Maha Fluid Power
RESEARCH CENTER

2025 Maha Fluid Power Conference Guide

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2025 Maha Fluid Power Conference

- Event date: **May 13th and 14th**.
- Location: Purdue University, at **Wilmeth Active Learning Center (WALC)**.
- Presentations: about 25 technical presentations from Maha Fluid Power Research Center and affiliated labs.
- Networking: coffee breaks, lunches, and a conference dinner included with the conference registration.
- Companies in attendance (as of May 3rd): Bobcat, Bosch Rexroth, Bucher Hydraulics, Case New Holland, Caterpillar, Cummins, Danfoss Power Solutions, Hengli America, Moog, National Fluid Power Association, Ognibene Power, Parker Hannifin, Sargent Aerospace & Defense, Settima Meccanica, Simerics, Sun Hydraulics, Trelleborg Sealing Solutions.

For more information access https://engineering.purdue.edu/Maha/conferences/2025/2025_MahaConference

Schedule

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Tuesday, May 13		
Time	**Location**	**Event**
7:30 AM - 8:30 AM	WALC 1121	Breakfast
8:30 AM - 8:50 AM	WALC 1132	Andrea Vacca: Welcoming Remarks and Introduction
8:50 AM - 10:30 AM	WALC 1132	**Session A: Pump Simulation**
		Ajinkya Pawar: Comparative Analysis of External Gear Machine Performance Considering Deformation and Thermal Effects
		Kai Ping Qwah: A Multi-Domain Thermal Model for Simulating Performance of High-Pressure Gerotor Pumps
		Ishan Suvarna: Effects of Piston Cylinder Interface Fiction on Cylinder Block Valve Plate Interface Relability - A Numerical Analysis
		Jinhwan Lee: A Elastohydrodyanmic Simulation for Radial Piston Motor and Its Experimental Validation
		Harrison Han: Simulation of Hydrostatic Pockets Between the Cylinder Block and Valve Plate of a Piston-type Pump
10:30 AM - 10:50 AM	WALC 1121	Coffee Break
10:50 AM - 12:30 PM	WALC 1132	**Session B: System Design**
		Zihao Xu: Experimental Investigation for Multi-Common Pressure Rail Systems with Three Pressure Rails and Three-Chamber Cylinders
		Prithvi Naresh Chandiramani: A Pump Decoupled Architecture to Allow Increasing Energy Efficiency of Hydrostatic Transmission Solution based on Fixed Displacement Secondary Units
		Elena Menegatti: Advancing Hydrogen Engine Powered Excavators: A Path to Energy-Efficient and Clean Construction Machinery
		Marvin Durango: Demonstration of a Digital Twin framework for a two-actuator hydraulic application
		Petru Aurelian Simionescu: Practical Contributions to Motion Actuation in Fluid Power
12:30 PM - 1:30 PM	WALC 1121	Lunch
1:30 PM - 3:30 PM	WALC 1132	**Session C: Electrification**
		Partha Mukerjee: Recent development of battery technology at Purdue
		Mostafa Fereydoonian: Sustainability-Centric and Rare-Earth-Free Electric Machine Design
		Seshan Calapatti Suresh: A Thermal Simulation of Integrated Electro Hydraulic Actuator (iEHA)
		Jacob Joseph Lengacher: Rationale and Design for Joint Electric – Hydraulic Supply for Agricultural Applications
		Nathan Allen Featherstone: Closed-Circuit EHA for Skidsteer Linear Functions Utilizing Continuous Contact Gear Pump Technology for Low Noise
		Tiraruek Ruekamnuaychok: The Transverse Homopolar Machine: A More Robust Alternative to the Permanent Magnet AC Machine
3:30 PM - 3:50 PM	WALC 1121	Coffee Break
4:00 PM – 5:00PM		Tour of Power and Energy Systems Facilities
5:00 PM – 6:00PM		Tour of Energy and Transport Sciences Laboratory
6:30 PM - 8:30 PM	Lafayette Country Club	Dinner

