

National Aeronautics and  
Space Administration



**Cosmic Origins Program Analysis Group (COPAG)  
Report to Astrophysics Advisory Committee (APAC)  
March 15, 16 & 17**

**Dr. Margaret Meixner  
Chair, Cosmic Origins Program  
Executive Committee**



# Thank You for your COPAG EC service!

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<i>Misty Bentz</i>	<i>2020</i>	<i>Georgia State University</i>
<i>Tom Megeath</i>	<i>2020</i>	<i>University of Toledo</i>
<i>Claudia Scarlata</i>	<i>2020</i>	<i>University of Minnesota</i>
<i>Jason Tumlinson</i>	<i>2020</i>	<i>STScI/JHU</i>
<i>Sarah Tuttle</i>	<i>2020</i>	<i>University of Washington</i>



# COPAG Executive Committee

<i>Margaret Meixner (Chair)</i>	<i>2021</i>	<i>SOFIA Science Mission Operations/USRA</i>
<i>Janice Lee (Chair-elect)</i>	<i>2024</i>	<i>Gemini/AURA</i>
<i>Christine Chen</i>	<i>2024</i>	<i>Space Telescope Science Institute</i>
<i>Chris Depree</i>	<i>2024</i>	<i>Agnes Scott College</i>
<i>Steve Finkelstein</i>	<i>2021</i>	<i>University of Texas, Austin</i>
<i>Lisbeth Gavilan-Marin</i>	<i>2024</i>	<i>NASA/Ames</i>
<i>Christopher Hayward</i>	<i>2024</i>	<i>Flatiron Institute</i>
<i>Alina Kiessling</i>	<i>2023</i>	<i>Jet Propulsion Laboratory, Caltech</i>
<i>Stephan McCandliss</i>	<i>2021</i>	<i>Johns Hopkins University</i>
<i>Alexandra Pope</i>	<i>2021</i>	<i>University of Massachusetts</i>
<i>Sabrina Stierwalt</i>	<i>2024</i>	<i>Occidental College</i>

*COPAG EC has a rolling application form. We are actively looking for new members so please apply or encourage your colleagues to apply.*

*[https://cor.gsfc.nasa.gov/news/Call for Nominations to COPAG EC.php](https://cor.gsfc.nasa.gov/news/Call_for_Nominations_to_COPAG_EC.php)*



# **Join the Cosmic Origins (COR) Analysis Group (COPAG) Executive Committee (EC) or a lead a Science Interest Group !**

## **WHY?**

- The EC provides analysis of community input for the purposes of informing NASA of community feedback on its programs.
- These analyses can have an impact: e.g. ADAP offerings, the Great Observatories report.
- Coming soon: Decadal Survey results, analysis of those results will be interesting, impactful and fun to discuss.
- New Science Interest Groups (SIGs): Cosmology, Galaxies, ISM and planet formation, Stars and stellar populations, State of the Profession and Societal Impacts

## **WHAT?**

- The EC is a diverse and inclusive body and the diversity of thought from their different backgrounds is critical to the discussions and analysis.
- EC members span the breadth of COR science and the astrophysics community.
- We aim for ~12-16 members at any given time
- The committee reports to NASA HQ Astrophysics Division

## **HOW?**

- COPAG EC has a rolling deadline for nominations and self-nominations:
- [https://cor.gsfc.nasa.gov/news/Call\\_for\\_Nominations\\_to\\_COPAG\\_EC.php](https://cor.gsfc.nasa.gov/news/Call_for_Nominations_to_COPAG_EC.php)

# COPAG Activities at AAS

Growth of participation in American Astronomical Society (AAS) splinter sessions

Group	FY20	FY21	$\Delta\%$	Notes
Joint PAG	160	157	- 2%	Combined with PCOS & Exoplanet Exploration Program (ExEP); held outside AAS
Enhancing participation	-	84	NEW!	Combined with PCOS & ExEP; held outside AAS; new this year
COPAG	10	55	+450%	
UV SIG/TIG	30	36	+ 20%	
IR SIG	40	65	+ 63%	
Low frequency radio	-	39	NEW!	New this year



