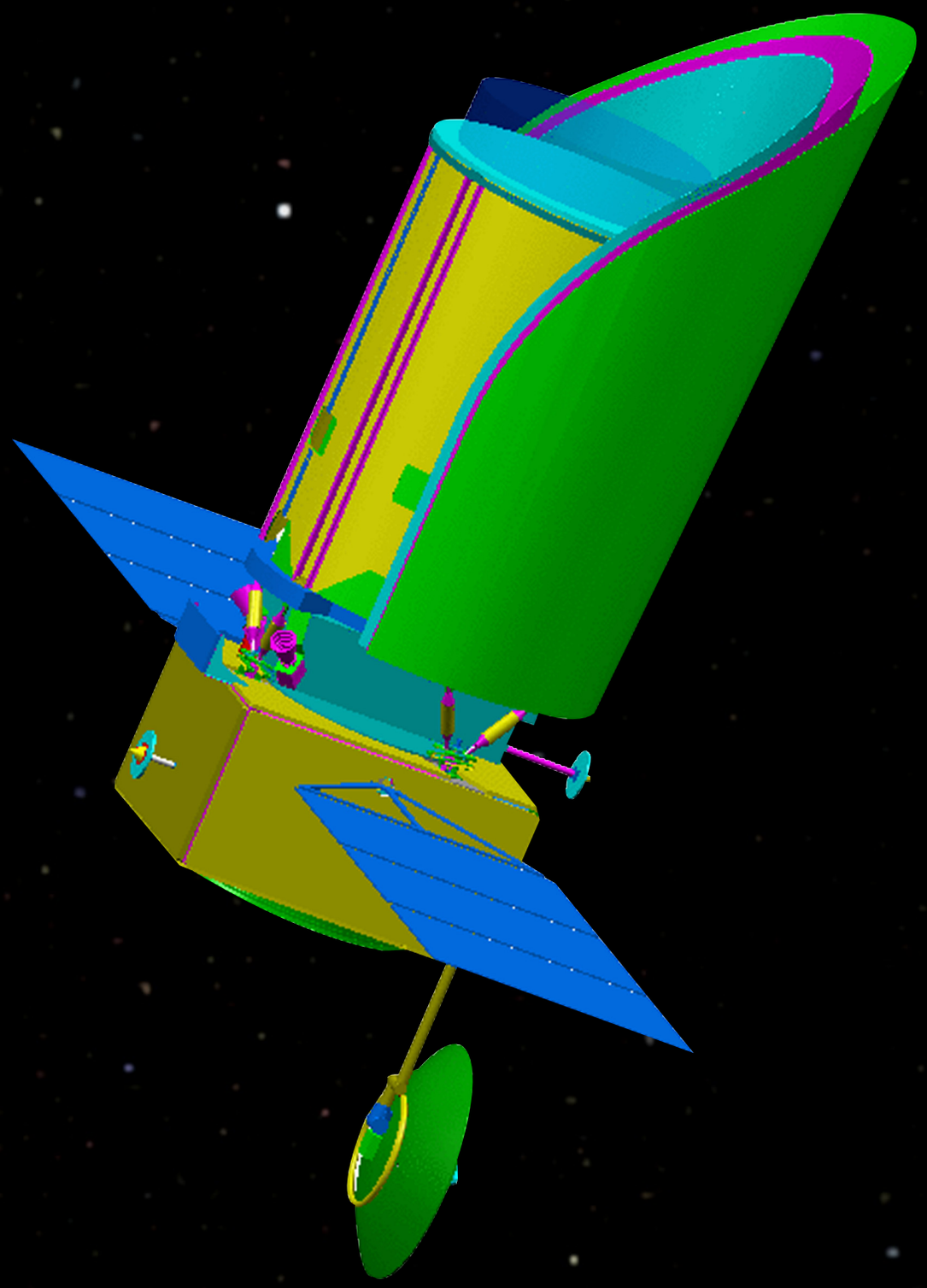
Actively-Corrected Coronagraph for Exoplanet System Studies

Principal Investigator	John Trauger, Jet Propulsion Laboratory, California Institute of Technology

