



Introduction

A3D3 High-Throughput AI Methods
and Infrastructure Workshop

July 10-14 2023

Melissa Quinnan

Welcome

- Welcome to the A3D3 High-Throughput AI Methods and Infrastructure Workshop
- In-person attendance recommended but [zoom also available](#)
- This is the **public event**: all are welcome
 - Monday, Wednesday afternoon, Thursday, & Friday morning
- There is a **private, internal site visit** for A3D3 members on Tuesday and Wednesday morning
 - For A3D3 members & trainees, potential collaborators
 - Members received email link to private indico

help with this workshop- contact me (mquinnan@ucsd.edu)

help with UW/private workshop - contact Prof. Shih-Chieh Hsu (schsu@uw.edu)

Workshop Goals

"throughput (noun) : the amount of material or items passing through a system or process" – merriam-webster dictionary

- Focus on & discuss ML tools & infrastructure used in scientific research that are not just fast and efficient, but **reliable & performant**
- Goal: Foster open inter-disciplinary discussion and knowledge exchange (particularly for trainees!!)
 - Meant to be informal and open exchange
 - Inclusive to diverse career levels and disciplines
 - **There are no stupid questions!**

Wifi



WIFI Option 1: eduroam

WIFI Option 2: University of Washington

- Username: uwepe
- Password: a3d32023

Code of Conduct



As a community that strives to promote a productive, inclusive and welcoming environment:

- Treatment of **dignity** and **respect** in all forms of interaction and communication
- **Equitable** treatment of **all members** of our community

Indico

- Indico with workshop agenda and information found here:
<https://indico.cern.ch/event/1282754/>
- Talks will be recorded
- Please upload pdfs of your slides/posters ahead of time
 - If you have trouble uploading files please email me (mquinnan@ucsd.edu)

Upload: click on 1) edit box, 2) material editor, 3) upload files (must have indico account)

14:00 → 16:05 **Research Subgroup AI Tools and Developments Talks: High Energy Physics**

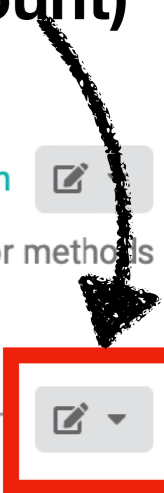
📍 Oak Hall Denny Room 

20 minute talks giving overview of research area and recent developments, and describing high-throughput ML infrastructure (gpus, fpgas,) or methods (algorithms, designs...) that have facilitated these developments.

14:00 **Javier Duarte Group (UCSD, CMS)**

🕒 25m 

Speakers: Daniel Diaz (Univ. of California San Diego (US)), Melissa Quinnan (Univ. of California San Diego (US)), Russell Denilson Marroquin Solares (Univ. of California San Diego (US))



