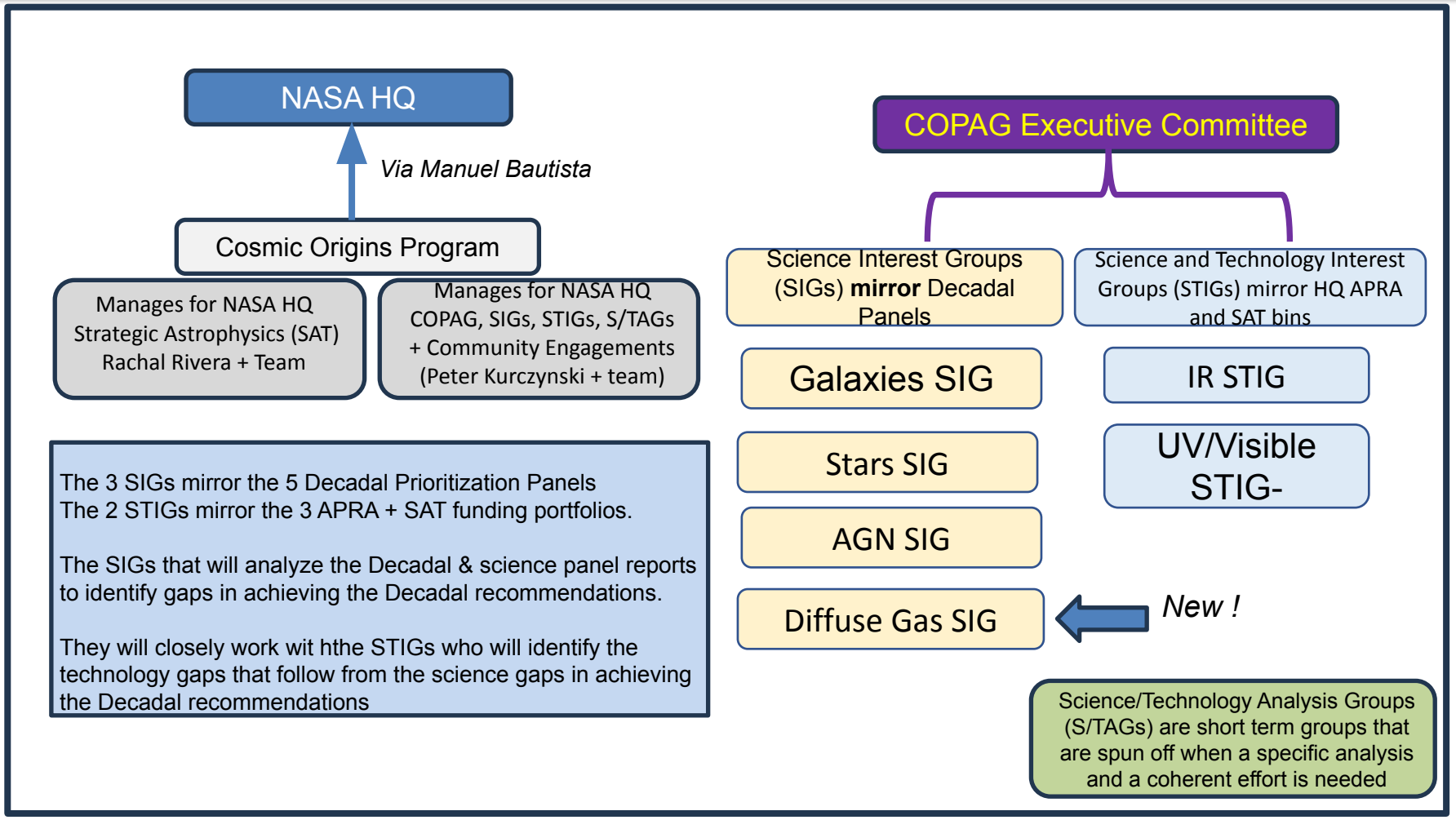


Galaxies SIG

AGN SIG

Stars SIG

New !

