



Stanford Center for Position, Navigation and Time



17th Annual PNT Symposium • November 1-2, 2023 • Kavli Auditorium at SLAC

Hosts

- Leo Hollberg
- Tom Langenstein
- Sherman Lo
- Brad Parkinson
- Todd Walter

Schedule

- Wednesday, November 1
All Day
Student Presentations
Banquet Dinner & Talk
- Thursday, November 2
All Day
Invited Presentations

Invited Speakers & Topics

- **Stefanie Tompkins** — PNT from the DARPA Perspective
- **Alison Brown** — PNT as a Service (PNTaaS) leveraging Commercial SATCOM
- **Wei Lee** — PNT Effects on AI Flight Testing
- **Steve Lewis** — Operational, AGlobal and Persistent GNSS Disruption Monitoring
- **Andrew Ludlow** — A Transportable Optical Lattice Clock for State-of-the-Art Optical Timekeeping Beyond the Lab
- **Adyasha Mohanty** - Tightly Coupled Graph Neural Network and Kalman Filter for Smartphone Positioning
- **Brad Parkinson** — An Expurgated History of the Origins of the GPS Revolution on its 50th Anniversary
- **Kirsten Strandjord** — Positioning Beyond the Constellation
- **Aaron Straup Cope** — Wayfinding at SFO
- **Andrey Suskho** — Long duration balloons for sensing the atmosphere
- **Lt. Col. Robert Wray** — GPS Status

Sponsors



CIA Research **LABS**

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SPACE IS LIMITED to 160 Attendees (in person) — RSVP is REQUIRED!



Stanford's 2023 PNT Symposium - Student Speakers

November 1st - Kavli Auditorium, SLAC & Stanford Faculty Club

	~ Start Time	~mins	Invited Speaker	Affiliation	Title of Presentation
Wednesday 11/1			<i>Introductions</i>		
1	8:30 AM	15	Walter, Todd & Lo, Sherman	Stanford University	Welome Comments & Announcements
2	8:45 AM	30	Fred "Trey" Taylor	University of Colorado Boulder	Testing a Coherent Software Defined Radio Platform for Detection of Angle of Arrival of Learning Neural Priors for Online Sparse View 3D Reconstruction
3	9:15 AM	30	Alvin Sun	Stanford University	An Analysis of the 2022 Wide-Area Interference in Texas Using ADS-B and
4	9:45 AM	30	Sandeep Jada	Virginia Tech	
	10:15 AM	15	<i>Extra Question Time + Morning Break</i>		
5	10:30 AM	30	Joshua Ott	Stanford University	Adaptive Informative Path Planning with Multimodal Sensing
6	11:00 AM	30	Nina Sung	National Cheng Kung University	Integrity Monitor of Carrier-Phase-Based GBAS
7	11:30 AM	30	Shubh Gupta	Stanford University	Neural City Maps for Navigation Applications
	12:00 PM	105	<i>Extra Question Time + Lunch</i>		
8	1:45 PM	30	Samuel Low	Stanford University	Precise Distributed Satellite Navigation: Differential GPS with Sensor-Coupling for Field Test of a Deeply-Coupled LTE and GPS receiver
9	2:15 PM	30	Sam Morgan	Auburn University	Analysis of a Deeply Integrated GPS-Flight Vehicle Model for GPS Challenged
10	2:45 PM	30	Noah Miller	Auburn University	
	3:15 PM	15	<i>Extra Question Time + Afternoon Break</i>		
11	3:30 PM	30	Laura Davies	University of Colorado Boulder	Radar-based multitarget estimation for a large-scale satellite deployment
12	4:00 PM	30	Jiawei Xu	University of Colorado Boulder	Multipath Detection using Normalized Early, Prompt, Late Area (NEPLA) Method
13	4:30 PM	30	Frank Lai	Stanford University	Prototyping Integrity Monitors for PPP Fault Detections
	5:00 PM	45	<i>End Day 1 - Student Talks (Drive to Faculty Club)</i>		
	5:45 PM	90	<i>Reception & Dinner at Stanford Faculty Club</i>		
	7:15 PM		Hsu, Li-Ta	Google/Hong Kong Polytechnic	Navigating accurately in cities: Vision-sensor-aided GNSS real time kinematic

