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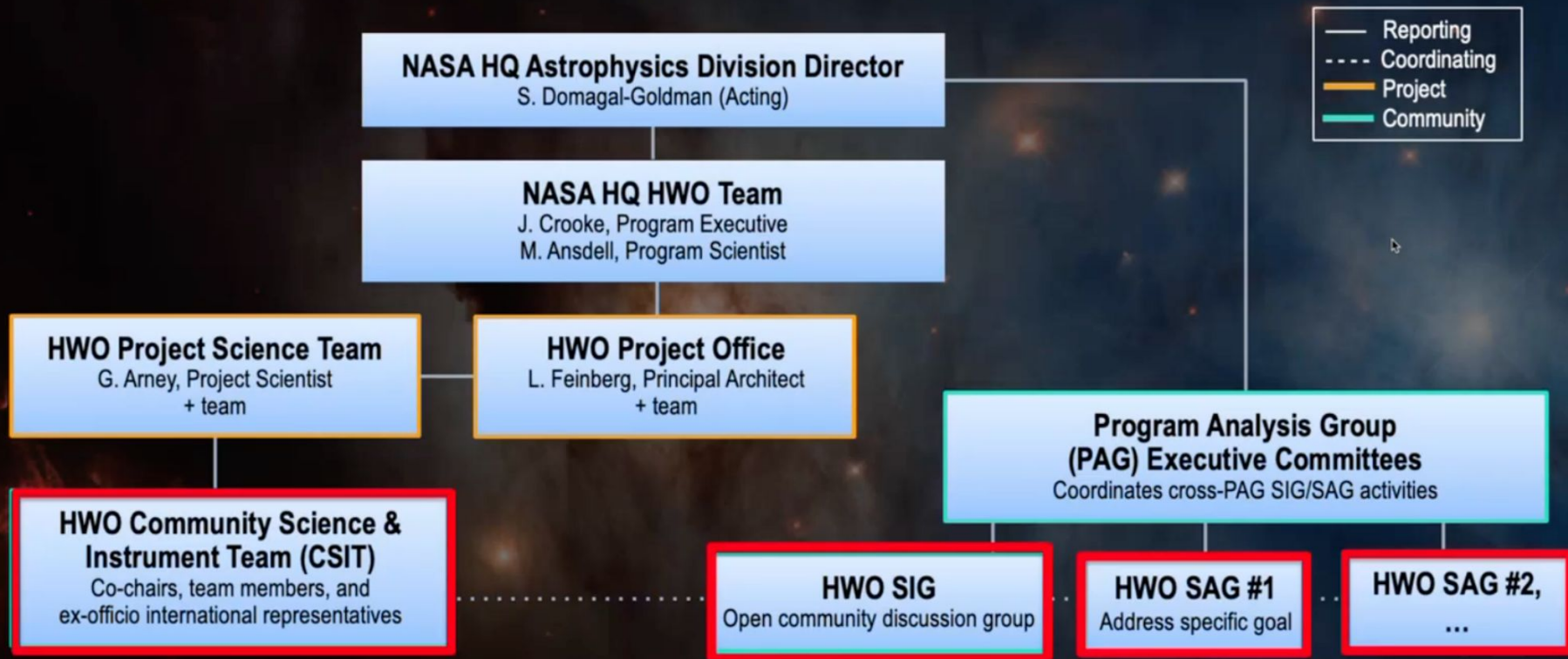
O B S E R V A T O R Y

Science Interest Group

Vivian U

Laura Mayorga, Joe Burchett, Jessie Christiansen, Richard Massey, Fabio Pacucci

HWO RELATIONS TO COMMUNITY GROUPS



SIG = Science Interest Group
SAG = Science Analysis Group

Stay involved in HWO science with the HWO Science Interest Group!

Joint activity of ExoPAG, PhysPAG & COPAG

Community forum for soliciting/coordinating analysis and input in support of HWO

Regular webinars with updates from the HWO project and community SAGs/SIGs

Join the email list at the QR code for updates

Be part of an international community supporting HWO!



Leadership Team

ExoPAG

Jessie Christiansen (IPAC/NExSci)

Laura Mayorga (JHU/APL)

COPAG

Joe Burchett (NMSU)

Vivian U (IPAC)

PhysPAG

Fabio Pacucci (CfA)

Richard Massey (Durham)

We have a website!

Science Interest Group

Habitable Worlds Observatory

The Habitable Worlds Observatory SIG serves as a forum and focal point for the HWO community.