Diffuse Gas in Cosmic Ecosystem SIG

Hsiao-Wen

Erika

IR STIG

UV/Visible STIG

Overview Objective

To make progress in bringing together the COR community and the Exoplanet community to discuss common goals, desired capabilities in HWO, identify progress and challenges

Who Attended

COPAG –EC members
COPAG SIG and STIG leads/members
COR CS and DCS; Exo CS
COR PS
COR/PhysCOS PM; ExEP PM
COR-UV WG Lead; ExEP WG Lead
JPL Astrophysics CS, PM

What was discussed

- Introduction and Welcome—Peter Kurczynski and Shouleh Nikzad
- A word from sponsors — Barb Grofic and Gary Blackwood
- Science Questions from Decadal and their mapping to missions—David Ardila (EXOPAG Member)

- Exoplanet Science Gaps with Karl Stapelfeldt (EXEP Program Scientist)

- UV Short wavelength cutoff, science justification, technology requirement, and status—Stephan McCandliss (COPAG, UVSTIG)

- Coronagraph requirements for exoplanet science—Bertrand Mennessen (EXOPAG Member)
- Coatings technology : description and status—John Hennessy (UV WG)
- Group Discussion
- Outline the next steps and Wrap up

Community Engagement Activities in planning and discussion

2024 Winter AAS

- Splinter sessions discussions
- Joint PAG participation—In conversation with PAG Chairs to potentially revamp the format.
- Making booths even more engaging for the community

Community Townhall

Floated the idea of a virtual Town Hall to share information with and hear from the community

Workshops

Working on a series of Cross PAG Workshop toward working with astrophysics community toward HWO

UVSTIG - Summer 2023 Update

UVSTIG Planning Activities:

- **HabWorlds and the New Great Observatories**
  - 10 - 14 July 2023 at STScI/JHU
- **QUEST** Joint Seminar with COPAG SIGs for Stars – Galaxies – AGN – ISM/CGM/IGM
  - Far-UV science gaps working group
- **Discussions for Joint COR/PHYS/ExEP-PAG Session at Winter AAS243: Focus on Habitable Worlds Observatory**

QUEST* Seminars archived at https://www.youtube.com/playlist?list=PL_dmnk6FeUeASWgZwzBIUR--Ut8axxSut

Working with COPAG-EC to follow up on the discussion/call at the AAS splinter for more interactions and workshops under the auspices of PAGs on HWO.

Steve McCandliss presented at the Mini Workshop was held on Caltech campus on May 10th on UV Science and Exoplanet Science –common grounds and challenges

New Leadership Team:

J. Tomlinson (STScI), S. McCandliss (JHU), D. Buzasi (Florida Gulf Coast University), C. Ertly (SwRI), K. France (CU-Boulder), E. Hamden (UA), J. Hennessy (JPL), K. Hoadley (U of Iowa), S. Nikzad (JPL), S. Tuttle (UW-Seattle), A. Youngblood (GSFC), E. Witt (CU-Boulder)

IRSTIG - Summer 2023 Update

2023 Activities

- Hosted splinter session at AAS meeting in Seattle, WA with >100 participants
- Reorganized webinar series to pair science and technology talks
  - Last talk in June and will start up again in the fall - Please suggest new speakers!
  - Recordings available on our YouTube channel
- Putting together another edition of the newsletter with a planned release this summer
- Soliciting new Leadership Council this summer - Reach out if interested!