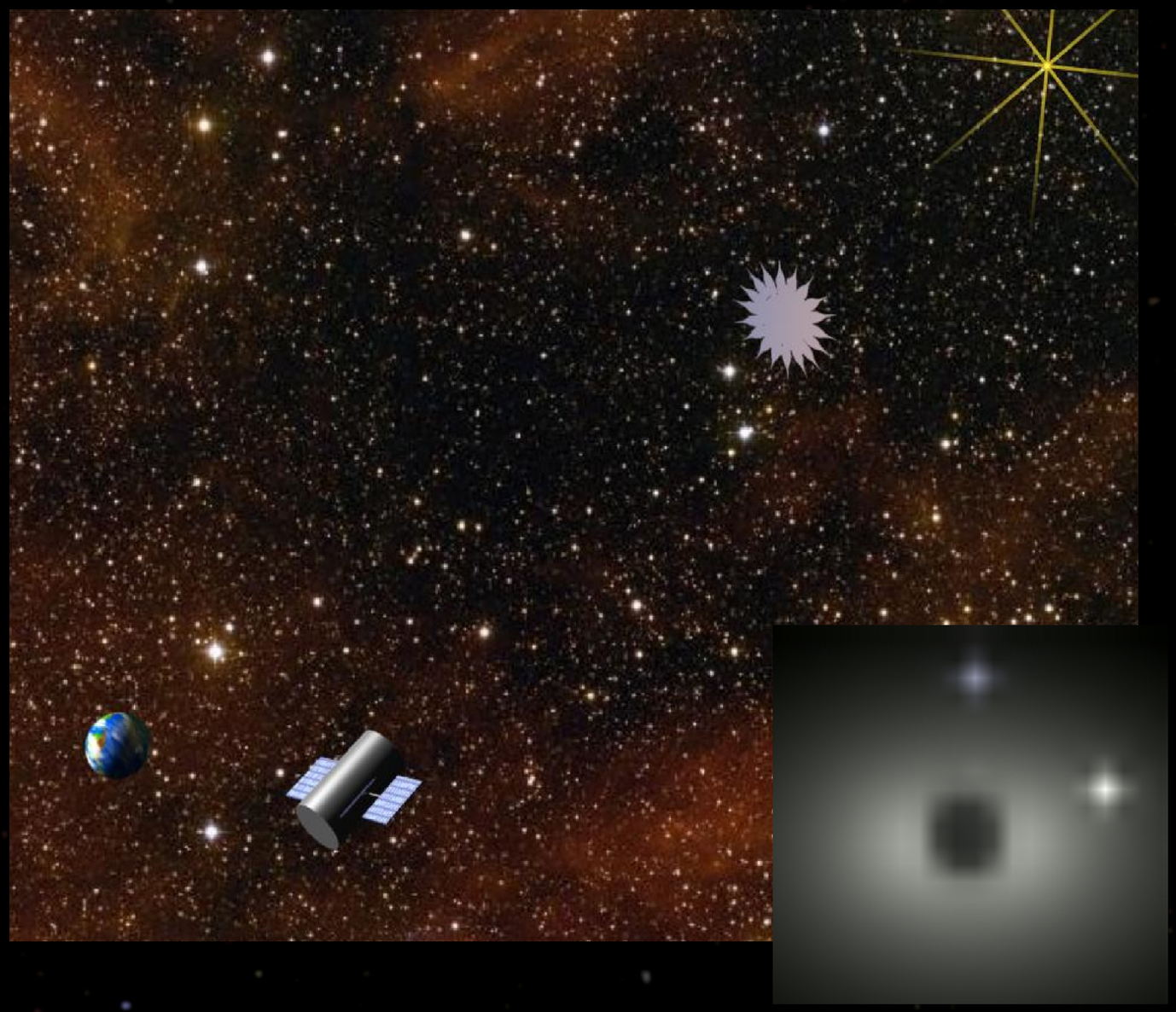


Actively-Corrected Coronagraph for Exoplanet System Studies (ACCESS) will carry out direct imaging and spectroscopy of exosolar giant planets, super-Earths, exo-Earths, and dust/debris fields.

ACCESS uses a hybrid approach to coronagraph architecture, demonstrated active wavefront control, and a stable 1.5-meter telescope.

The New Worlds Observer: Direct Observations of Exoplanets

Principal Investigator	Webster Cash, University of Colorado



The New Worlds Observer features a distant external occulter between a telescope and a nearby star. The occulter removes the direct light from the star, revealing the planetary system free from stellar glare.

