



**Hybrid Space-Ground Observatories:  
Revolutionizing the Search for Earth-like Exoplanets**

**March 9 - 13, 2026  
Overview Schedule**

**Monday, March 9, 2026  
Chen 100 Lecture Hall, Chen Neuroscience Research Building - Caltech**

**Short Course: Hybrid Space-Ground Observatories: Revolutionizing the Search for Earth-Like Exoplanets**

<b>Time</b>	<b>Event</b>	<b>Speaker</b>
8:15 - 8:45	Coffee and Refreshments	
8:45 - 9:00	Logistics / Introduction	Harriet Brettle
9:00 - 9:30	Hybrid Space-Ground Observatories	John Mather NASA Goddard Space Flight Center
9:30 - 10:00	Exploring New Worlds: Exoplanet Discoveries, Challenges, and Future Frontiers	Amber Young NASA Headquarters (HQ)
10:00 - 10:30	Starshade	Stuart Shaklan Jet Propulsion Laboratory
10:30 - 11:00	Break	
11:00 - 11:30	Seeing Clearly - Observing Through Earth's Atmosphere	Ahmed Soliman Jet Propulsion Laboratory
11:30 - 12:00	Extremely Large Telescopes - AO and Extreme AO	Markus Kasper European Southern Observatory
12:00 - 12:30	Orbital Dynamics	Eliad Peretz NASA Goddard Space Flight Center
12:30 - 1:30	Short Course Ends: Informal Lunch is provided Chen Breezeway	

**Invitation-Only Study Program Begins  
Keck Center - Think Tank, Room 155**

1:30 - 1:45	Walk to Keck Center, pick up badge and welcome packet, find seat in the Think Tank	
1:45 - 2:30	Study Program Logistics and Introduction to KISS	Harriet Brettle
2:30 - 3:00	Participant Introductions	Harriet Brettle
3:00 - 3:30	Study vision and goals for the study program	John Mather
3:30 - 4:00	Break	
4:00 - 5:00	Finalize study vision and goals via plenary discussion	All
5:00 - 5:30	Ongoing Work - NIAC Study Briefing x 3	NIAC Study Leads: Eliad Peretz/John Mather, Christine Gregg, Jonathan Sauder
5:30 - 5:40	Solicitation of Lightning Talks	Team Leads
5:40 - 6:00	Pack up and walk to dinner	All
6:00	Group Dinner at local Pasadena Restaurant	

**Tuesday, March 10, 2026 - Keck Center - Think Tank, Room 155**

<b>Time</b>	<b>Event</b>	<b>Speaker</b>
8:00 - 8:30	Institute Opens - FREE THINK TIME	
8:30 - 9:00	Coffee and Refreshments at Keck Center	
9:00 - 9:15	Logistics and Team Lead Goals for the Day	Harriet Brettle and Team Leads
9:15 - 10:00	The Path to Earth-like Exoplanets: Status and Challenges	Heather Knutson, Caltech
10:00 - 10:30	Lightning Talks x 3	TBC
10:30 - 11:00	Break	
11:00 - 11:15	Introduction to Breakout Groups and Topics	Harriet Brettle
11:15 - 12:30	<b>Breakout Session 1:</b> - Breakout Group 1A - Science goals (and in context to other missions) - Breakout Group 1B - Building and launching a 100 m starshade: on-orbit build, inflatable, and Overall feasibility - Breakout Group 1C - Observation through Earth Atmosphere, AO atmospheric turbulence, combining coronagraphs and starshades	Groups
12:30 - 2:00	Lunch on your own	
2:00 - 2:45	Report outs from breakout groups (10 mins each)	All
2:45 - 3:00	Plenary Discussion and Q&A	All
3:00 - 3:30	Writing Time: Writing / information gathering / summarizing session	All
3:30 - 4:00	Break	
4:00 - 5:30	<b>Breakout Session 2:</b> Breakout Group 2A - Design Reference Mission Breakout Group 2B - Technology Maturation Roadmap Breakout Group 2C - Preparing capabilities at ground-based telescopes	Groups
5:30 - 7:30	POSTER-ish SESSION and Informal dinner at the Keck Center (dinner starts at 6:30 pm)	