2024 Plans

- Will host another splinter session at the winter AAS meeting
- Continue hosting webinar series and publishing newsletter - We're always looking for new speakers and contributions!
- Considering an additional workshop after FIR probe proposals are submitted and/or selections are made

Contacts: Meredith MacGregor (meredith.macgregor@colorado.edu) and Jake Connors (jake.connors@nist.gov)

Co-Chairs: Yuan-Sen Ting (ANU) & Rachael Beaton (STScI)

2023A:

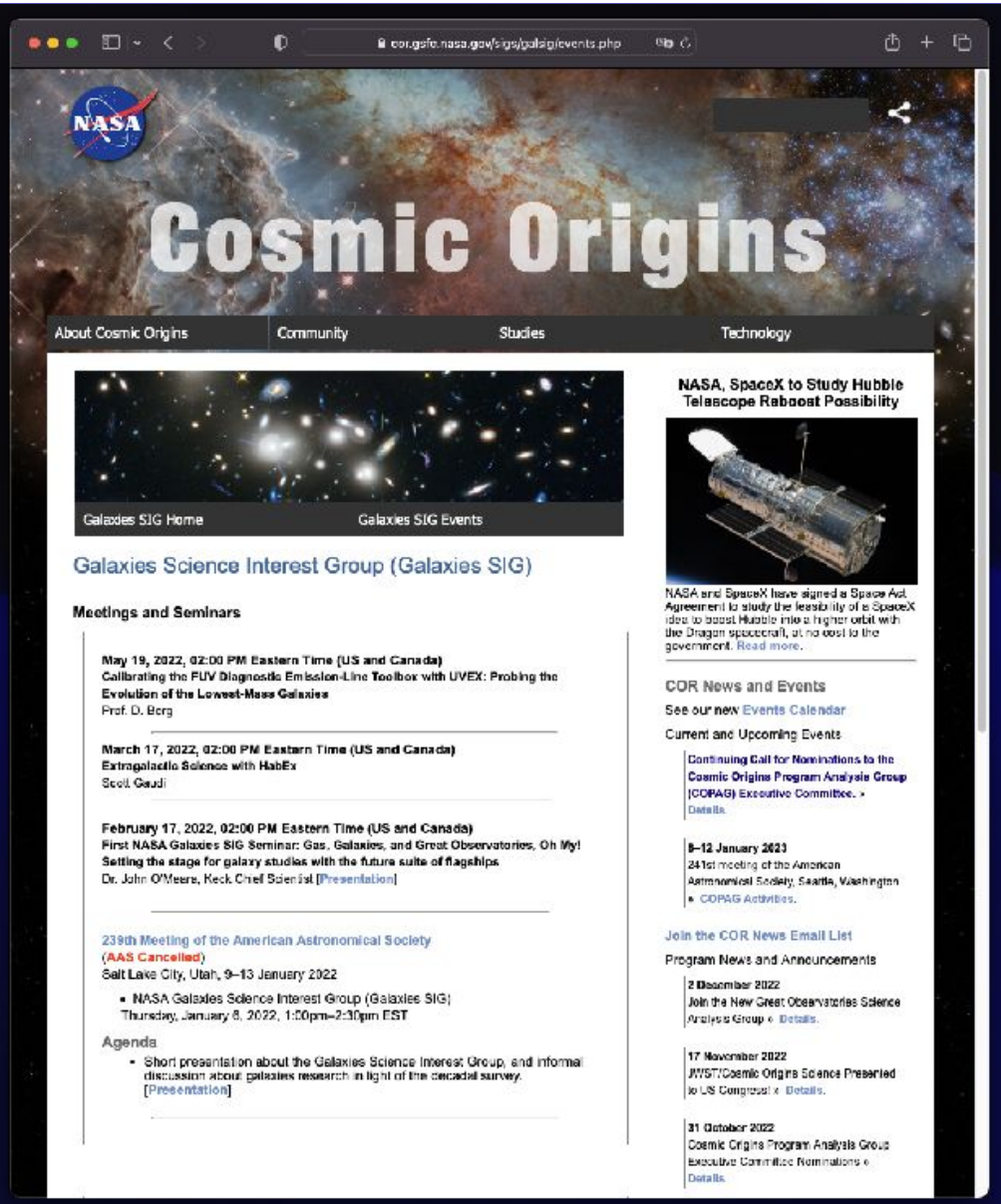
- Still working on a refresh of the leadership council and in a holding pattern.
  - Next step is to advertise on the COR mailing list for more volunteers.
- Taking a pause from regular activities during the refresh.
  - Typically host a bi-weekly colloquium style talk series with 2 x 30 min talks