# UV/Vis SIG/TIG Splinter Session at AAS237

[https://cor.gsfc.nasa.gov/copag/AAS\\_Jan2021/AAS2021-agenda.php#uvvis](https://cor.gsfc.nasa.gov/copag/AAS_Jan2021/AAS2021-agenda.php#uvvis)

- Highlights
  - Introduction by Tumlinson emphasizing need to track technical readiness for mission critical technologies in post decadal era
  - Four talks on science missions:
    - Time Domain; Diffuse OVI; Exoplanet UV Environment; Spectroscopic Survey of Galaxies at “Cosmic High Noon”
    - Platforms ranged from CubeSats to Probes
  - Three talks on far-UV mirror coating developments broad and narrow band
  - Three talks on ultra-stable high contrast imaging technologies
  - Two talks on multiplex spectroscopic techniques
  - MCP detector talk by
    - AAS 2020 Weber Prize winner Dr. Oswald Siegmund -- UCB/SSL
- Consensus on regular (monthly) UV/VIS SIG/TIG talks; pitch for QUEST
  - Quorum for Ultraviolet Exploration of Science and Technology
    - Community forum for science updates /sharing “what works, what doesn’t”
    - Develop prioritization metrics for the UV/Vis components of Cosmic Origins Science guided by decadal debrief



# Infrared Science Interest Group – Activity Highlights

*Meredith MacGregor & Michael Zemcov (co-chairs)*

- **Continuing to develop the new website and grow our mail list (> 450 subscribers)**
  - <https://cor.gsfc.nasa.gov/sigs/irsig.php>
  - Working with new COR Chief Scientist Peter Kurczynski.
  - Continuing to reach out to early career IR scientists.
- **New IRSIG newsletter published (Jan 2021)**
- **Continuing the webinar series**
  - Cadence of ~1 talk/month.
  - Typical attendance of 30 scientists from around the world.
- **Ran Splinter Session at 237<sup>th</sup> American Astronomical Society Meeting (~60 attendees)**
  - Made use of Zoom and gather.town to enable discussion between participants.
  - Compiled notes from discussion and plan to draft a summary paper to distribute.
- **Organizing virtual workshop “The Impacts of Astro2020 on IR Astrophysics” July 20-22, 2021**
  - Opportunity for the community to synthesize the priorities from the Astro2020 review.
  - Provide a forum for discussion of the future of the field in the next decade and beyond.

# Long Wavelength Radio Astronomy

- Organized by Judd Bowman, Greg Taylor, Jack Burns, Gregg Hallinan, Jonathan Pober
- Attended by over ~40 members
- Missions/mission concepts discussed
  - DAPPER (Dark Ages Polarization Pathfinder) is a concept that will make spectral observations from the lunar farside of the Dark Ages & Cosmic Dawn using the highly redshifted 21-cm signal.
  - FAR SIDE (Farside Array for Radio Science Investigations of the Dark ages and Exoplanets)
  - Radiowave Observations at the Lunar Surface of the photoElectron Sheath (ROLSES, 2021) and Lunar Surface Electromagnetics Experiment (LuSEE, 2024) (2 radio frequency spectrometers going to the lunar surface)
  - Sun Radio Interferometer Space Experiment (**SunRISE**), designed for observing Solar Radio Bursts, can see the entire Low Frequency Sky over 12 month mission. Data Processing mirrors that of a larger array that could detect Extrasolar Planetary Emission or 21 cm signal (2023)

# SAG11: Cosmic Dawn

This SAG11 was challenged by the COVID-19 pandemic.

Plan is to dissolve this SAG and roll the topic and work into the new Galaxies Science Interest Group (SIG) that will ingest the Decadal Survey.



# **COPAG – splinter: 2021 plans**

## **Ingesting the Astro2020 Decadal survey**

12 -12:15 pm: Ingesting the Decadal Survey Results: The role of the COPAG

- NASA HQ: Kartik Sheth
- COR Program Office/NASA Goddard: Peter Kurczynski
- COPAG Executive Committee: Margaret Meixner (USRA/SOFIA)

12:15-1 pm: New Science Interest Groups (SIGs) and Science Analysis Groups (SAGs) – chaired by Meixner

- Laura Lopez (OSU), ISM and planet formation
- Keith Hawkins (UT Austin), Stars, Sun and Stellar Populations
- Kartik Sheth (NASA HQ), State of the Profession & Societal Impacts
- Steven Finkelstein (UT Austin) Cosmic Dawn, Galaxies
- Jason Tumlinson (STScI/JHU) The Next Great Observatories
- DISCUSSION

1-1:30 pm: Panel Discussion: What have I done and liked about serving on the COPAG Executive Committee (EC)?

