

Ad ASTRA Workshop

David R. Ardila
Deputy Program Manager
NASA's Exoplanet Exploration Program Office (ExEP)



Scientific Organizing Committee

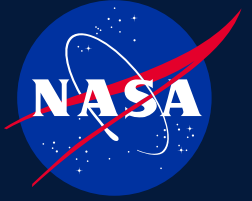
- David R. Ardila (Exoplanet Program Office, Jet Propulsion Laboratory)
- David Ciardi (Caltech/IPAC-NExSci)
- Francesca Civano (Physics of the Cosmos Program Office, Goddard Space Flight Center)
- Ron Gamble (Cosmic Origins, Goddard Space Flight Center)
- Jessica Gaskin (NASA Headquarters)
- Brian Humensky (Physics of the Cosmos Program Office, Goddard Space Flight Center)
- Bernard Kelly (Physics of the Cosmos, Goddard Space Flight Center)
- Peter Kurczynski (Cosmic Origins Program Office, Goddard Space Flight Center)
- Eric Mamajek (Exoplanet Program Office, Jet Propulsion Laboratory)
- Swara Ravindranath (Cosmic Origins Program Office, Goddard Space Flight Center)
- Karl Stapelfeldt (Exoplanet Program Office, Jet Propulsion Laboratory)

Local Organizing Committee

- **David R. Ardila (Jet Propulsion Laboratory)**
- Frank Aragon (Caltech/IPAC)
- Wendy Burt (Caltech/IPAC)
- **David Ciardi (Caltech/IPAC)**
- **Catherine Clark (Caltech/IPAC)**
- **Stephanie Clark (Goddard Space Flight Center)**
- David Cook (Caltech/IPAC)
- **Elise Furlan (Caltech/IPAC)**
- Alex Hui (Caltech/IPAC)
- Sean Kindt (Caltech/IPAC)
- Cindy Kim (Caltech/IPAC)
- Ryan Lau (Caltech/IPAC)
- Tiffany Meshkat (Caltech/IPAC)
- Teresa Molano (Caltech/IPAC)
- David Navarro (Caltech/IPAC),
- Eric Oh (Caltech/IPAC)
- Daniel Piña-Muro (Caltech/IPAC),
- Narot Piric (Caltech/IPAC)
- Nina Pretty (Exoplanet Program Office, Jet Propulsion Laboratory)
- Nancy Solis (Caltech/IPAC)
- Vivian U (Caltech/IPAC)
- Ashlee Zhang (Caltech/IPAC)



Logistics



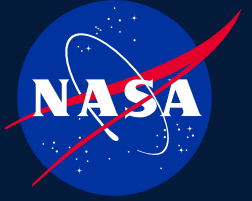
You are in Baxter Lecture Hall

- All plenary sessions will be held here
- No food or drink allowed (water is okay)
- Room is unlocked during the day — do not leave valuables unattended (room will be locked at the end of the day)
- Power outlets and strips are available on the floor in select rows
- Please enter and exit through the back of the room
- Restrooms are located one level down via the stairs at the back of the hall
- If you require elevator access, please contact the organizers.

Breakout Rooms

- 6 different rooms on campus + Baxter Lecture Hall
- **Overflow room: Schlinger 118**
- About 5-10 min walk; please **no food or drink in the breakout rooms**
- See program for additional details

Logistics



Dabney Hall & Garden

- Coffee breaks and the opening reception will take place in Dabney Garden
- The posters are set up in Dabney Hall

BIG THANKS TO OUR SPONSORS:

Caltech **JPL**

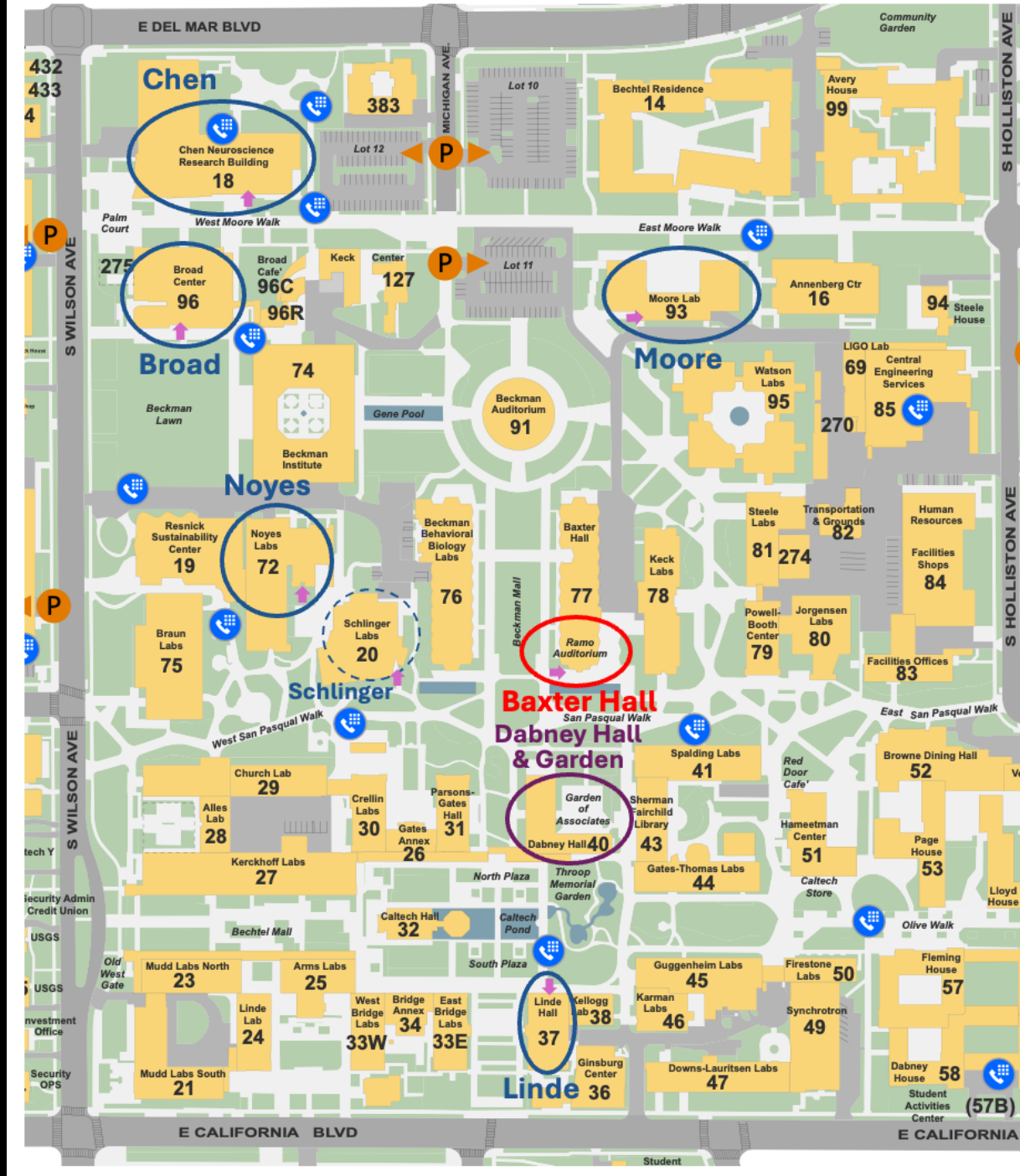
BAE SYSTEMS

Workshop WiFi:

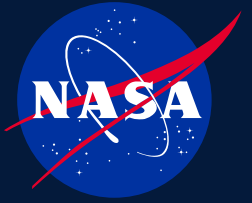
- **EDUROAM:** Log in with your home institution credentials
- **Caltech Visitor Network:** Registration using a cell phone is required

For remote attendees:

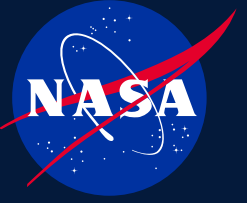
- You will join as a Zoom Webinar Attendee
- Your video and microphone will be disabled (but you can be unmuted by the host)
- **Use Slack for questions**



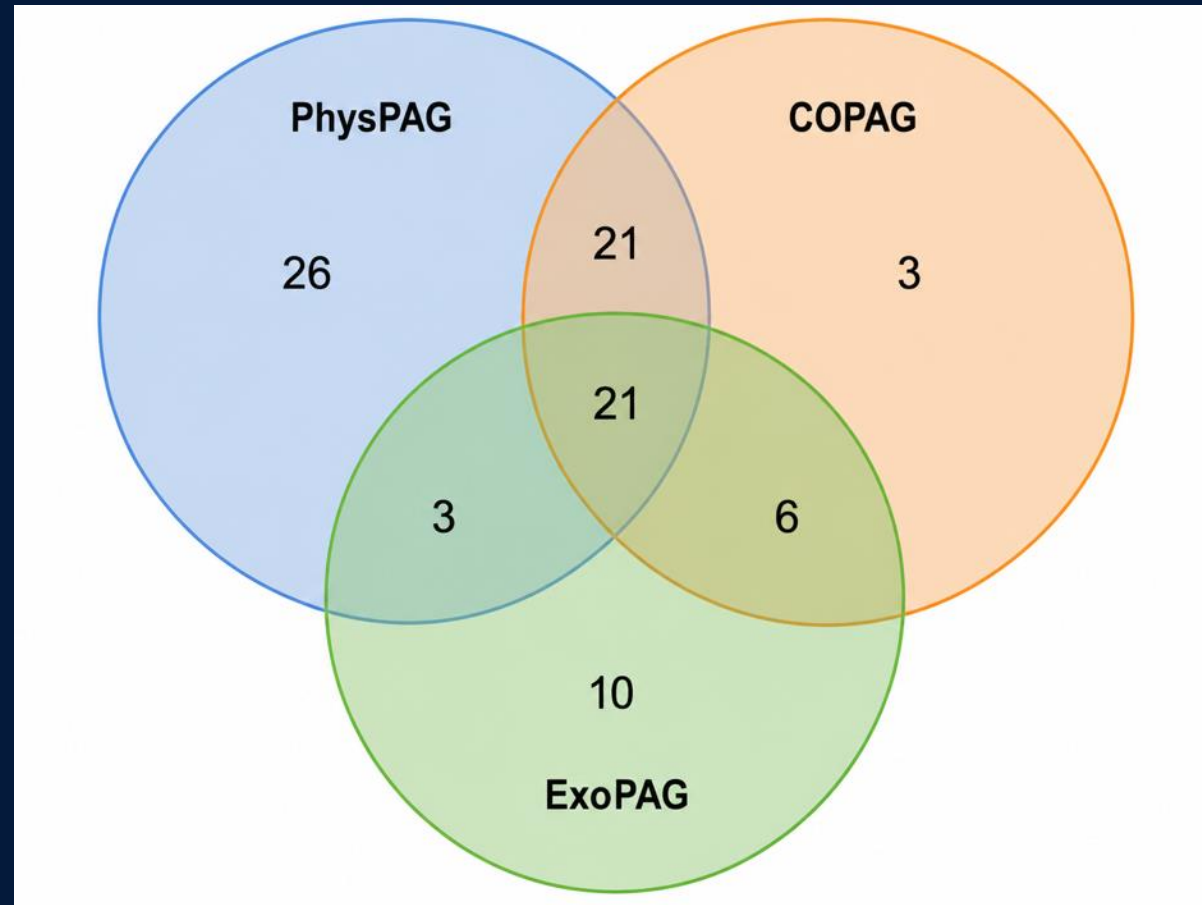
ASTRA & Ad ASTRA Workshop



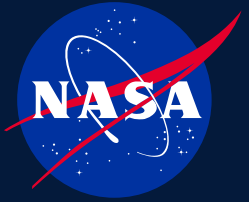
- NASA's Astrophysics Division asked for community participation in the Astrophysics Strategic Technology & Research Accelerator (ASTRA) Initiative through the PAGs:
 - Cosmic Origins (COPAG)
 - Exoplanet Exploration (ExoPAG)
 - Physics of the Cosmos (PhysPAG)
- Each PAG solicited the astronomy and astrophysics community for mission concept ideas. To accomplish this, each PAG is empowered to envision and use its own process.
- The Ad ASTRA workshop is one piece of the process, intended to bring the community together for face-to-face discussions of science priorities and potential mission concepts.
- Key point: the ASTRA studies will focus on science and mission architecture trade space, not specific mission concepts.
 - Focus on broad “mission concept bins” that span a reasonable trade space range, not “proposal” mission concepts



Mission Concepts Statistics



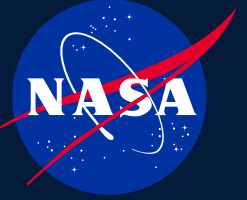
90 compliant concepts submitted



Workshop Goals

- This is a working meeting to provide inputs to the PAG ECs for the categorization of ASTRA concepts
- Discuss current open science priorities/questions from strategic documents
 - *Astro 2020 Decadal Survey*
 - *Enduring Quests - Daring Visions* (2014) 30-year roadmap
- Discuss NEW science questions emerged from the last 6 years of astrophysics discoveries
- Identify common science and capabilities between the ASTRA mission concepts submitted or presented at this workshop
- Identify community science priorities and connect those priorities with mission concepts
- Identify potential opportunities with Industry, the community at-large, and Artemis Program