Schedule

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Wednesday, May 14		
Time	**Location**	**Event**
7:30 AM - 8:30 AM	WALC 1121	Breakfast
8:30 AM - 9:10 AM	WALC 1132	**Session D: Component Design**
		Parth Manoj Tawarawala: Multi-objective Optimization-based design of Crescent Internal Gear Machines for high-pressure hydraulic applications
		Ratnam Dipakkumar Patel: SIMULATION INTEGRATED OPTIMIZATION BASED FEATURE DESIGN OF HYDRAULIC VANE MACHINE
		Harrison Han: Dynamic Simulation of Slipper Retainer Ring of an Axial Piston Pump
9:10 AM - 9:50 AM	WALC 1132	**Session E: Off-Road Vehicle Technology**
		John Evans: RowMowsim: Development of a Virtual Simulation Environment for Off-Road Vehicles Featuring High Fidelity Georeferenced Terrain and Sensor Noise
		Leonardo Franquilino: STUDY ON HYDRAULIC ARCHITECTURES FOR ELECTRIFIED SKID-STEER LOADERS
		Doni Thomas: Advancing Hydrogen Engines in Excavators with eBoosting Technology
9:50 AM - 10:10 AM	WALC 1121	Coffee Break
10:10 AM - 11:10 AM	WALC 1132	**Session F: New Applications**
		Yan Gu: Advancing Legged Robotics: Research Progress and Perspectives on Fluid Power Integration
		Austin Luke Zapata: A Generalized Lumped-Parameter Model for Analyzing External Gear Machines with Shear-Thinning Operating Fluids
		Jarrod Robins and John Murray: Demonstration of Pulse Flow Reverse Osmosis system with flow reversal capabilities
11:10 AM - 12:00 PM	WALC 1132	IAB Meeting (Closed Door)
12:00 PM - 12:30 PM	WALC 1132	Discussion on Future Activities
12:30 PM - 1:30 PM	WALC 1121	Lunch

Locations (1/3)

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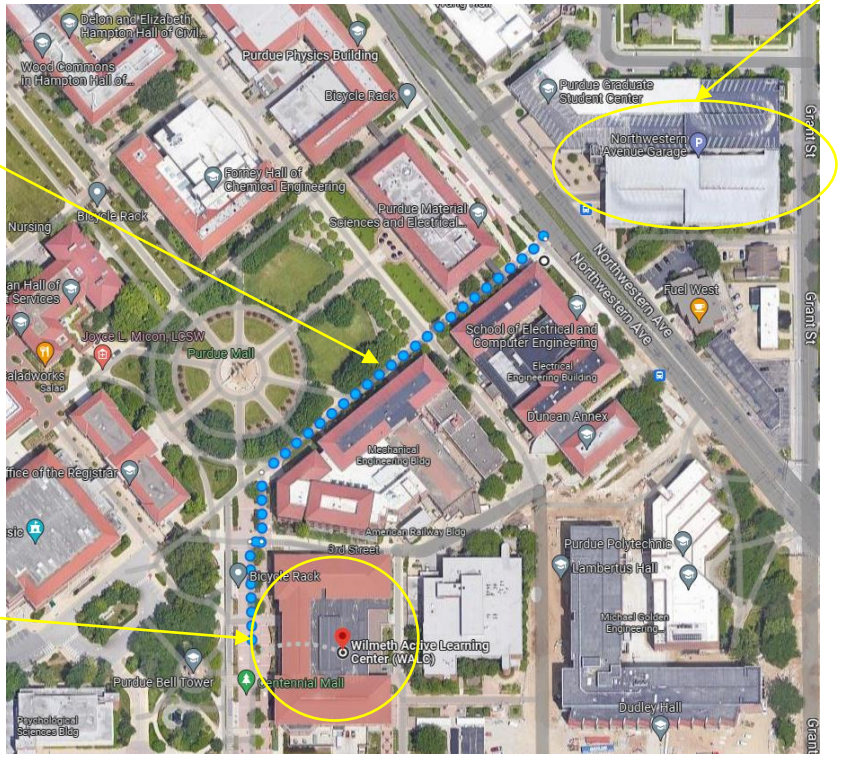
- **Technical presentations on May 13th and May 14th**:
  - WALC - 340 Centennial Mall Dr, West Lafayette, IN 47907
    Closest parking location: Northwestern Avenue Garage, ***parking permit required*** https://purdue.t2hosted.com/Account/Portal
    Alternative parking location (gated garage): Grant Street Parking Garage, ***parking permit NOT required (but still valid if you have it)***