- Janice Lee, IPAC/CalTech
- Stephan McCandliss, Johns Hopkins University
- Alex Pope, University of Massachusetts, Amherst
- Tom Megeath, University of Toledo
- DISCUSSION

NASA HQ

Cosmic Origins Program

Management for NASA HQ  
the Strategic Astrophysics  
Technology (SAT)  
(Thai Pham + team)

Manages for NASA HQ the  
COPAG, SIGs, STIGs, S/TAGs +  
Community Engagement  
(Peter Kurczynski + team)

COPAG Executive Committee

Science Interest Groups (SIGs)  
**mirror** Decadal Panels

Science/Technology Interest Groups  
(STIGs) **mirror** HQ APRA bins

Cosmology

Galaxies

ISM & Planet  
formation

Stars, Sun and  
Stellar Pops

State of the  
Profession

Infrared / Radio

Ultraviolet /  
Optical

High Energy /  
Particles

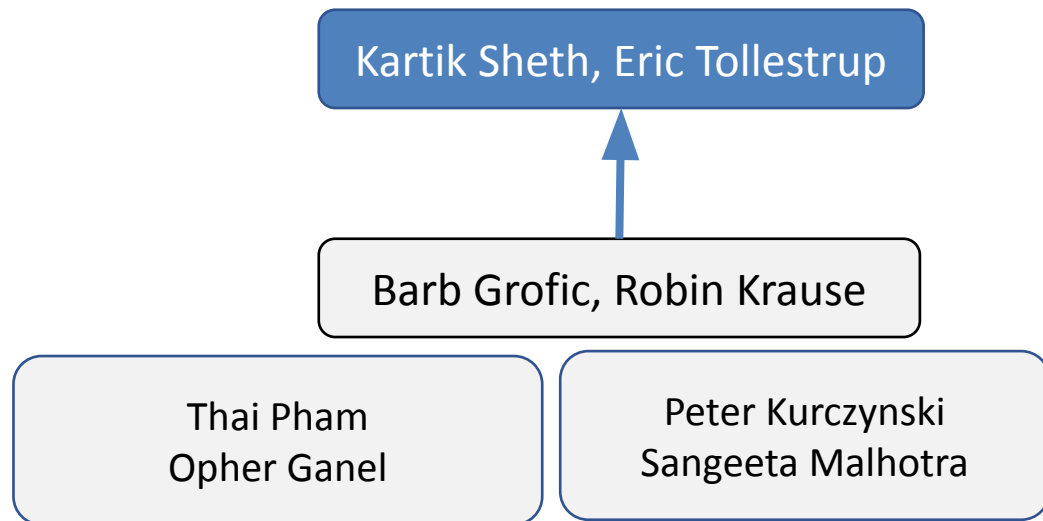
Science/Technology Analysis Groups  
(S/TAGs) are **short term** groups that are  
spun off when a specific analysis and a  
coherent effort is needed.

The 5 SIGs **mirror** the 5 Decadal Prioritization Panels.  
The 3 STIGs **mirror** the 3 APRA+SAT funding portfolios.