About



Join HWO SIG Email List



Leadership



News & Events



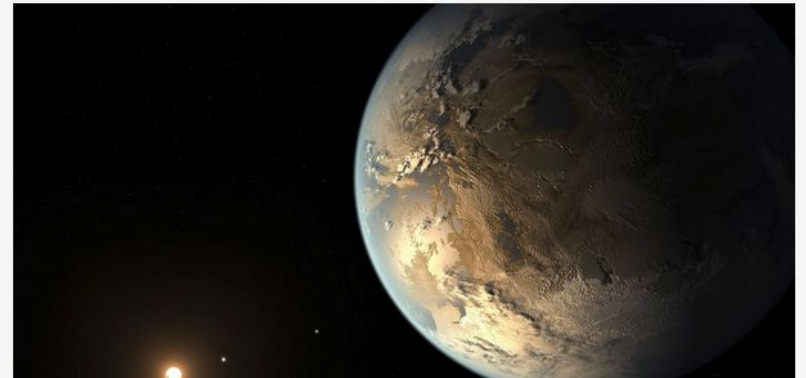
Documents



About HWO SIG

The Search for Earth-Like Planets in Habitable Zones

HWO is a large infrared/optical/ultraviolet space telescope



We have a website! (and an unofficial one)

Habitable Worlds Observatory Science Interest Group (HWO SIG)

The Habitable Worlds Observatory Science Interest Group (HWO SIG) is an interdisciplinary, community-based forum coordinating analysis and communicating input in support of the Habitable Worlds Observatory across the three NASA Astrophysics Program Analysis Groups: Exoplanet Exploration, Cosmic Origins, and Physics of the Cosmos.

This page is unofficial and run by the HWO SIG leadership council. The official HWO SIG page is [here](#).

[Terms of Reference](#)

Recent SIG Activities

- Terms of Reference have been approved:
 - Vivian U is chairperson, Laura Mayorga is chairperson-elect.
- Two seminars (and more to come!)

08 October 2025 10PT/1ET

[Recording](#)

[HWO SIG Welcome](#) - Vivian U

Update from TMPO - Bertrand Menneson

[SAG Process](#) - Karl Stapelfeldt

[SAG Highlight #1](#): UV IFU - Emily Witt

[SAG Highlight #2](#): Exozodi - John Debes

[Walk on Discussion](#) - Laura Mayorga

03 December 2025 10PT/1ET

[Recording](#)

[HWO SIG Welcome](#) - Laura Mayorga

[Update from CSIT](#) - David Charbonneau

[Planetary Defense with HWO](#) - Andy Rivkin

SAG Advertisements - Hartman, Moin

- [Multi-star Systems](#)
- [ML/AI for HWO](#)

HWO-related groups

Group	PAG	Contacts	Group Type
OVI in diffuse media	COPAG	Sanch Borthakur	Working Group
Spatially Resolved UV Spectroscopy Science Analysis Group in Support of Habitable Worlds Observatory	COPAG	Emily Witt	SAG
Exoplanet demographics	ExoPAG	Rachel Fernandes, Kiersten Boley	SIG
Exoplanet/Solar System synergies	ExoPAG	Vikki Meadows, Kathy Mandt	SIG
Exoplanet Reflectance Spectroscopy for the Habitable Worlds Observatory	ExoPAG	Renyu Hu, Ty Robinson	SAG
Exploring the Complementary Science Value of Starshade Observations	ExoPAG	Sara Seager, Stuart Shaklan	SAG

HWO-related groups (cont.)

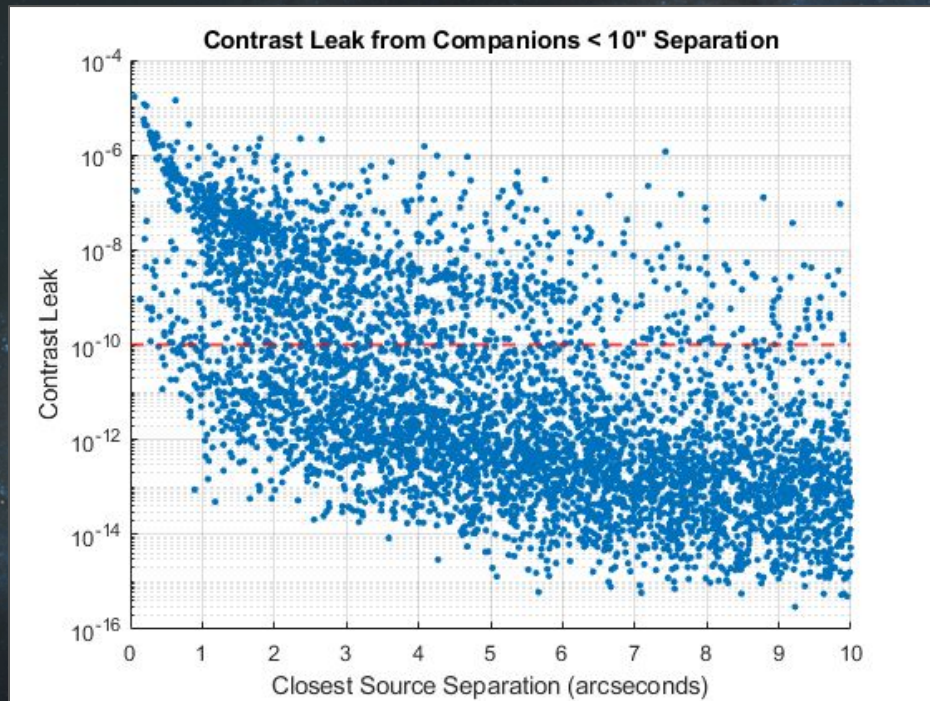
Group	PAG	Contacts	Group Type
The Impact of Exo-Zodiacal Dust on Exoplanet Direct Imaging Surveys	ExoPAG	John Debes, Yasuhiro Hasegawa	SAG
HWO red wavelength limit	COPAG	Roberta Paladini, Kyle Cook, Benne Holwerda	SAG
Exploring galaxies throughout the universe	COPAG	Aaron Yung	SIG
Astrophysics from the Moon	PhysPAG	Dave Pooley	Other
Planetary Defense with HWO	N/A	Andy Rivkin	Other