Stanford's 2023 PNT Symposium - Invited Speakers

November 2nd - Kavli Auditorium, SLAC

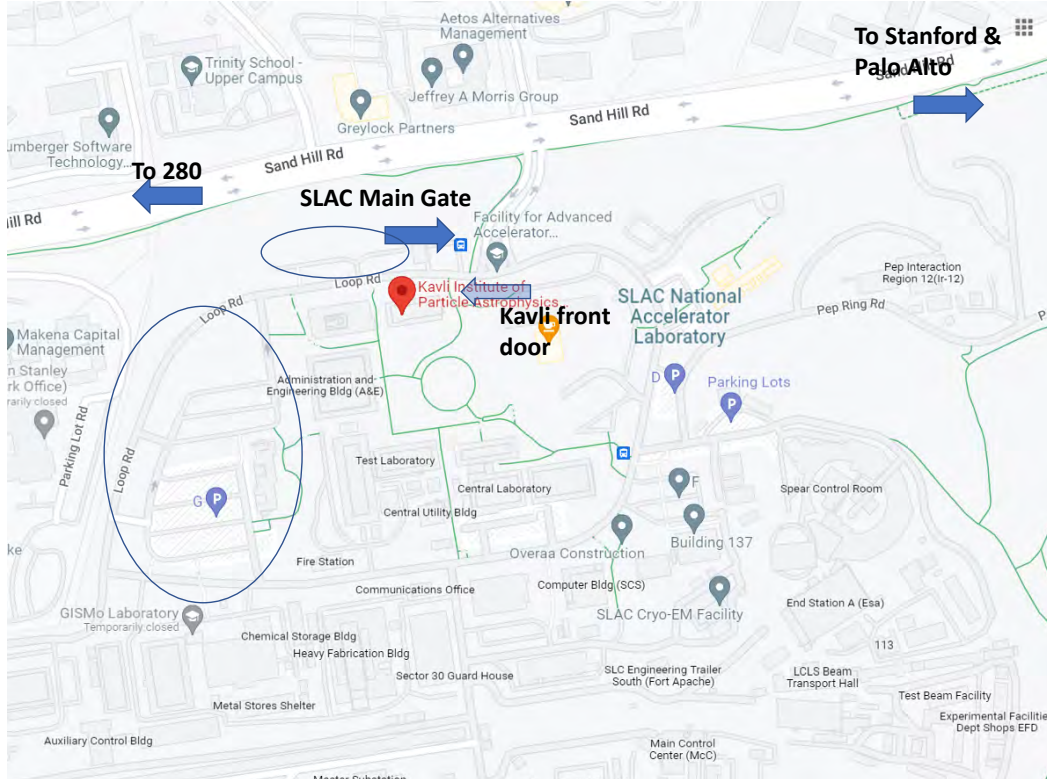
	~ Start Time	~mins	Invited Speaker	Affiliation	Title of Presentation
Thursday 11/2			<i>Reconvene</i>		
1	8:30 AM	15	Walter, Todd & Lo, Sherman	Stanford University	Welome Comments & Announcements
2	8:45 AM	30	Wray, Lt. Col. Robert	2 SOPS	GPS Operations and Performance
3	9:15 AM	30	Tompkins, Stefanie	DARPA	PNT from the DARPA Perspective
	9:45 AM	15	<i>Extra Question Time + Morning Break</i>		
4	10:00 AM	45	Parkinson, Brad	Stanford University	An Expurgated History of the Origins of the GPS Revolution on the occasion of the 50th Anniversary Gaining Approval for Full Scale Demonstration
5	10:45 AM	30	Ludlow, Andrew	NIST	A Transportable Optical Lattice Clock for State-of-the-Art Optical Timekeeping Beyond the Lab
6	11:15 AM	30	Brown, Alison	Navsys	PNT as a Service (PNTaaS) leveraging Commercial SATCOM
	11:45 AM	105	<i>Extra Question Time + Lunch</i>		
7	1:30 PM	30	Lewis, Steve	The Aerospace Corporation	Operational, Global, and Persistent GNSS Disruption Monitoring
8	2:00 PM	30	Mohanty, Adyasha	Stanford University	Tightly Coupled Graph Neural Network and Kalman Filter for Smartphone Positioning
9	2:30 PM	30	Cope, Aaron Straup	SFO	Wayfinding at SFO
	3:00 PM	15	<i>Extra Question Time + Afternoon Break</i>		
10	3:15 PM	30	Strandjord, Kirsten	University of Minnesota, Twin Cities	Positioning Beyond the Constellation
11	3:45 PM	30	Suskho, Andrey	Windborne Systems	Long duration balloons for sensing the atmosphere
12	4:15 PM	30	Lee, Wei	USAF Test Pilot School	PNT Effects on AI Flight Testing
	4:45 PM		<i>End Day 2</i>		

