

Cosmic Origins Program Analysis
Group Report
Astrophysics Advisory Committee
Meeting – July 2017

Paul Scowen
(COPAG EC Chair)

COPAG EC Membership

Paul Scowen (Chair, APAC Member)

Lee Armus

Suvi Gezari

Matt Greenhouse ~

Mary Elizabeth Kaiser ~

Joseph Lazio ~

Paul Lightsey

Pam Marcum ~

Tom Megeath

John O'Meara

Claudia Scarlata

Sarah Tuttle

Mario Perez (Executive Secretary, Ex-Officio)

Eric Tollestrup (Ex-Officio)

Susan Neff (COR Program Office, Ex-Officio)

Vacant (COR Program Office, Ex-Officio)

Arizona State University

Caltech

University of Maryland

NASA/Goddard Space Flight Center

Johns Hopkins

NASA/JPL

Ball Aerospace

NASA/Ames

U.Toledo

St. Michael College

U. Minnesota

U. Washington

NASA HQ

NASA HQ

NASA/GSFC

~ Members rotating off in Fall 2017; Greenhouse in Jan 2018

COPAG Activities Since April

- Many COPAG EC members continued to be active contributors to the STDT exercises
- The newly-formed TIG was handed the COR Technology Gap list and spent a month analyzing the content (see report below)
- Scowen was invited as COPAG Chair to provide a summary of the science drivers for all 4 STDT mission concept studies to the recent ngVLA workshop in Socorro, NM to help identify scientific synergies in the 2030s
- Otherwise the 3 months since the last APAC meeting has been pretty quiet

COPAG Activities

- The COPAG EC has continued to track closely STDT activities through members who are on the respective teams:
 - **OST** - Lee Armus
 - **HabEx** - Paul Scowen
 - **LUVOIR** - John O'Meara
 - **Lynx** –Two EC members are part of SWGs - Joe Lazio and Suvi Gezari

COPAG Activities

- COPAG continues to have no open SAGs
- COPAG continues to have 3 open SIGs
- All 3 SIGs have plans to hold community meetings at the January 2018 AAS Meeting in Washington, DC
- The COPAG will be co-sponsoring a session at the AAS to allow Paul Hertz to address the combined membership of the PAGs, as well as providing a forum to hear summary talks on the state of progress with the STDT efforts

SIG1 - FIR Astronomy

J.D. Smith, U. Toledo - Co-Chair

- The Far-Infrared Science Interest Group (SIG #1) remains very active in connecting the community with ongoing and planned missions and programs in the FIR & submm.
- In March, we co-organized the "Future of far-infrared astronomy instrumentation" workshop in Pasadena, and are currently writing up a white paper to communicate the outcome of this productive meeting.
- We have continued our successful monthly webinar series, with recent contributions from SOFIA leadership, and other scientists and instrumentalists, including OST study team members.
- We also organized community interests and provided detailed input for the Cosmic Origins technology prioritization process.
- A subcommittee of our group has begun plans for a monthly "Far-infrared community newsletter", with the first issue expected in September.
- We are planning another joint meeting at the upcoming Winter 2018 AAS for the FIRSIG community, working with OST study team leads to coordinate with their planned activities.
- Four members of the FIRSIG leadership council are rotating off term, and we will be recruiting new members over July.
- Follow our activities at <http://tinyurl.com/firsig>

SIG2 - UV-Visible Astronomy from Space

Paul Scowen, ASU - Chair

- The community members have been actively participating in UV focused meetings over the Summer 2017 in locations such as Italy, Israel and Holland to help define the state of the art from ongoing HST programs such as LEGUS, and looking to the future with anticipated needs and drivers
- The UV-Visible SIG intends to meet at the upcoming Winter AAS meeting in Washington, DC
- The focus of the efforts at this meeting and throughout the Fall leading up to it will be on the capabilities being reported for the UVO instruments on both the LUVOIR and HabEx mission concepts
- Using the reported ETCs and throughput curves, as well as the observing modes being designed into the instruments, we will solicit science programs from the community for these instruments to help define real examples of how such missions might work – to help define Design Reference Mission (DRM) documents
- Both missions have strong General Astrophysics portfolios and the instrumentation, in both case, consist of wide field cameras and FUV spectrographs, although the specific capabilities differ depending on the science cases that drive their requirements.