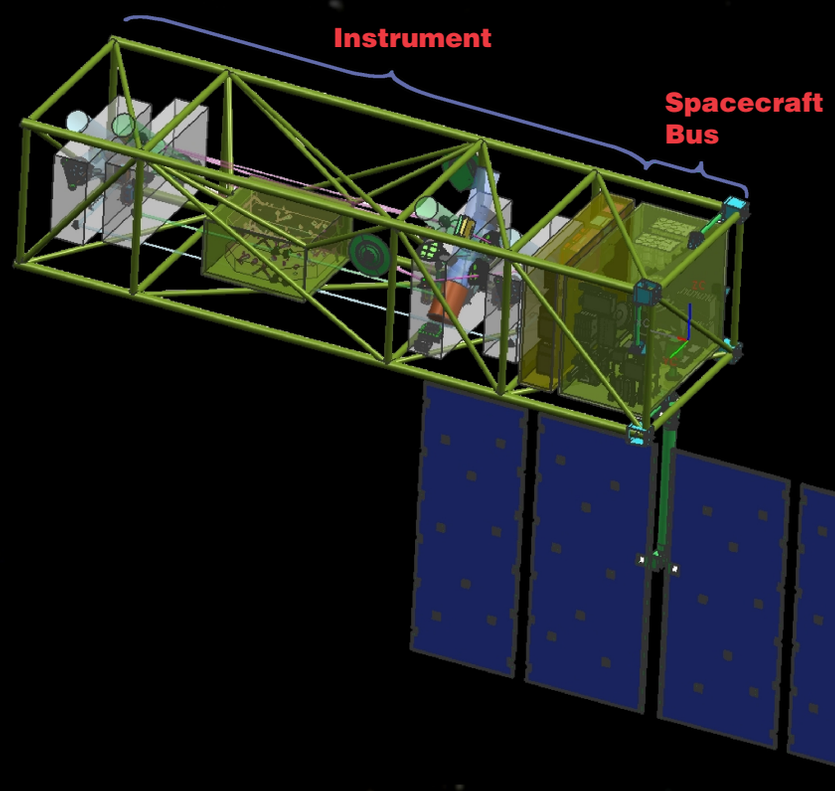
FLAGSHIP-CLASS EXOPLANET MISSION CONCEPT

Planet Hunter

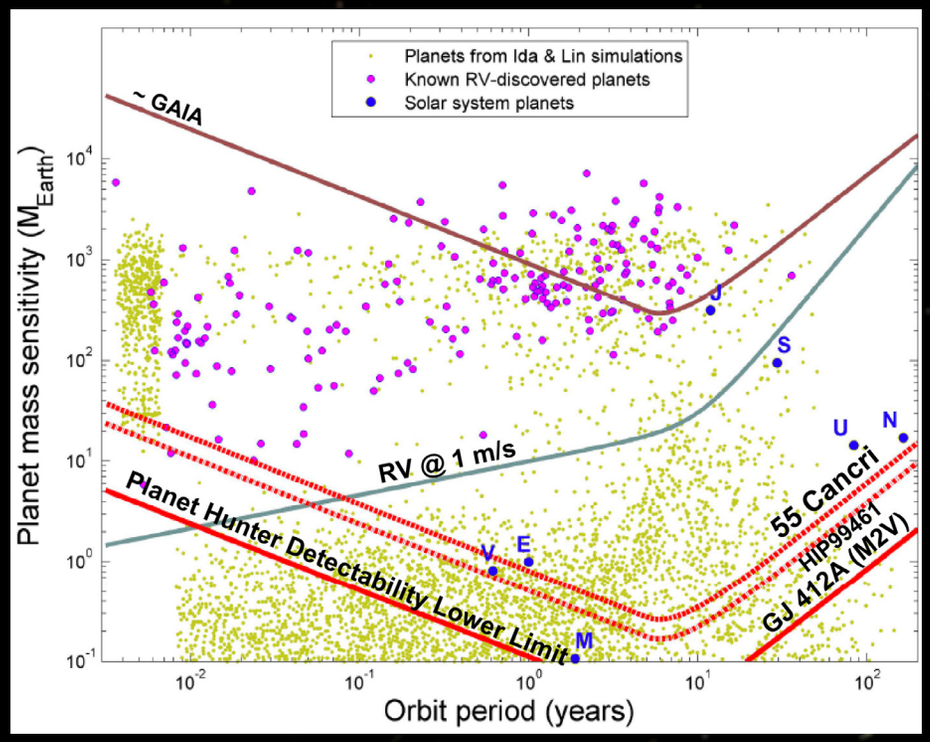
Principal Investigator	Geoff Marcy, U.C. Berkeley

The Planet Hunter mission will carry out:

- A deep search of 65 nearby F,G,K stars for Earth analogs.
- A broad survey of planetary systems around 1000 nearby stars.
- A young planet search of 50 nearby young stars.

