NASA Exoplanet Exploration Program Science Update

Dr. Karl Stapelfeldt & Dr. Eric Mamajek

Program Chief Scientists

Jet Propulsion Laboratory

California Institute of Technology

ExoPAG 32 - August 19, 2025

Dr. Jennifer Burt (EPRV RCN)

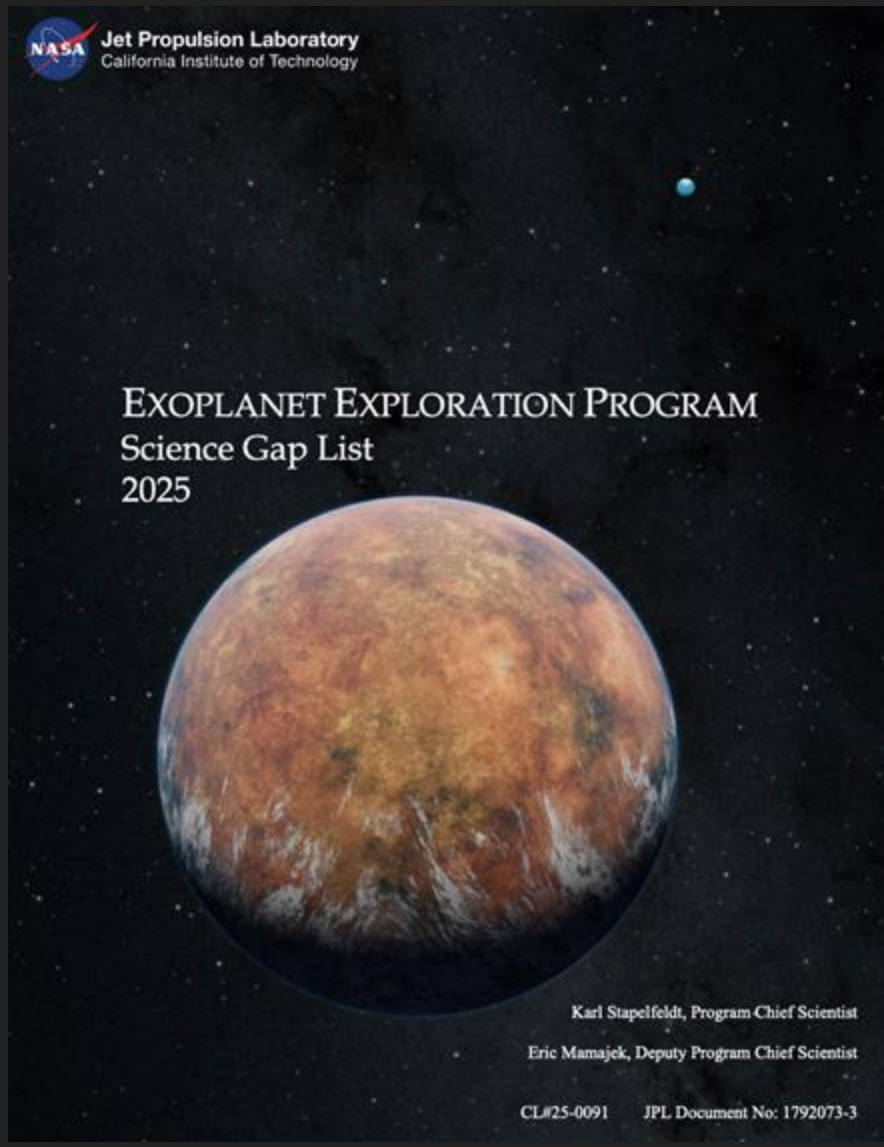
Dr. Anjali Tripathi (ExEP Sci Amb.)

Dr. Tiffany Kataria (Scientist/ExoExplorers)

Requests for input on ExEP Science Gap List

https://exoplanets.nasa.gov/exep/science-overview/ https://arxiv.org/abs/2507.18665

- Descriptions of research areas where additional work would benefit current & future NASA exoplanet missions. *Tactical goals*, flowing from Decadal and NASA *strategic goals*.
- Connects mission needs to work in theory, laboratory measurements, simulations, and supporting observations.
- Its major utility is as a guide for XRP proposers, review panels, and NASA HQ selection officials. Not used proscriptively.
- Updated annually from inputs from ExoPAG EC, community, and HWO scientists
- **Request for input (deadline September 30, 2025) email** Karl.R.Stapelfeldt@jpl.nasa.gov & Eric.Mamajek@jpl.nasa.gov



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Each gap is described by:

- **Title**
- **Summary**
- **Capability Needed**
- **Capability Today**
- **Mitigations in Progress**

Mitigations NOT in Progress are what you should be proposing !