Purdue campus

Northwestern Parking garage (permit required)

4 min walk path



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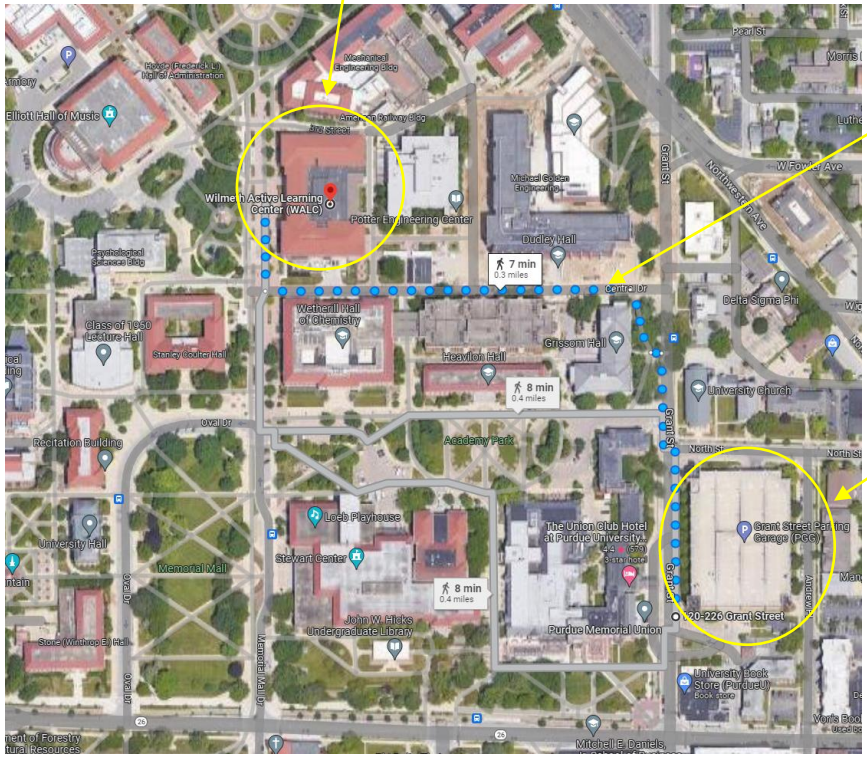

8 min walk path

Grant street parking garage (gated)

Locations (2/3)

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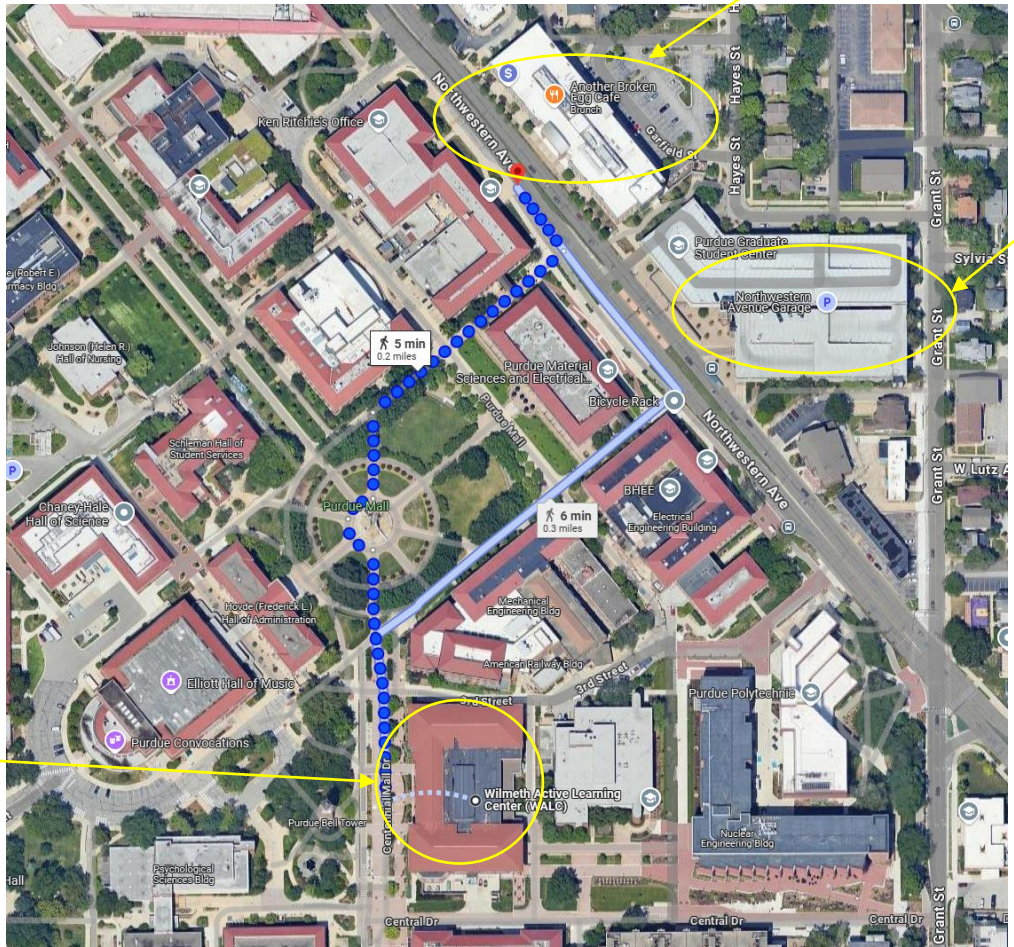
- **Lab tour 1 (May 13th, 4:00pm): Power and Energy Systems Facilities**
  https://engineering.purdue.edu/ECE/Research/Areas/PES
  Wang Hall, 516 Northwestern Ave, West Lafayette, IN 47906
  Walking distance from WALC building, where technical sessions will take place