Agenda

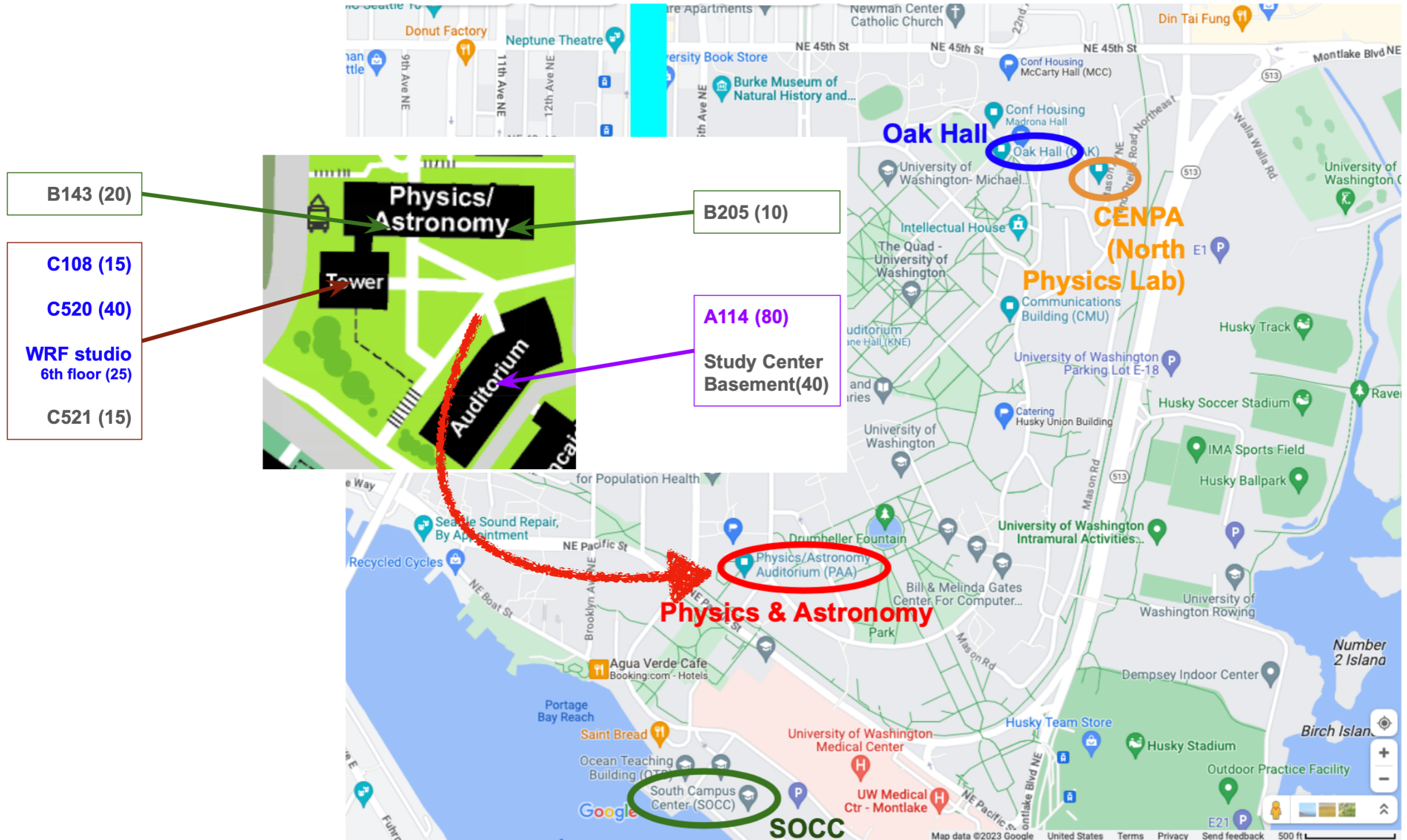
public

private

	Monday July 10	Tuesday July 11	Wednesday July 12	Thursday July 13	Friday July 14
morning session	intro+Research Talks (8:00-12:35) <i>Oak Hall Denny Room</i>	internal A3D3 workshop (8:00-1:00)	internal A3D3 workshop (8:00-12:30) private poster session (9:15-10:15)	townhalls + hackathon (8:00-12:30) <i>PAA A114 then breakout rooms C520, C521, & WRF Studio</i>	poster awards, hackathon presentations, workshop conclusion (8:00-12:00) <i>PAA A114</i>
lunch	self-organized lunch (12:10-1:30)	internal A3D3 workshop lunch (1:00-2:30)	self-organized lunch (12:30-2:00)	self-organized lunch (12:30-2:00)	
afternoon session	Research Talks (2:00-6:00) <i>Oak Hall Denny Room</i>	internal A3D3 workshop (2:30-6:30)	Flash Talks, Hackathon Intro & Lab tour (2:00-6:30) <i>PAA A114 then breakout rooms C520, C521, & WRF Studio</i>	hackathon (2:00-6:00) <i>breakout rooms C520, C521, & WRF Studio</i>	
evening	Reception + public poster session (6:00-9:00) <i>Oak Hall Denny Room</i>		workshop banquet +demos/hackathon debrief (6:30-9:00) <i>SCC Terrace</i>		