WAVELENGTHS

AN EPRV NETWORKING POD PROGRAM

Program Goals

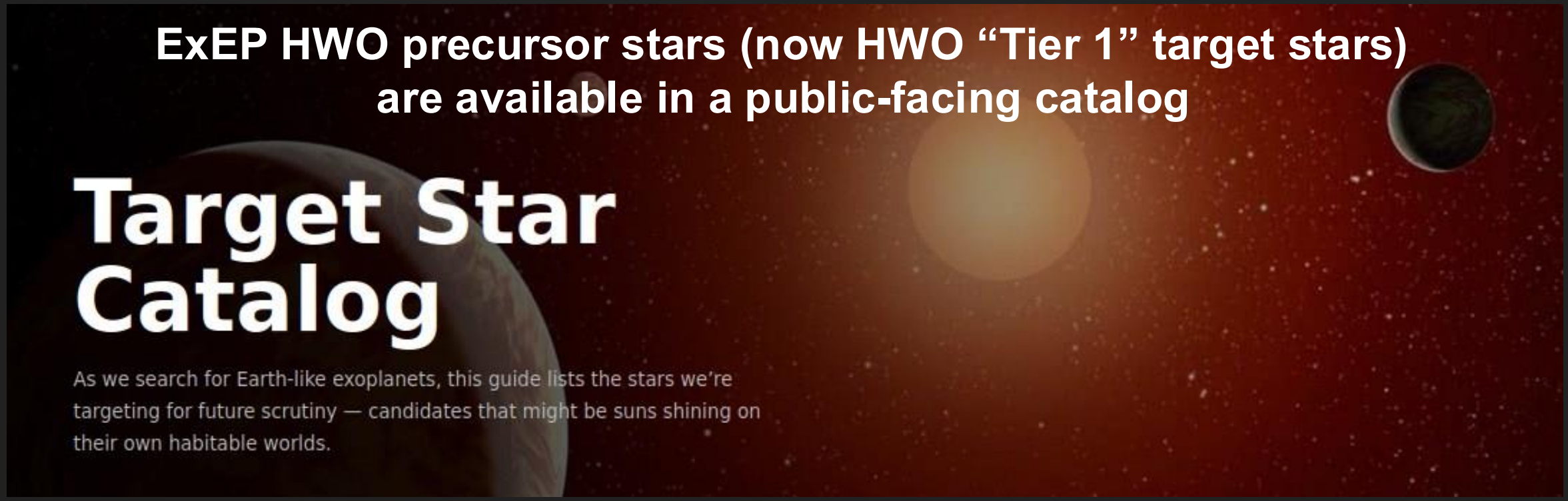
- Promote low-effort, low-pressure, professional networking across the EPRV community
- Foster connections between early-career and more senior researchers
- Bridge gaps between subfields, such as instrumentation, data analysis, and theory
- Encourage cross-collaboration and awareness across international spectrograph teams

Program Structure

- Participants placed into small “pods” of 7-8 people, balanced across career stages, interests, & institutions. One dedicated ‘Pod Organizer’ in each to facilitate meetings and help guide discussion
- 6 meetings per year, each with a suggested theme and discussion questions from the RCN Steering Committee. Examples include: navigating job markets in different countries & sharing favorite tools or techniques
- First cohort launched in July 2025, calls for future cohorts will go out via the EPRV RCN mailing list

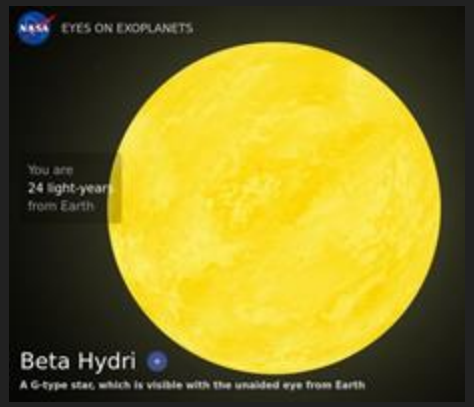
https://exoplanets.nasa.gov/exep/NNExplore/EPRV-RCN/EPRV-RCN-Wavelengths

ExEP HWO precursor stars (now HWO “Tier 1” target stars) are available in a public-facing catalog



- Goal: Grow public enthusiasm for "Where We Explore" with HWO. Highlight these naked eye targets for amateur astronomers & general public
- Now live at **https://science.nasa.gov/exoplanets/target-star-catalog/**
- 164 stars can be sorted by distance, brightness, constellation, presence of known planets, and stellar type.
- Links to "**Eyes on Exoplanets**" pages depicting the system
- "+" sign link takes you to description of the system including narrative text