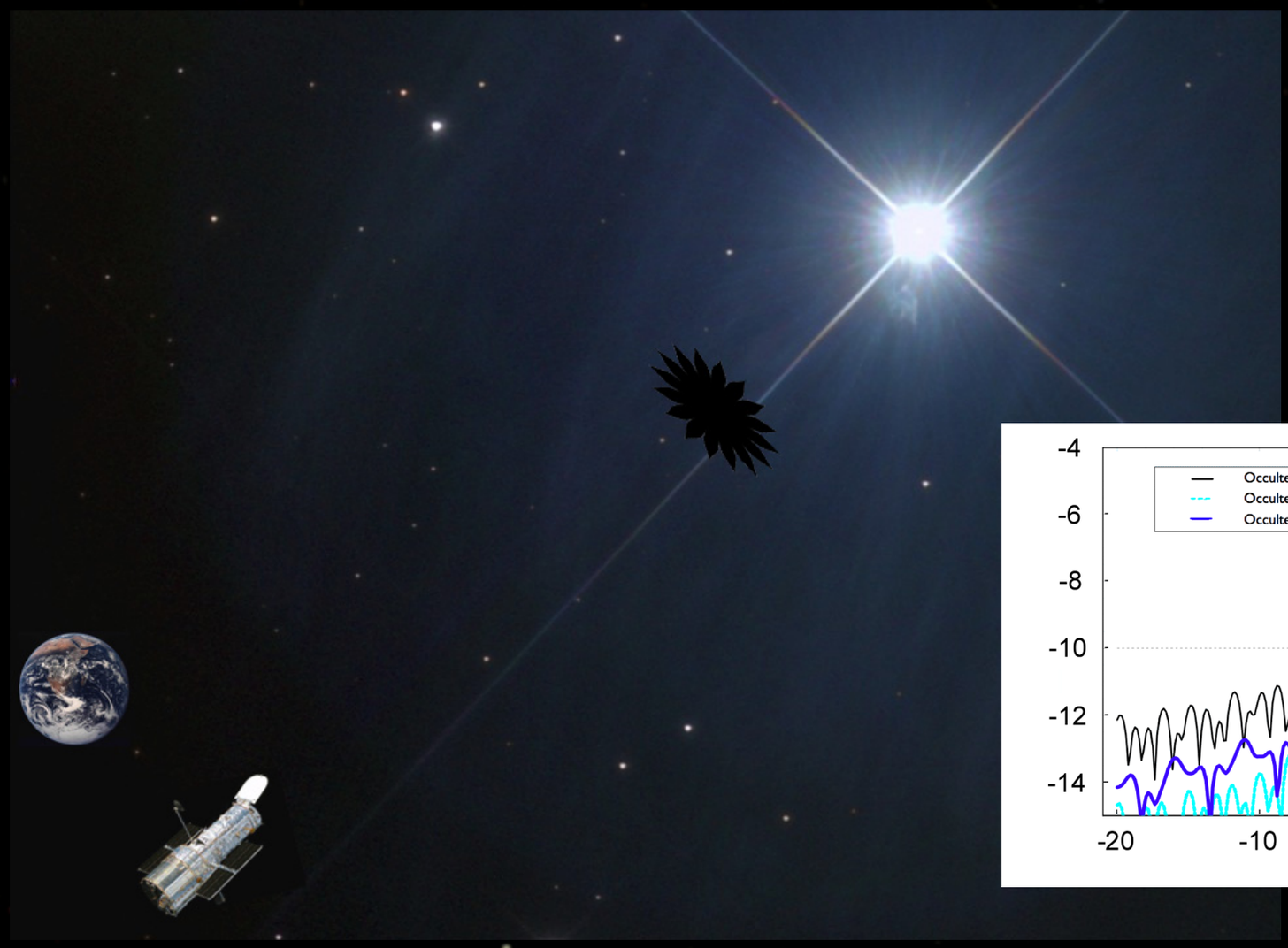


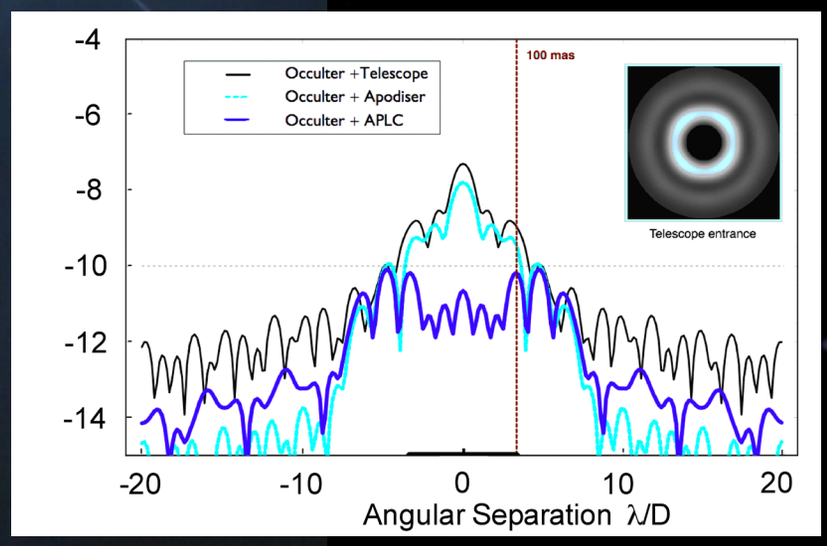
6-meter astrometric interferom-eter using mature technology (from SIM)