Locations (2/3)

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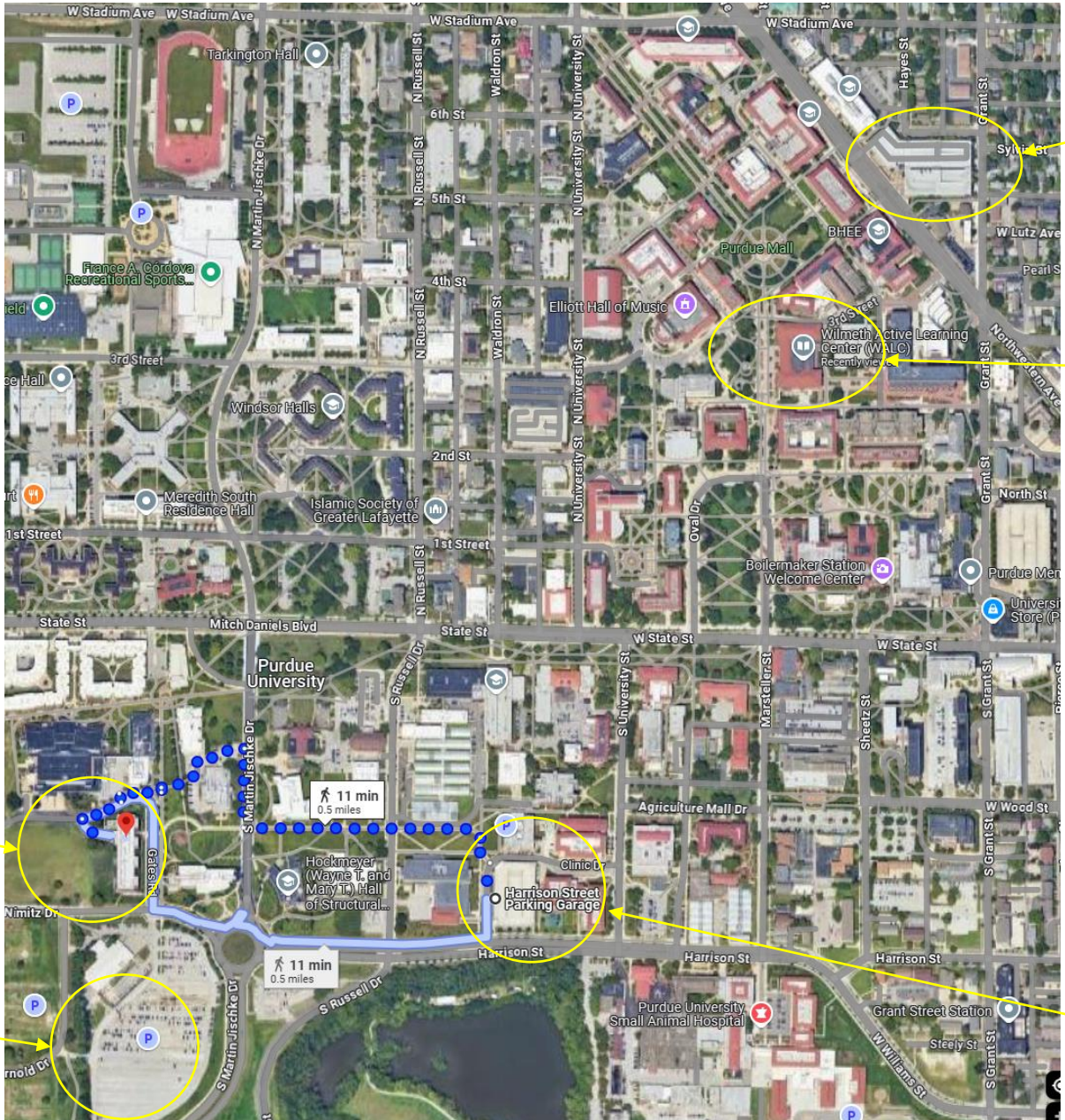
- **Lab tour 2 (May 13th, 5:00pm): Battery research**