Target star catalog preview for beta Hydri



Beta Hydri

A bright, nearby Sun-like star with good prospects for finding planets with future direct imaging

STAR TYPE G

DISTANCE 24 light-years away

CONFIRMED PLANETS 0

Beta Hydri is a Sun-like star located in the Southern constellation Hydrus, which represents a male water snake. Visible to the naked eye, it is the brightest star in the constellation, and it represents the tail of the water snake. As the closest prominent star to the south celestial pole, it is easily recognizable in the Southern sky. Relative to the Sun, Beta Hydri is older, larger, similar in temperature, and over three times more luminous. It has lower levels of stellar magnetic activity and a lower abundance of elements heavier than helium, compared to the Sun.

Pop Culture

Beta Hydri's proximity and Sun-like characteristics have captured the imagination of science fiction writers. It has served as a backdrop for interstellar journeys in novels like "Time for the Stars" by Robert Heinlein and "Old Twentieth" by Joe Halderman. In works such as "A Canticle for Leibowitz" by Walter M. Miller and "Daughters of Earth" by Judith Merril, Beta Hydri hosts exoplanets where human colonies thrive, and in "Calculating God" by Robert J. Sawyer, it serves as an exoplanet host where alien life is discovered.

The Sixth Spirit of Lyot Conference

THE SCIENCE AND TECHNOLOGY OF HIGH CONTRAST IMAGING

February 2-6, 2026

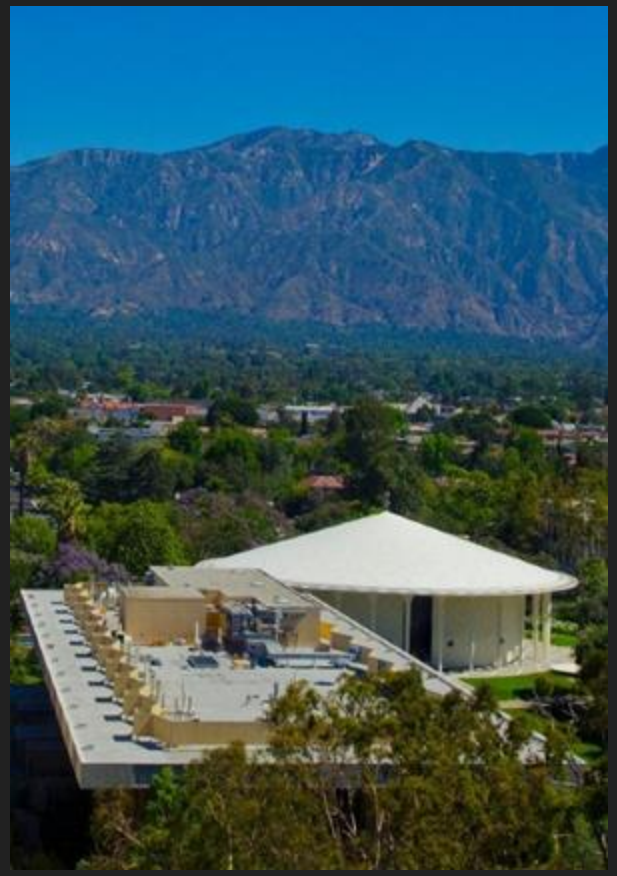
Caltech campus, Pasadena CA

Topics include

- Coronagraph instrument technology
- Exoplanet imaging and spectroscopy
- Theory & imaging studies of circumstellar disks & exozodi
- Large telescopes and adaptive optics for high contrast imaging
- Modeling of exoplanet atmospheres & biosignatures
- Image processing and spectral retrieval techniques
- High contrast imaging space missions and mission concepts, including dedicated Roman Coronagraph session(s)

Submit abstracts by **October 1, 2025**

https://conference.ipac.caltech.edu/SpiritofLyot6



Conference Chairs:
Dimitri Mawet (Caltech)
Briann Sitarski (GSFC)

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5,983
Confirmed Planets
08/14/2025

686
TESS Confirmed Planets
08/14/2025

7,658
TESS Project Candidates
08/07/2025

View more Planet and Candidate statistics

Explore the Archive

Name or Coordinates — Search

Optional Radius (arcsec)

Advanced Search

Transit Surveys — 130,041,578 Light Curves

Launched in April 2018, TESS is surveying the sky for two years to find transiting exoplanets around the brightest stars near Earth.