GENERAL INFORMATION

To go to the Kavli Building (Building 51) at SLAC, go to the SLAC main entrance. See picture for reference. The gate will ask for an ID – I will have left your name with the gate. If there are problems, contact Dana Parga or myself

PARKING

Parking at SLAC/Kavli is free. I circled the nearest parking areas to Kavli.



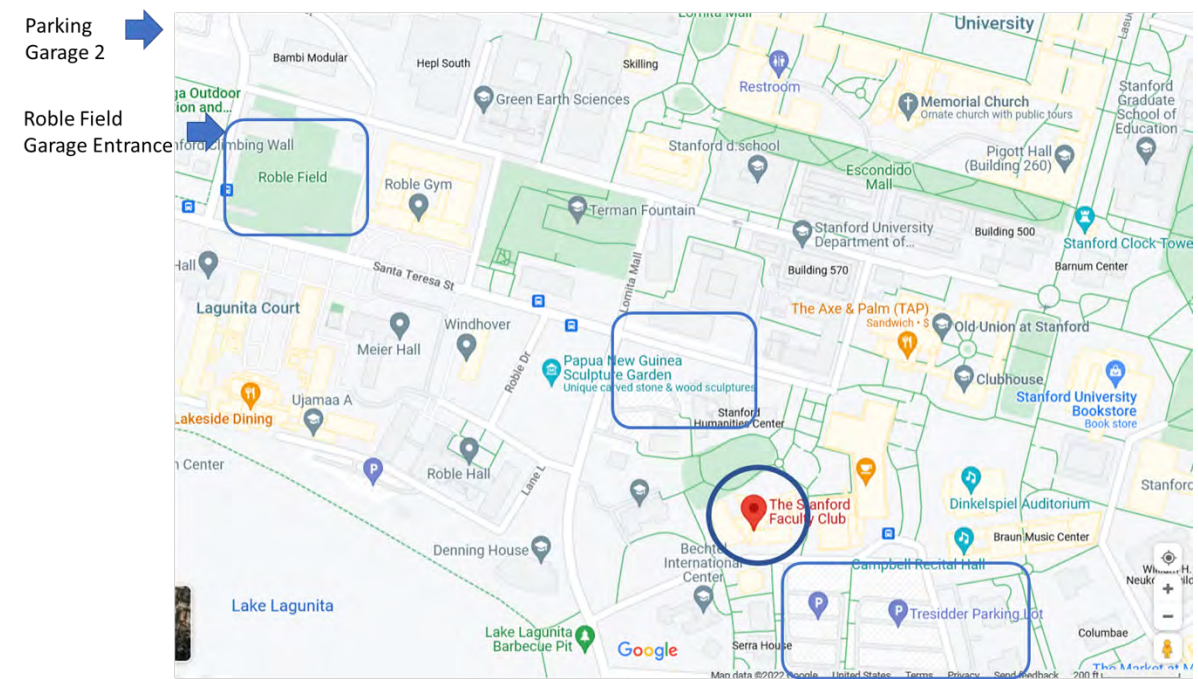
GENERAL INFORMATION

The address of the Stanford Faculty Club is

439 Lagunita Dr, Stanford, CA 94305

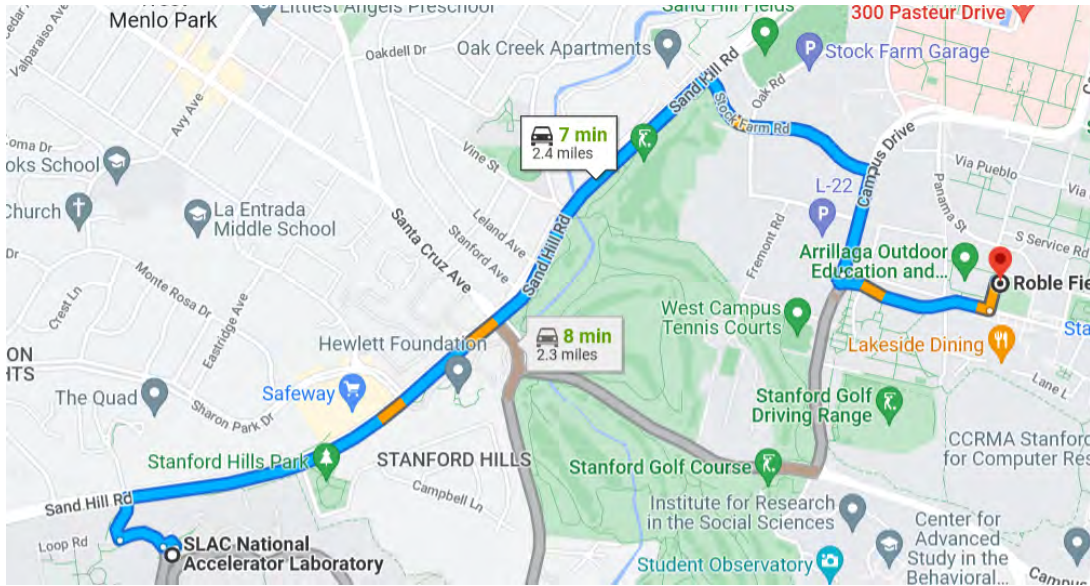
PARKING

If you park on campus after 4 PM, you do not need to pay for a visitor/A/C parking spot. Convenient parking is available in the Roble field parking garage and parking garage 2. You can also park at Tresidder lot. Roble field is an underground parking garage – see map for entrance. There is also some street side parking



DRIVING DIRECTIONS FROM SLAC TO ROBLE FIELD GARAGE

SLAC National Accelerator Laboratory
2575 Sand Hill Rd, Menlo Park, CA 94025
Take Loop Rd to Sand Hill Rd in Menlo Park (0.2 mi)
Turn right onto Sand Hill Rd (1.3 mi)
Turn right onto Stock Farm Rd (0.4 mi)
Turn right onto Campus Drive (0.2 mi)
Continue on Santa Teresa St. Drive to Via Ortega Dr
The garage entrance is on your left



General Stanford Instructions & Maps are located at
<http://www.stanford.edu/dept/visitorinfo/plan/maps.html>
https://lbre.stanford.edu/sites/default/files/visitor_map.pdf

On google maps, look for Roble Field Garage; Otherwise you can use Via Ortega Garage

CAMPUS MAP

Google campus map at <http://campus-map.stanford.edu/>