SAG advertisements

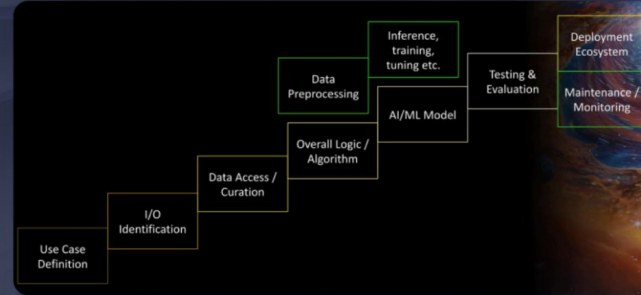
HWO, Multi-star Systems, and Exoplanets Oh My!

- **Originally a task team of the Target Stars and Systems Working Group**
 - Could be part of a continuation of Target Stars
- **Goals:**
 - Understand which potential HWO targets are part multi-star systems
 - Understand the potential impacts of stellar companions on direct imaging observations (scientific requirements, realistic planet yields)
- **Expansions?**
 - Identify multi-star systems in support of SCDDs (e.g. Newton et al. 2025)
- **Interested?**
 - Email zachary.d.hartman@nasa.gov



{AI/ML Solutions for HWO Research Workflows}

- A cross-functional working group to explore, design, develop and deploy AI/ML-powered tools and utilities for accelerated HWO research workflows.
- Operating across multiple groups, SIGs, SAGs.
- **LLM/RAG-assisted Knowledge Synthesis:** requirements-to-science / science idea-to-requirements, science idea-to-document generation [proposals, science cases, reports, reviews and more].
- **AI-assisted Technical Description:** instrument configurations, technical parameters, observation schemes, traceability, science return, cross-referencing, validation.
- **AI-powered Multi-Source Information Consolidation:** Information retrieval, management, consolidation from multiple sources [ADS/SciX, NASA documents, ArXiv].
- **ML-driven data analytics workflows:** pattern recognition, classification, anomaly detection, data processing, analytics, predictions [across HWO Science Cases: Exoplanets / Planetary Science / Astrophysics].



AI/ML Deployment Ladder

Contemporary AI models, ML frameworks, techniques and support tools are widely available, but they become practically and operationally useful only when they are systematically orchestrated, integrated, and deployed as unified AI-assisted solutions for accelerated science research workflows saving time, minimizing manual effort.

Interested?

Contact: aakib moin [aquibmoin@gmail.com]

[HWO AI/ML WG]

CSIT Update from David Charbonneau



Michael Bottom
U. Hawaii



Eric Burns
LSU



Richard Cartwright
JHU - APL



Ewan Douglas
U. Arizona



Kevin France
LASP/CU
Boulder



Scott Gaudi
Ohio State



Rebecca Jensen-Clem
UCSC



David Charbonneau,
Co-chair
Harvard



Evgenya Shkolnik,
Co-chair
Arizona State



Janice Lee
STScI



Victoria Meadows
U.
Washington



Chris Packham
UT San Antonio



Laurent Pueyo
STScI



Tyler Robinson
U. Arizona



Jason Tumlinson
STScI

- Community Science & Technology Integration Team (CSIT) is the science community's direct link to the HWO Project Office.
- Ensures HWO's design is driven by transformative science.
- 15 U.S.-based experts across UV/O/IR astrophysics, exoplanets, astrobiology, and instrumentation.
- Will include 1-2 international ex-officio members per partner agency.
- The CSIT completes its work at the Mission Concept Review later this decade.

Ways to Support HWO TMPO

- Tell TMPO what is interesting and exciting and explore!
 - More detailed analyses following from SCDDs. Focus on “enabling” science cases.
 - Advocacy for science cases
 - Identifying important science not covered by SCDDs (Please make sure to check SCDDs first!)
 - Are there important details you need know that are missing from the slide packages? Nothing is locked down, but guard rails exist.
- SAG reminder: Technology is a valid SAG topic! As is hardware and programmatic topics, not just science!
- Synergistic activities in the meantime until launch
 - Supporting observations, e.g. large time baselines
 - Big computations that will take time to complete
 - Laboratory astrophysics

<https://tinyurl.com/hwo-sig>

Jessie Christiansen (IPAC/NExSci)
Laura Mayorga (JHU/APL)