XPC: Detecting Extrasolar Planets by Sharing the Burden

Principal Investigator	David Spergel, Princeton University



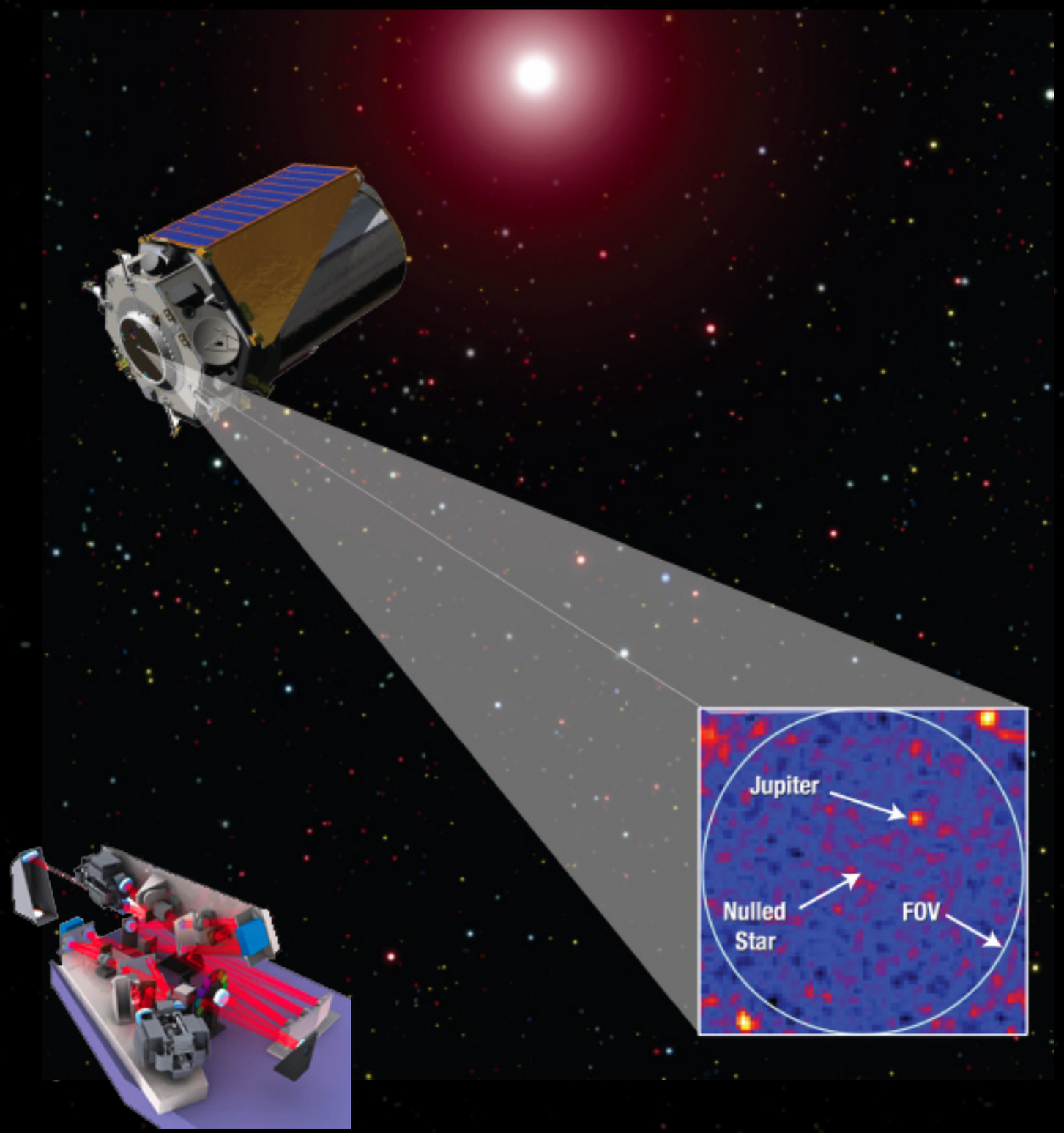


The eXtrasolar Planet Characterizer (XPC) is a hybrid coronagraph and external occulter to achieve the required starlight suppression for detecting and characterizing extrasolar planets. The starlight suppression is shared by the occulter and coronagraph.

Extrasolar Planetary Imaging Coronagraph