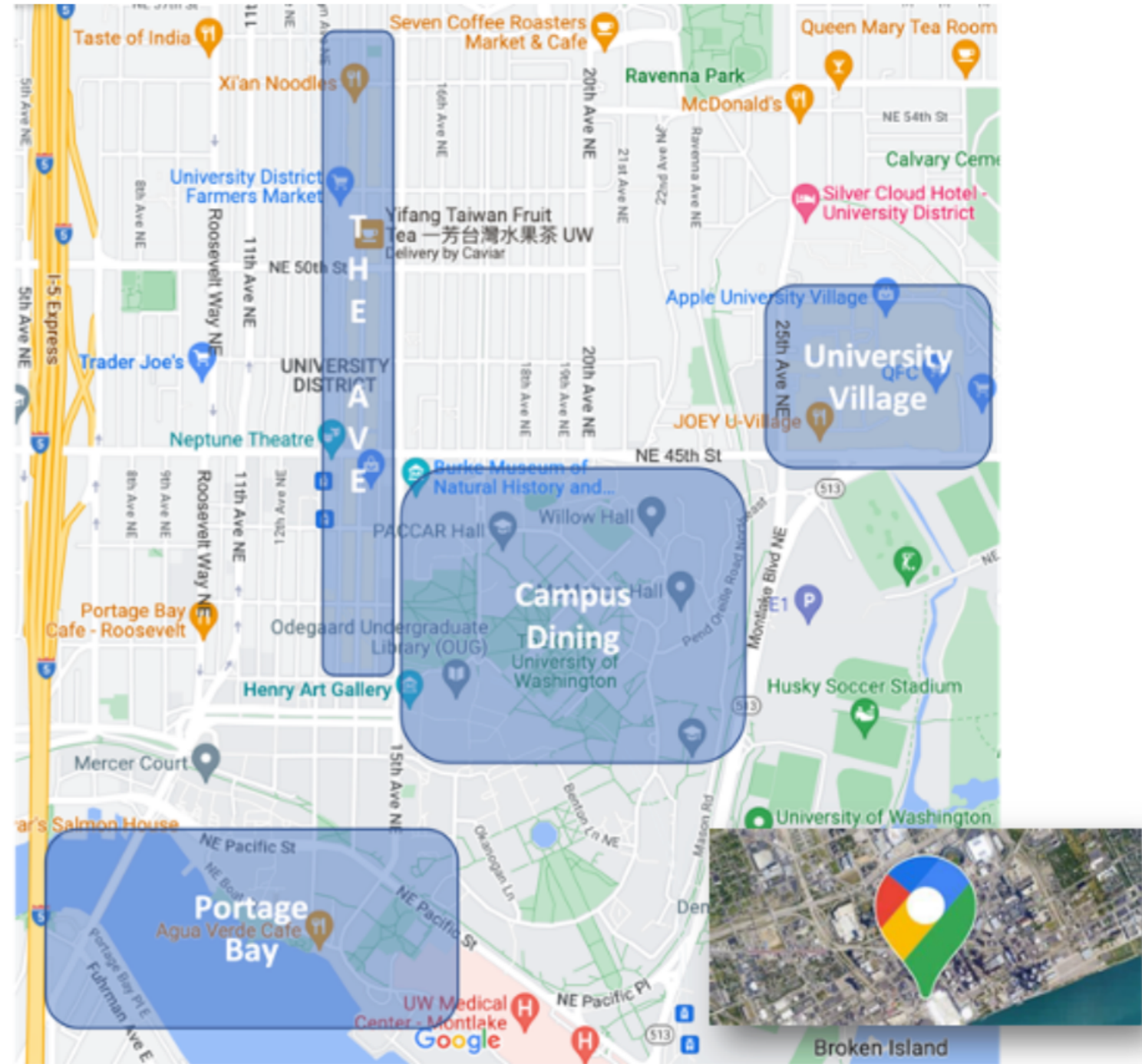
<https://indico.cern.ch/event/1282754/timetable/?view=standard>

Location



Dining Options

- You are responsible for finding your own lunch
- *Except for on Tuesday for internal A3D3 members
- Many options available on campus or in the area



Today: Research Talks

- Today: research talks per subcategory
 - neuroscience, multi-messenger astronomy (MMA), high energy physics (HEP) & hardware/algorithm co-development (HAC)
- 20 minute talks giving overview of research area and recent developments, and describing high-throughput ML infrastructure (gpus, fpgas,) or methods (algorithms, designs...) that have facilitated these developments
- 5 minutes for questions

Today: Poster Session / Reception

- Will also take place here (Oak Hall Denny Room)
 - arrival/setup @ 6pm presentations start @ 7pm
 - can setup posters in this room whenever you like
- Food & Drinks Provided
- Presenters will be split into groups so that they also have an opportunity to view other posters
- Posters will be judged based on content, layout, and presentation
 - Winners announced Friday!
- A3D3 members: second private poster session Wednesday morning!