https://engineering.purdue.edu/ETSL/

  - FLEX Lab, 205 Gates Rd, West Lafayette, IN 47906
    Suggested CAR parking: Harrison St Parking Garage 719 Clinic Dr., West Lafayette, IN, 47907

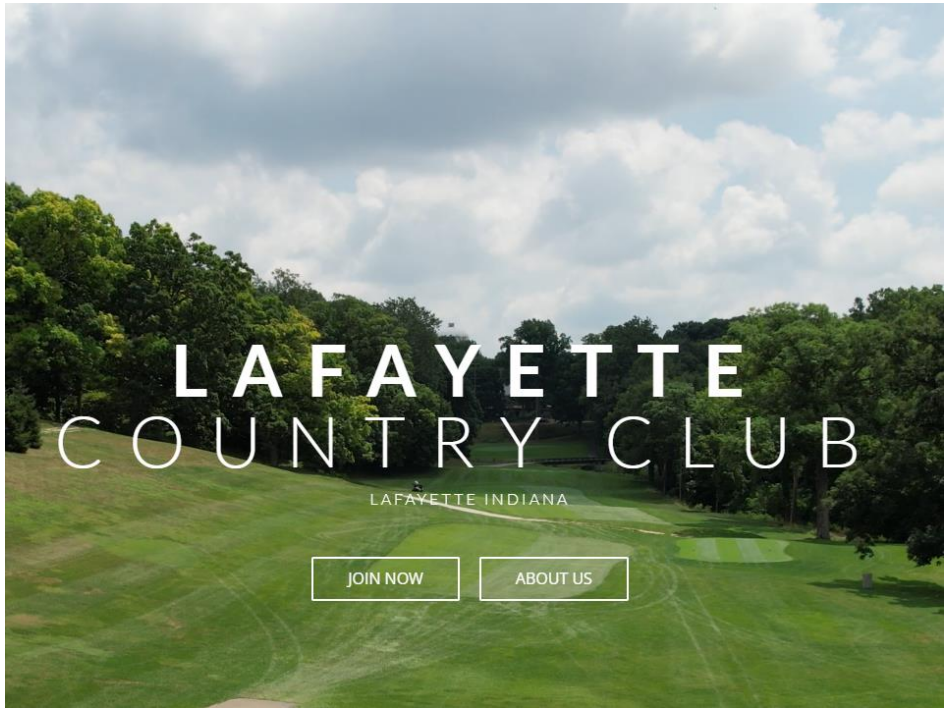
    (gated parking, no permit required)