Principal Investigator	Mark Clampin, NASA Goddard Space Flight Center

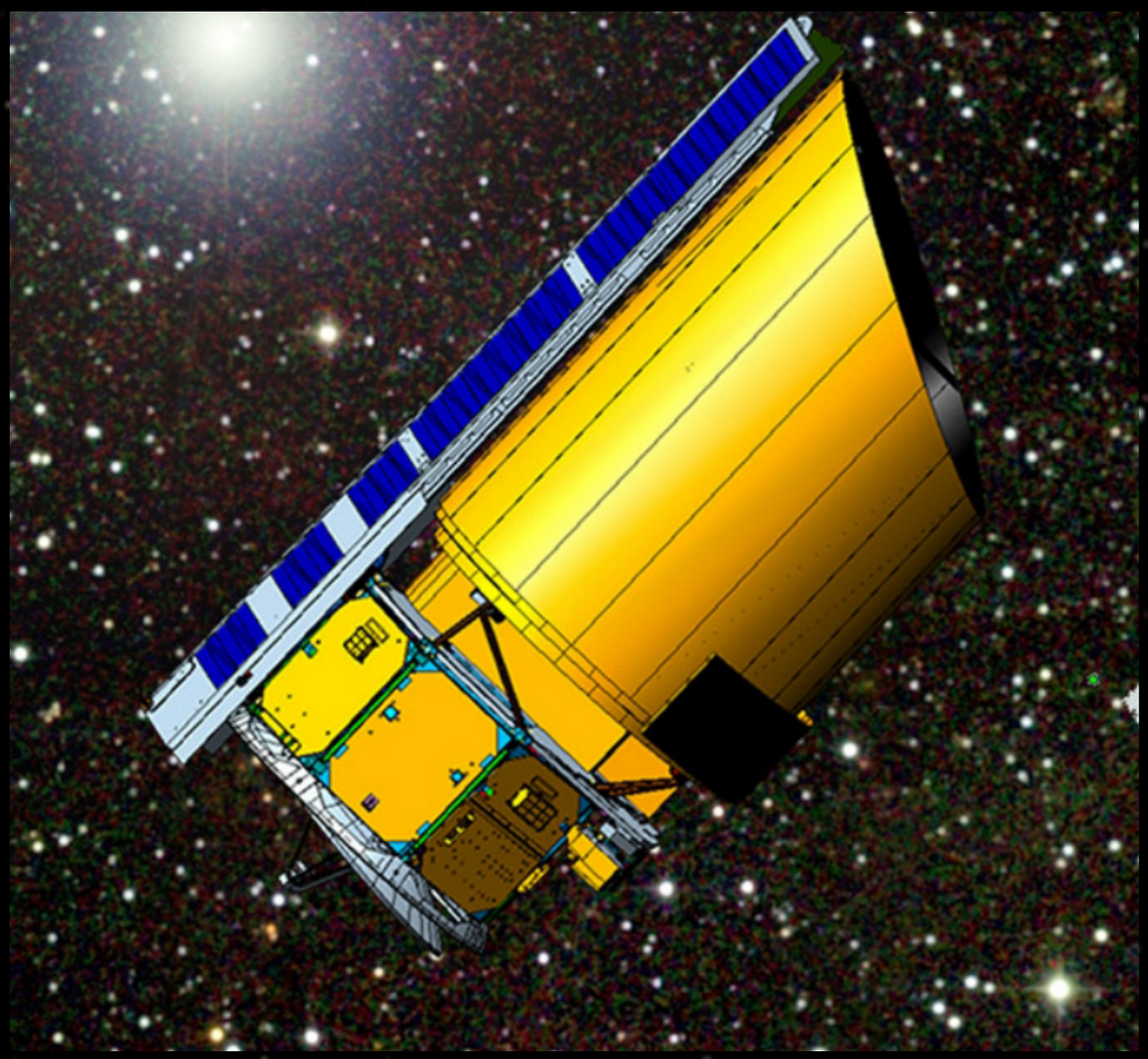
The Extrasolar Planetary Imaging Coronagraph (EPIC) is a medium-class mission to study exoplanets. The mission science goals are to detect and characterize gas giant planets, and to study exoplanetary system architectures. A system-level demonstration of 10^9 contrast white light nulling is currently underway at Goddard Space Flight Center.