Looking to 2023B

- Focus on Habitable Worlds Topics.
  - LARGE number of questions in Astro2020 have some element of starstuff

Galaxies Science Interest Group

- The SIG was represented at the COPAG strategy retreat in Pasadena, May 2023, and discussed key science questions from the decadal survey, as well as appendix N on State of the Profession, and identified decadal survey science questions most relevant to Habitable Worlds Observatory.
- We are a relatively new group that was formed just over a year ago, and we are planning to ramp up group activities in the Fall semester, including a seminar series and discussions on identifying science gaps in the Astro2020 Decadal Report.
- Chair: Benne Holwerda
  Deputy Chair: L. Y. Aaron Yung



AGN Science Interest Group: Highlights (Shobita, et al.)

https://cor.gsfc.nasa.gov/sigs/agnsig.php

New AGN SIG began in August 2022

- Biweekly seminar series - with recorded talks on YouTube - Attendance of ~30-60 people
- Planned "AGN Vision Series" Colloquia - 30 minute talks followed by community discussion on most outstanding questions in the field and the current and future facilities needed to answer them.
- Planned Monthly informal zoom lunch meetings for Faculty/Research Staff and separately for Postdocs/Grad Students
- Discord server
- Community surveys, workshops
- Possible hybrid conference
- Held a Winter AAS splinter session

September 27, 2022
A high angular resolution view of the PAH emission in Seyfert galaxies using the James Webb Space Telescope
Ismael G. Bernete

September 13, 2022
Measuring AGN Hosts Properties at z>3 with JWST
Dale Kocevski

August 30, 2022
Dust in the Central Parsecs of AGNs
Almudena Prieto

October 11, 2022
Newborn Quasar Jets Discovered in the Very Large Array Sky Survey
Kristina Nyland

October 25, 2022
JWST ERO observations of NGC 7319
David Law

November 8, 2022
Revealing Low Luminosity AGN with JWST
Anil Seth

November 22, 2022
Low-power jet-ISM interaction in NGC 7319 revealed by JWST/MIRI MRS
Miguel Pereria Santaella

December 13, 2022
Magnetic fields as the cause or effect of the origin of radio-loud and radio-quiet AGN
Enrique Lopez Rodriguez