Jet Propulsion Laboratory
California Institute of Technology

Cosmic Dawn Science Interest Group

Joseph Lazio

on behalf of the COPAG EC



Cosmic Dawn SIG

Primary Activities – Past 3 Months

Succession Planning

- **Current chair (J. Lazio) rolls off COPAG EC in the near term**
- **Move toward structure similar to Far-IR SIG (SIG 2): Steering Committee + EC liaison**
 - **Identify EC member to serve as liaison: in progress, but likely individual, has not yet confirmed**
 - **Number of community members who have expressed interest in greater level of involvement**

Engagement with the Flagship STDTs

- **Membership on the Far IR Surveyor**
- **Observing X-ray Surveyor activities**

Cosmic Dawn SIG

Cosmic Origins PAG

“We have learned much in recent years about the history of the universe, from the big bang to the present day. A great mystery now confronts us: When and how did the first galaxies form out of cold clumps of hydrogen gas and start to shine---when was our ‘cosmic dawn’?”

New Worlds, New Horizons

SIG focusses on science cases, observations, and technology development needed to address this "great mystery" of Cosmic Origins.

- **Membership is open to all.**

To be added to the mailing list, please contact Joseph Lazio (Joseph.Lazio@jpl.nasa.gov)

- **Website: <http://cd-sig.jpl.nasa.gov/>**

Report on Inaugural TIG Review of Technology Gaps

- Since authorization in April, we solicited the community and formed a core team of 24 community members
- Thai Pham delivered the collated Technology Gap input received from the community, including last years entries, to the TIG for analysis on June 7, with a deadline for delivery of July 7
- Instructions included:
 - Combine similar or overlapping gaps when it does not make sense to prioritize them separately.
 - Refine the gaps' information as needed to make them unique, complete, accurate, and compelling. Inputs should be submitted as technology capability gaps between the current state-of-the-art and the science objective targeted
 - Add any missing gap(s) and identify
 - Recommend dropping any gaps from the list to be prioritized if they do not require technology development, are a duplicate of an existing gap, are not sufficiently well defined, or are not relevant to the COR program's strategic outlook.
- Weekly telecons shaped the discussion and analysis
- The form we were instructed to use limits most descriptions to 150 words and in some cases were cryptic
- Despite agreement that stated TRLs had to be backed up by citation, many were missing this
- It was concluded in review that provision of a terse summary together with an unreferenced TRL rating was not a clear way to proceed
- In some cases MRL and PRL numbers were being conflated with TRL further muddying the waters
- The annotated document was delivered back to Thai Pham on time for his deadline

Actions Requested of the APAC

- No explicit actions requested
- The COPAG EC would like to ask the following questions of Paul Hertz:
 - What is the view of the new NASA authorization bill's requirement that the National Academies deliver a 'science strategy' to NASA regarding exoplanets and astrobiology separately (section 508, 509 of the bill). How does this work in the ecosystem of the decadal surveys given these strategies must be delivered in 2018?
 - How is NASA reacting to the findings of the recent SMEX report?
 - Since the STDTs are being asked to be creative and develop exciting next-gen telescopes, it tends to be thought of as a competition. The community has benefitted greatly by having HST, Spitzer, Chandra and CGRO active at the same time, so how might we recapture the spirit of the Great Observatories for the next decade given a flat budget?

COPAG Future Activities

- Bi-weekly EC telecons will continue
- Continued dialogue and support of ongoing STDT activities
- Recruiting new EC candidates to replace four rotating off members and perhaps offer a few 1-yr service extensions
- Preparations for SIG community meetings at January 2018 AAS meeting