EPIC's Visible Nulling Coronagraph (VNC) optical bench

Pupil-mapping Exoplanet Coronagraphic Observer (PECO)

Principal Investigator	Olivier Guyon, University of Arizona

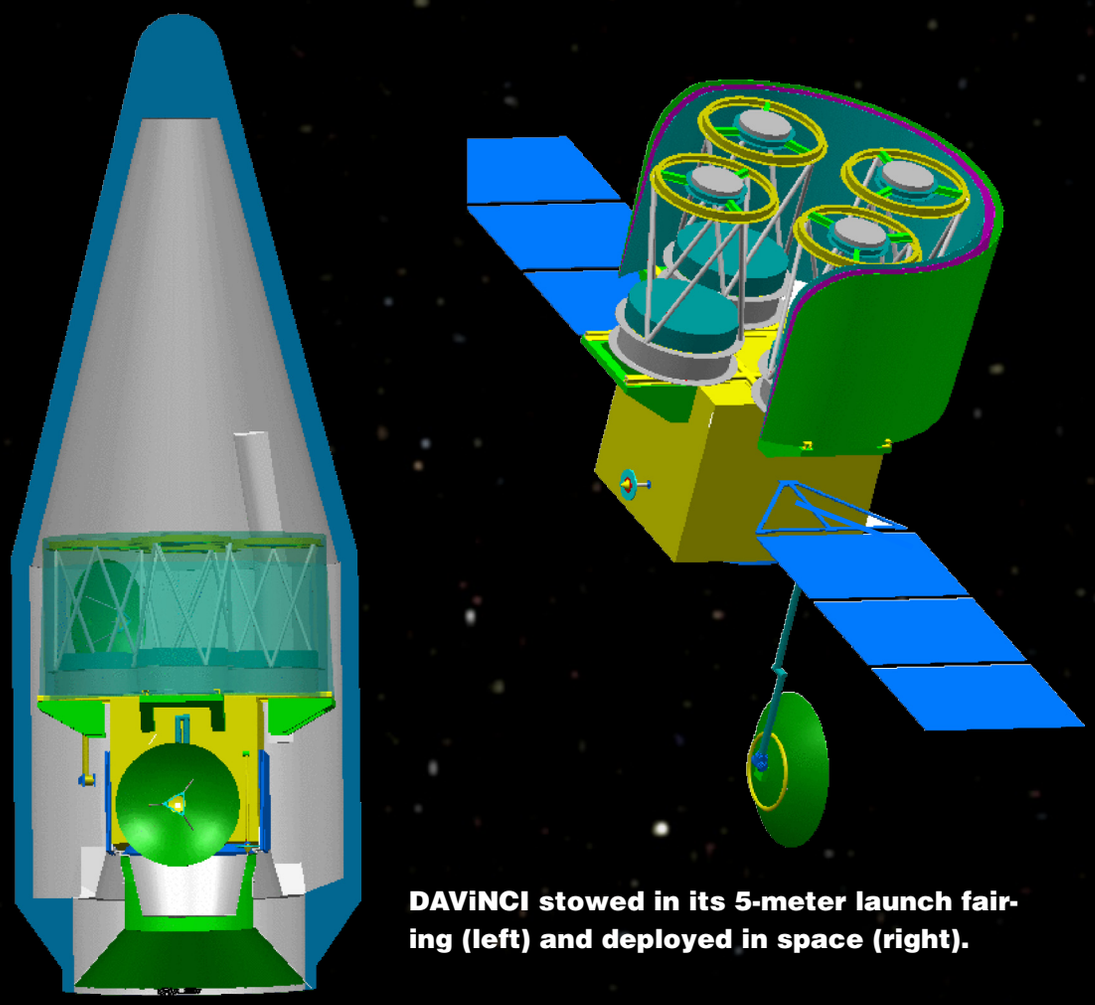


The Pupil-mapping Exoplanet Coronagraphic Observer (PECO) is a 1.4-meter optical telescope equipped with a high-performance phase-induced amplitude apodization (PIAA) coronagraph, to image and characterize planets and zodiacal dust in the habitable zones of nearby stars.