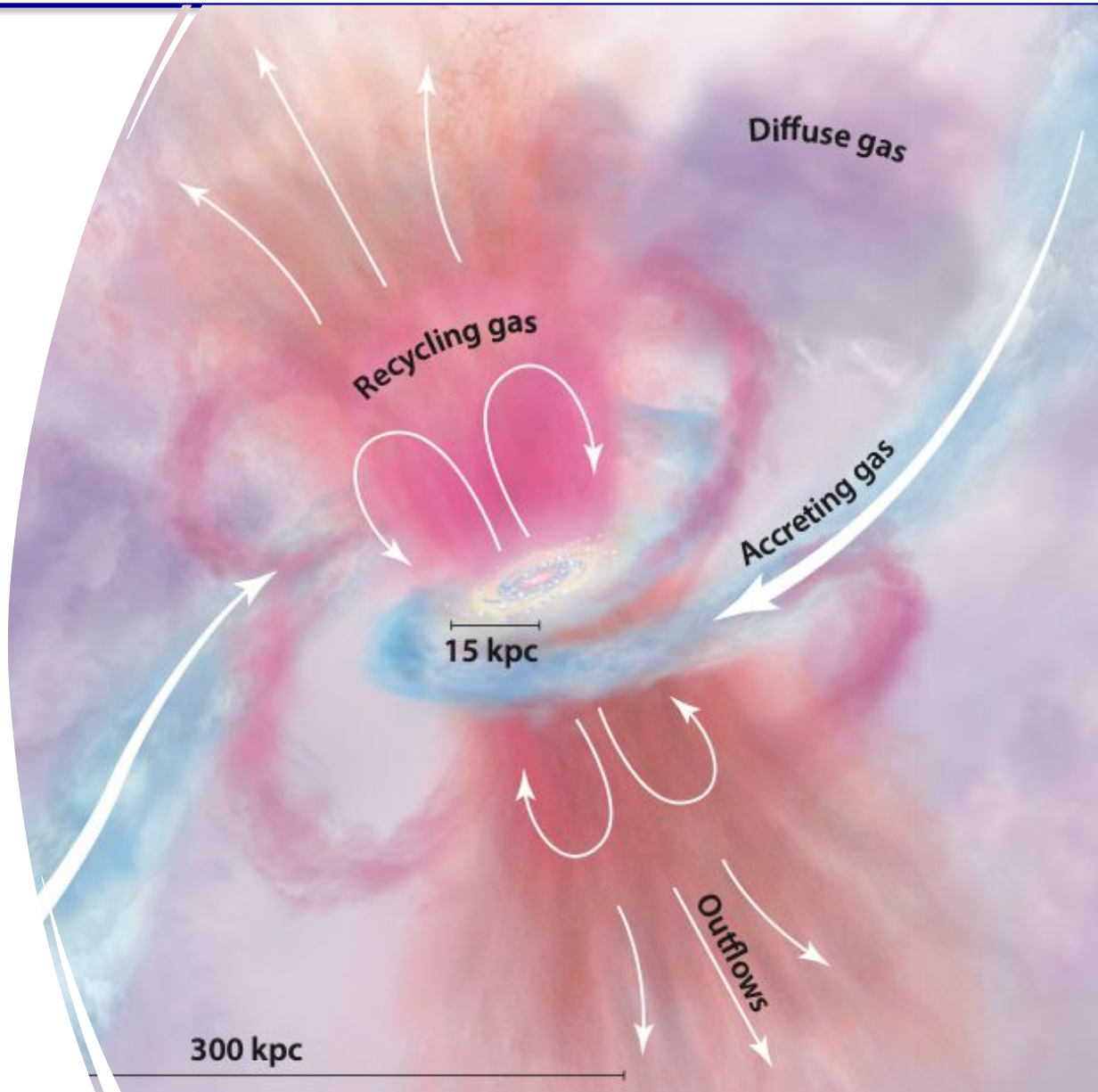
DGCE Sig Update

Diffuse Gas in Cosmic Ecosystems (DGCE) Science Interest Group

New Science Interest Group: Highlights (Hamden et al.)

- DGCE SIG held first virtual talk on April 27th
- Talks are scheduled every month through November, with a wide range of speakers already scheduled.
- SIG mailing list has grown to over 100 people
- SIG was represented at the COPAG strategy retreat in Pasadena, May 2023, and discussed key science questions from the decadal survey, as well as appendix N on State of the Profession, and identified decadal survey science questions most relevant to Habitable Worlds Observatory
- SIG EC is in discussions for Fall Activities, including participating in conferences (SACNAS, NSBP, etc) and holding a splinter session at the AAS in January 2024

Contacts:
Erika Hamden hamden@arizona.edu and
Hsiao-Wen Chen hchen@astro.uchicago.edu



Cosmic Origins: Explorers: Student Science Interest Group

New
Student Science Interest Group
Ronald Gamble

Purpose:

- Create a space for professional development of undergraduate and graduate students
- exposing them to programmatic structures aligned with *animating the science*
- Removes barriers for engagement with the broader NASA astrophysics research community. Allows for diversification and inclusion

Organization & Leadership:

- Combination of NASA program scientists (Ronald Gamble) and selected students at the junior undergraduate level and higher
- SIG student leaders will have the opportunity to represent the COR:E SIG and present relevant work in astrophysics at conferences and workshops
- Travel support for student leaders is anticipated.