Each day ends with a broad community discussion led by breakout session moderators



Workshop Overview

Day 1

Science

Pressing Science Questions for Space Missions in the 2030s and Beyond:

- What are the science questions that future space missions should address?
- Are there new questions from strategic docs/Decadal?

Day 2

Technology & Capabilities

Emerging Technologies & capabilities needed

What capabilities are needed to answer these science questions?

Day 3

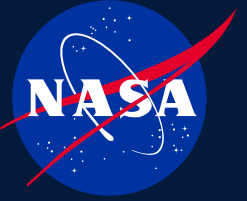
Community Discussion

Workshop synthesis 1: Key Science Questions for the 2030s and Beyond

Workshop synthesis 2: Key Technology Capabilities for the 2030s and Beyond

Posters are part of this discussion!

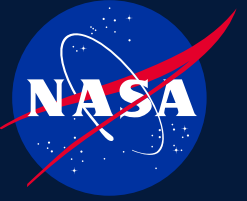
Mandate and Deliverables for Day



1: Science

Focus on science questions and not on mission concept descriptions (as this is the focus of Day 2)

- What are your big (>\$1 B) science questions?
- What measurements/capabilities are needed to address those questions?
- What unexpected science questions caught your attention and deserve more exploration?
- What did you not hear about today that surprised you and ought to be discussed?



Have Questions?

Check Out the FAQs →

Current listing of submitted ASTRA
Initiative [Questions with Answers](#)

Have more Questions?

Submit Questions using the [Slido Tool](#) →

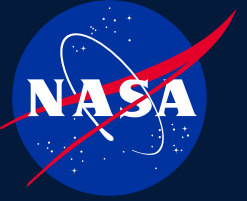


Mandate and Deliverables for Day

2: Capabilities

- Critical or key enabling technology and state of development
- Synergies with mission concepts
- What are the most demanding design drivers, if known?
- Leveraging external opportunities
 - e.g. commercial industry, the Artemis infrastructure, or strategic partnerships

Mandate and Deliverables for Day



3: Community discussion

- Considering that the ASTRA trade space studies are intended to be broad (“surveyors”), where do you see opportunities to bring different science and capability exploration together under the umbrella of one study?