**Wednesday, March 11, 2026 - Keck Center - Think Tank, Room 155**

8:00 - 8:30	Institute Opens - FREE THINK TIME	
8:30 - 9:00	Coffee and Refreshments at Keck Center	
9:00 - 9:15	Logistics and Team Lead Goals for the Day	Harriet Brettle and Team Leads
9:15 - 10:00	Report Outs from Breakout Groups (10 mins each)	Groups
10:00 - 10:30	Plenary Session - Implementing Hybrid Observatories: new instrumentation, coordinating and scheduling ground/space	Team Leads
10:30 - 11:00	Break	
11:00 - 11:30	<b>Group Pulse:</b> "Where we are at" & "What are we missing"	All
11:30 - 12:15	<b>Writing Time:</b> Writing / information gathering / summarizing session	All
12:15 - 12:30	Selection of Breakout Groups	
12:30 - 2:00	Group Picture and Lunch at the Athenaeum	
2:00 - 3:30	<b>Breakout Session 3:</b> Breakout Group 3A - Precursor Science: finding and characterizing targets Breakout Group 3B - Precursor Engineering: what precedes HOEE Starshade and AO Breakout Group 3C - Coordinating observations: scheduling, communications, multi-telescope coordination	Groups
3:30 - 3:45	Quick Break	
3:45 - 4:15	Report outs from breakout groups (10 mins each)	All
4:15 - 4:45	KISS Outputs - Final Report and Stakeholders	Harriet Brettle
4:45 - 5:00	Pack up and move to reception	All
5:00 - 5:30	Lecture Reception (outside Ramo Auditorium)	All
5:30 - 6:30	<b>Guest Lecture</b> - Revolutionizing Astrophysics: How Space and Ground Telescopes Can Work Together (Ramo Auditorium)	John Mather
6:30 - 7:30	Dinner on your own	

Thursday, March 12, 2026 - Keck Center - Think Tank, Room 155		
8:00 - 8:30	Institute Opens - FREE THINK TIME	
8:30 - 9:00	Coffee and Refreshments at Keck Center	
9:00 - 9:15	Logistics and Team Lead Goals for the Day, and selection of breakout groups	Harriet Brettle and Team Leads
9:15 - 10:45	<b>Break Out Session 4:</b> 4A: Programmatic Avenues, Advocacy for HOEE incl. international collaboration 4B: State-of-the-art large deployables 4C: Testing a 100 m starshade (incl. facilities)	Team leads
10:45 - 11:15	Break	All
11:15 - 11:45	Report outs from breakout groups (10 mins each)	All
11:45 - 12:30	Plenary Discussion: HOEE and HWO alignment	All
12:30 - 2:00	Lunch at the Keck Center	
2:00 - 2:30	FREE THINK TIME (individual, or self organizing small groups)	All
2:30 - 3:00	Importance of Illustrations - KISS Gallery	Harriet Brettle
3:00 - 3:30	<b>Writing and Illustrations Sprint</b>	All
3:30 - 4:00	Break	
4:00 - 5:30	Plenary Discussion: Key Takeaways and Recommendations	Team Leads
5:30 - 6:00	Walk over to the Athenaeum	All
6:00	Closing Dinner at the Athenaeum	

**Friday, March 13, 2026 - Keck Center - Think Tank, Room 155**

<b>Time</b>	<b>Event</b>	<b>Speaker</b>
8:00 - 8:30	Institute Opens - FREE THINK TIME	
8:30 - 9:00	Coffee and Refreshments at Keck Center	
9:00 - 9:15	Logistics and Team Lead Goals for the Day	Harriet Brettle and Team Leads
9:15 - 10:00	Report Status Check	Chapter leads
10:00 - 10:30	Plenary Group Discussion: Path Forward for Collaboration, Discussion on Future Projects	All
10:30 - 11:00	Break	
11:00 - 12:30	Plenary Discussion: Tech Development Concepts and Science Goals Summary	All
12:30 - 2:00	Lunch at the Keck Center	
2:00 - 3:00	<b>Small Group Working Session - Report Drafting</b>	All
3:00 - 3:30	Break	
3:30 - 4:30	Open Discussion of Final Report and Path Forward	
4:30 - 5:00	Workshop Closeout	Harriet Brettle
5:00	Institute Closes	