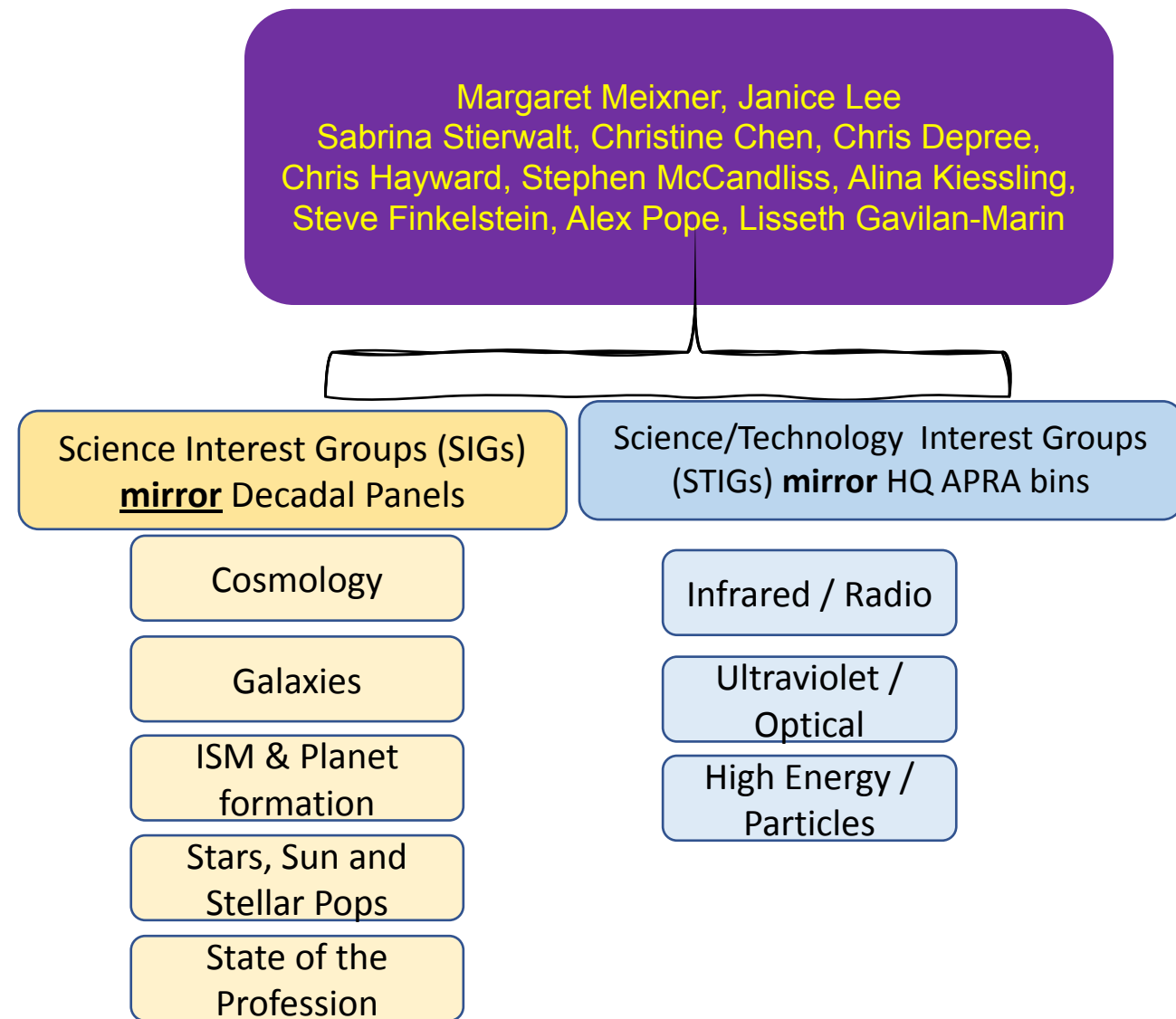
The SIGs that will analyze the Decadal & science panel reports to  
identify science gaps in achieving the Decadal recommendations.

They will closely work with the STIGs who will identify the  
technology gaps that **follow from** the science gaps in achieving the  
Decadal recommendations.

The Astrophysics Community



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**The Astrophysics Community**

# 2021: Ingest of Astro 2020 Decadal Survey Results



Further analysis by COPAG may be important to the ingest

COPAG is creating 5 new Science Interest Groups that parallel the Decadal Panels:

- Cosmology
- Galaxies
- ISM and planet formation
- Stars, Sun and Stellar Populations
- State of the Profession and Societal Impacts (cross-cutting SIG)

Interested in leading or joining one of these SIGs or STIGs?

Fill out this form: <https://forms.gle/X1qUccRJk9Jy94iN6> or please contact any of us directly.