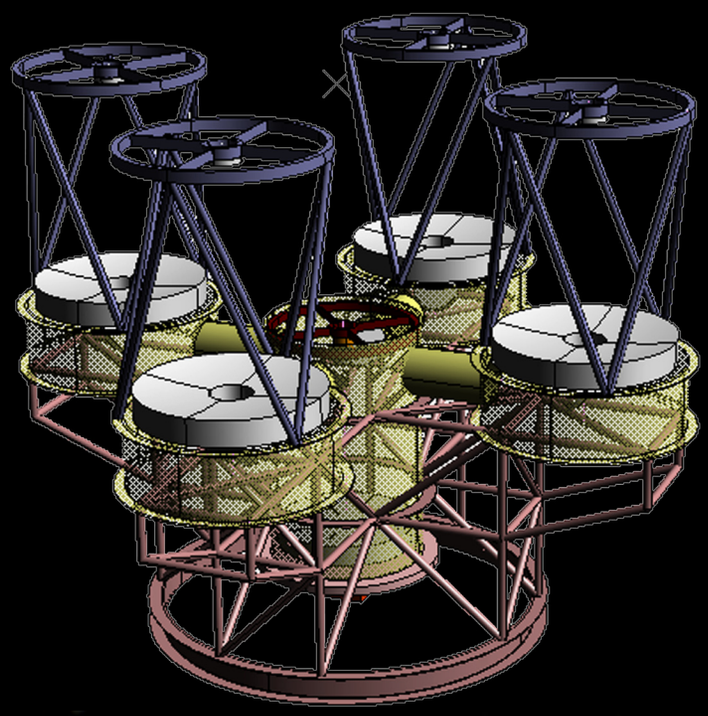
Dilute Aperture Visible Nulling Coronagraph Imager (DAViNCI)

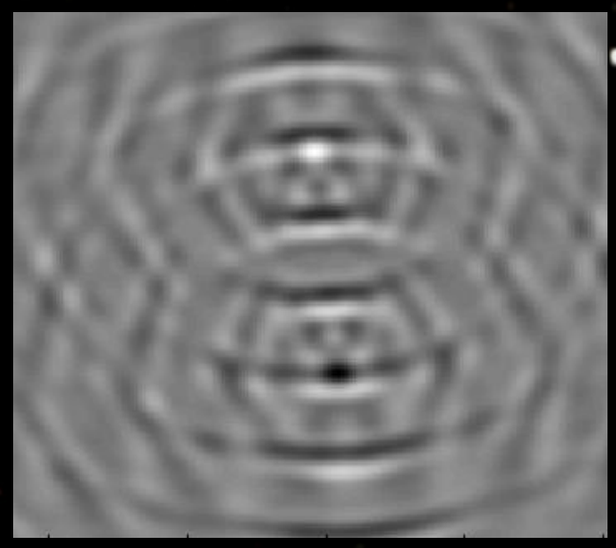
Principal Investigator	Michael Shao, Jet Propulsion Laboratory, California Institute of Technology

DAViNCI has the potential to detect many exoplanets, including exo-Earths, using four 1.1-meter telescopes arrayed on a 4-meter baseline.



DAViNCI stowed in its 5-meter launch fairing (left) and deployed in space (right).





PROBE-CLASS EXOPLANET MISSION CONCEPT