Hackathon (Wed-Friday)

- You will have the option to join one of 3 projects:
 - HEP: Trigger anomaly detection
 - Neuroscience: mouse touch stimulus brain signals
 - MMA: telescope (ZTF) source classification
- We will split groups into roughly even sizes and encourage people to participate in projects not related to their own discipline
- Goal of the hackathon is to define and present a project strategy
 - These strategies will be evaluated and a prize given to the most innovative and well defined project
 - We encourage hackathon projects to continue (especially among postbacs/students) over the course of the next year to be presented at the next A3D3 meetup!
- Volunteers needed to float between groups and help out/consult!

Survey + Conclusion

- Please fill out the welcome survey at your earliest convenience so we can get final attendance!
 - very brief (~1 minute)

<https://forms.gle/gLXxausPrrQDxVFb9>

- Thanks to the local and organizing committee & UW!!
- Many thanks to you for traveling through bad weather and a very warm welcome to the workshop!
- Questions?



Special Thanks: Organizing Committee



Melissa Quinnan (UCSD) (Chair)



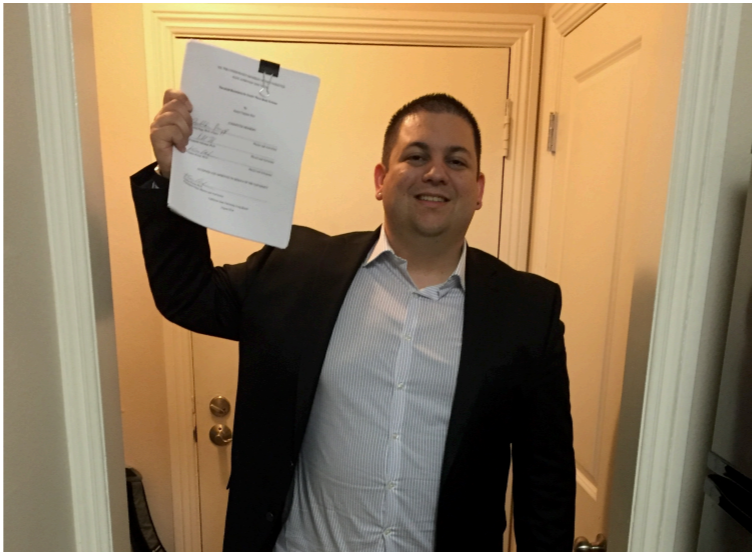
Brian Healy (UMN)



Elham E Khoda (UW)



Megan Lipton (Purdue)



Daniel Diaz (UCSD)



Janina Hakenmueller (Duke)

Special Thanks: Local Committee



Shih-Chieh Hsu
(Phys Assoc. Prof.)



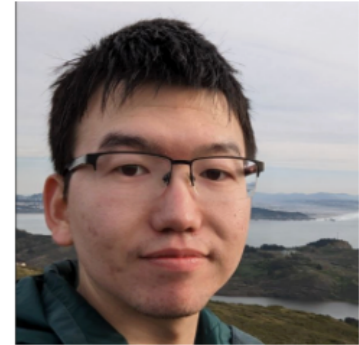
Scott Hauck
(ECE Prof)



Ali Garabaglu
(Phys PhD)



Alex Schuy
(Phys PhD)



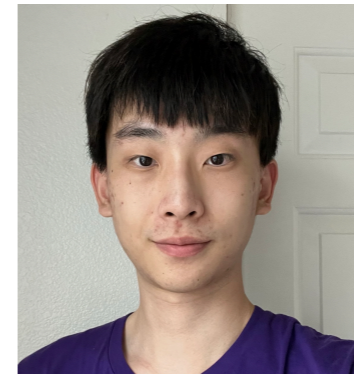
Haoran Zhao
(Phys PhD)



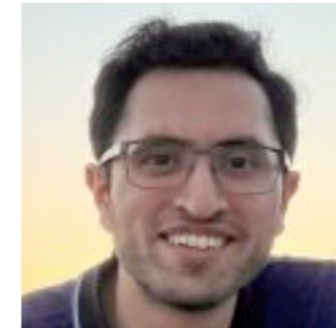
Amy Orsborn
(ECE/BioEng
Assist. Prof.)