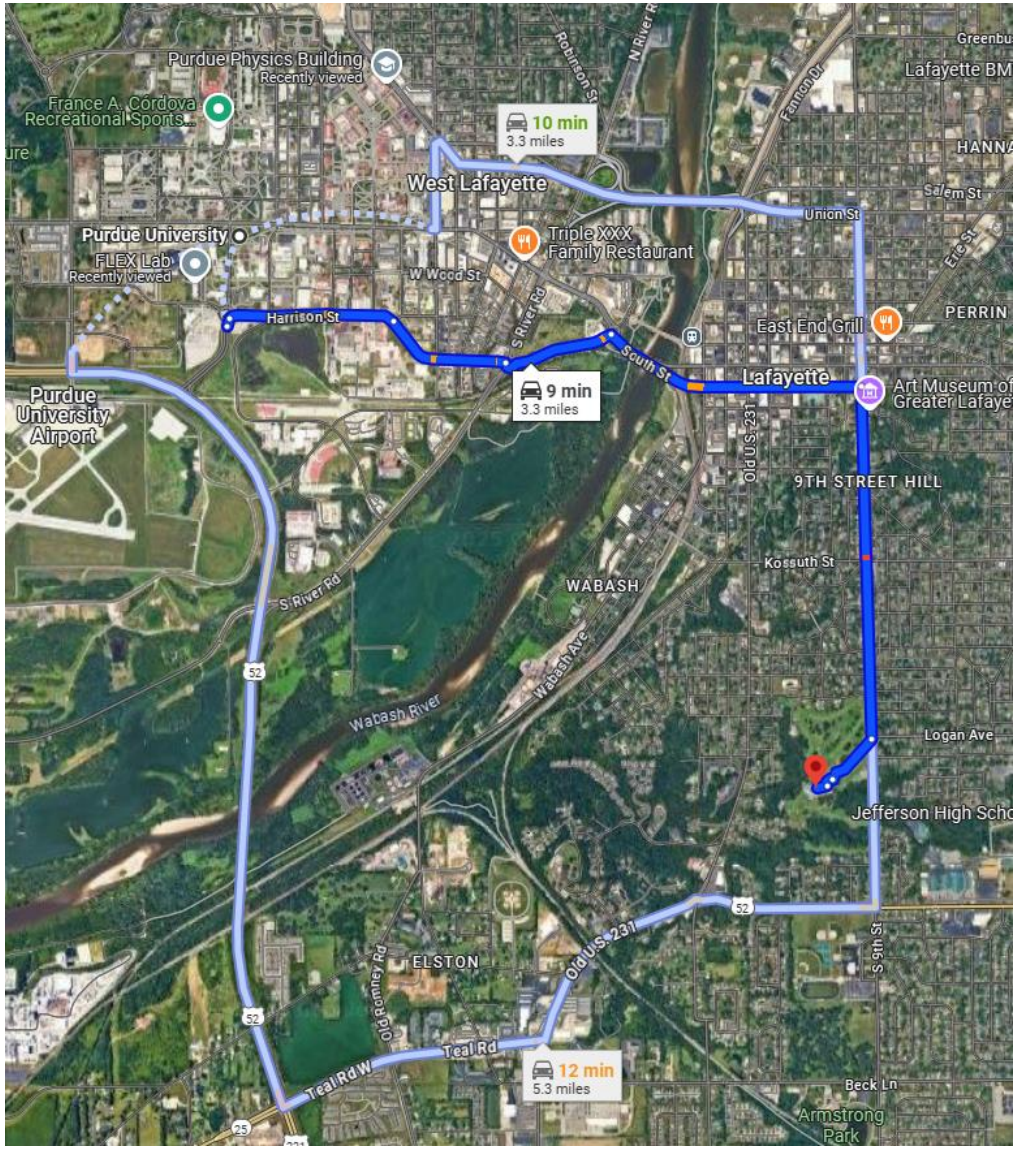


Locations (3/3)

- **May 13th at 6:30 pm, dinner at Lafayette Country Club :**
  - 1500 S 9th St., Lafayette, IN 47905
    No parking permit required

  https://lafayettecountryclub.net/





Details on parking permits

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A parking permit is needed in case you plan parking at the Northwestern Parking Garage (closest parking to WALC building).
Instead, to park at the Grant street Garage, you can simply pay onsite, when you leave the parking lot.

Single day parking permits (valid for both the two garage options) can be purchased at https://purdue.t2hosted.com/Account/Portal

Below the basic steps to follow to get a parking garage permit