***Black Space Week, White House,* June 20, 2023**
The Artemis Generation Round Table

Astronaut Capt. Victor Glover & student participants

Panelists Ronald Gamble, Kim Macharia, Zephanii Smith Eisenstat and students

Cosmic Origins: Explorers

New Student Science Interest Group: Ronaald Gamble

- Student Science Interest Group

Expected Outcomes

- Increased engagement and interest in NASA Astrophysics-related topics: By providing an interactive session and highlighting various pathways to a career in space-sciences and astrophysics.
- Support of Student Professional Development Opportunities: This could lead to increased interest in pursuing careers or educational opportunities in the field of space science, technology, and scientific research.
- Increased access and removal of barriers to NASA Astrophysics: This could lead to an increased diversification in student demographics within the fields of space-science, astronomy, and astrophysics.

Students gathered for a special event for ***Black Space Week*** held at the White House, June, 20, 2023:

The Artemis Generation Roundtable

UV Science and Technology Working Group in support of Habitable Worlds Observatory

OBJECTIVES

Build upon and update (not duplicate!) extensive work on this topic by the LUVOIR, HabEx, and other studies.

Articulate UV requirements for general astrophysics.

Coordinate with ExEP working groups to identify UV coating requirements for exoplanet coronagraphy,

Develop a UV technology development plan,

Communicate results and report to the COPAG EC (through EC member Champions and UV STIG).

ACTIVITIES

Chair identified and appointed: Sarah Tuttle, University of Washington-Seattle

Several members identified, contacted, and confirmed

6 month study beginning June/July 2023. Will adjust with START and TAG activities and schedule

Meetings would take place weekly or biweekly.

The plan would include series of workshops ~ starting with one being planned for summer 2023.

Publish previous unpublished white papers and study material establishing the UV science case

Envision consolidated into a publication into a peer-reviewed journal—special issue of JATIS

COPAG EC STRATEGIC PLAN

- Create a strategic plan for COPAG-EC activities
  - Retreat being took place May 11-12 at Keck Center Think Tank and Keck Institute for Space Studies (KISS) Center
  - Worked with a facilitator to converge quickly to create the plan, goals, actionable objectives.
  - At the end of the second day, had produced Mission Statement, Vision Statement, Outlines of Goals and Objectives.
  - The COPAG EC leadership team (Chair, Vice Chair, COR CS, COR DCS, and PM) is meeting with the facilitator to write the plan based on the work done in May. Two meetings have taken place and two more are planned.
  - Strategic plan, goals, and objectives will be documented as a living, dynamic document that can be used by new members and updated as landscape evolves
  - COPAG-EC members will be assigned as Champions of actionable objectives
- Work with program office, HQ, COR community, and other PAGs to implement objectives


NASA's Cosmic Origins
Program Analysis Group Strategy Retreat
Keck
INSTITUTE FOR SPACE STUDIES


an approved budget,
and technology
Operations
Keck
INSTITUTE FOR SPACE STUDIES


Keck

Backup Slides

- **Aaron Yung & Benne Holwerda**

- AAS meeting - joint meeting with Stars SIG
- Built a Science Gap Questionnaire
- Generating a Speaker list for summer and fall.
- Science Gap Example: Discussion on synergy between Habitable Worlds Targets and extra-galactic astronomy.
  - e.g. how many targets are already known?
  - How big does the camera/IFU/MOS need to be to be useful?
  - Is this something that can be designed in? (e.g. enough onboard memory and filter wheel and shutter vibration).
  - LUVOIR and HabEx thought about this too.