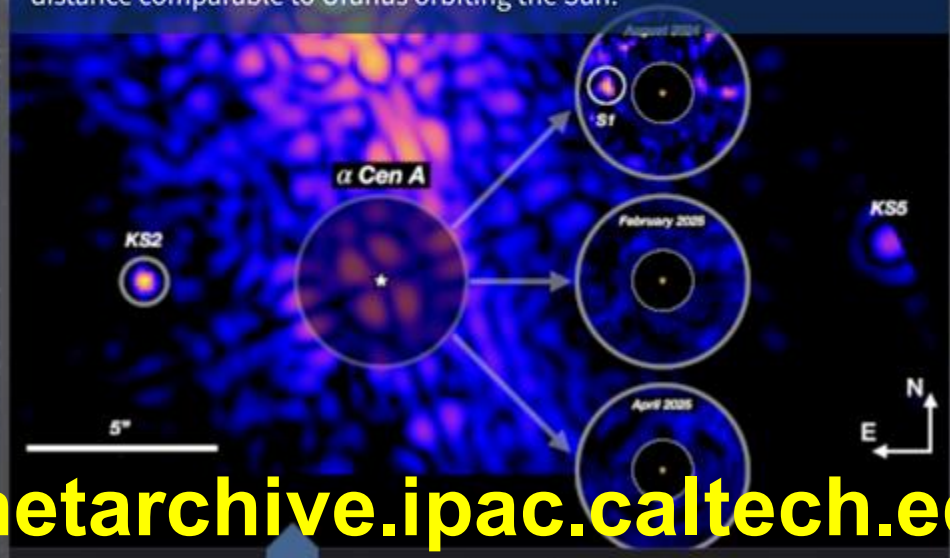
- Confirmed Planets
- ExoFOP-TESS
- Project Candidates

TESS | Kepler | K2 | KELT | UKIRT

JWST Direct Imaging of alf Cen A Candidate Planet and Five New Planets!

August 7, 2025 • New Data

This week's release includes new JWST observations of a Saturn-mass candidate planet orbiting alf Cen A in our closest neighboring star system, and the young, massive planet HD 135344 A b orbiting its host at a distance comparable to Uranus orbiting the Sun.



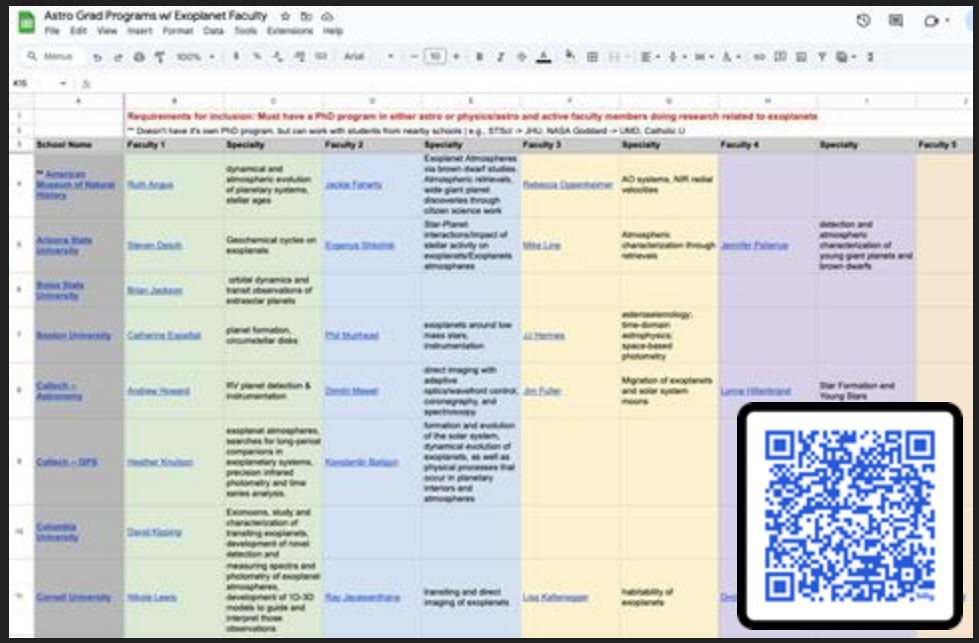
News → 1 2 3 4 | Plots → 1 2 3 4

https://exoplanetarchive.ipac.caltech.edu/

Other Updates

- ExoPAG request for a NASA missions webpage: this is underway, but won't be completed until after NASA ExEP webpage migration to main NASA webpages is completed.

- Requesting your input to update a list of astro and/or physics departments that offer PhDs *and have faculty members doing exoplanet-related research*.
  Please share, and leave suggested updates as comments on the relevant google sheet cells.



bit.ly/ExoplanetDepartmentTracker

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jpl.nasa.gov