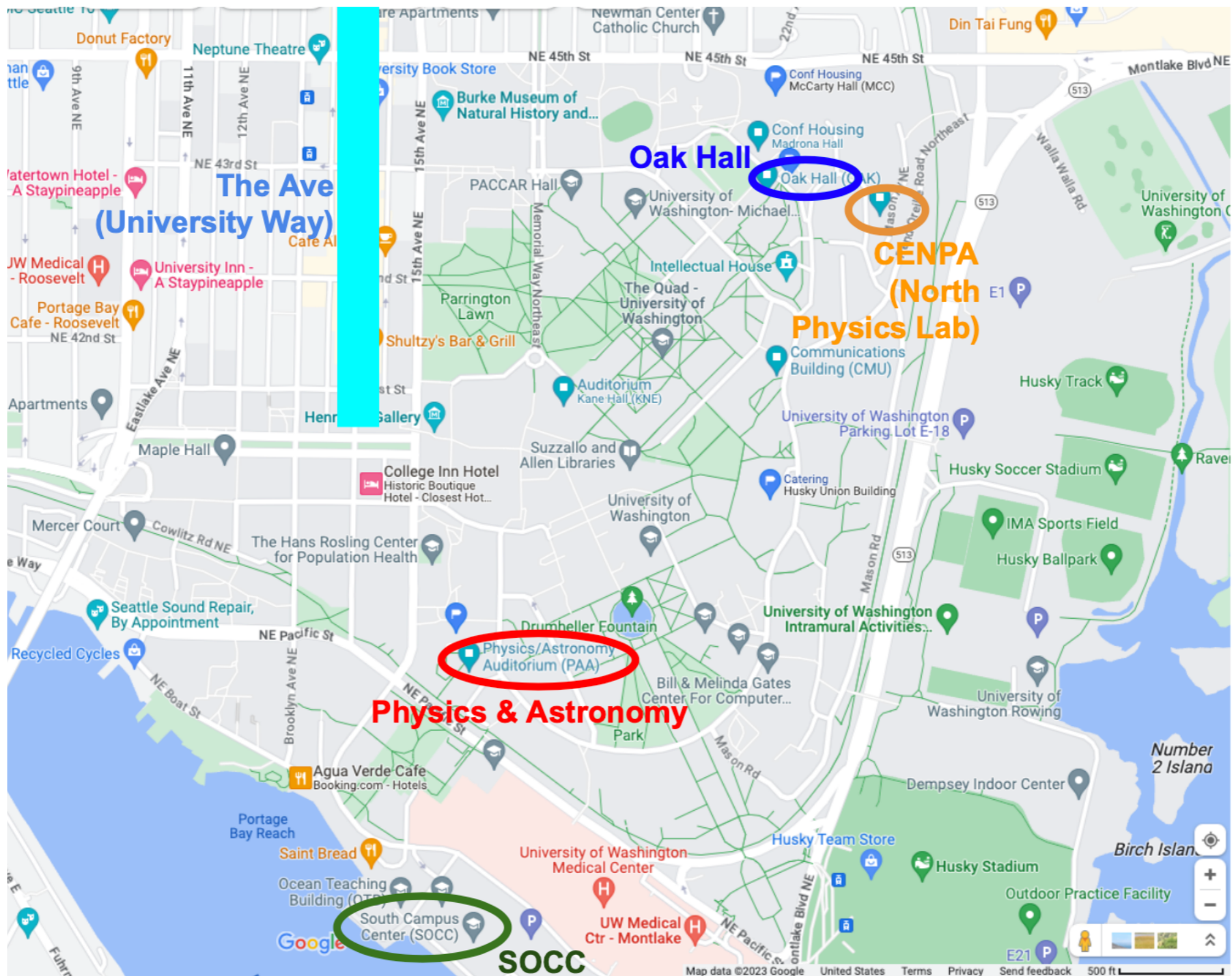
Eli Shlizerman
(ECE/AMath
Assoc. Prof.)



Xiaohan Liu
(ECE MS)



Waiz Khan
(ECE MS)



	Plenary	Breakout rooms			Overflow			
	A114 (80)	C108 (15)	C520 (40)	WRF Studio (25)	B143 (20)	B205 (10)	C521 (15)	Study Ctr (40)
Wed PM	Yes	Yes	Yes	Yes	N/A	N/A	Yes	Yes
Thu AM	Yes	Yes	Yes	N/A	Yes	Yes	Yes	Yes
Thu PM	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

