# Senior Laboratory PHYS 493L, Spring 2025

Lab Time: Tuesdays & Thursdays, 8am-10am

Lab Location: PAIS 1417

Lectures and Group Meetings: (most) Tuesdays & Thursdays,

10am-10:50am in PAIS 1405

Instructor: Tara Drake

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Offices: PAIS 2234 and CHTM 118B

Teaching Assistant: Xiaoxuan (Shane) Li

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#### **Presentations:**

**Goal**: teach your classmates about an important topic related to senior lab experiments

- A "lesson" (rather than a report of what you did)
- Sharing an expertise

#### **Details**:

- 15 minutes long
- Include information you learned in an experiment(s) and/or what you researched on your own
- Will finish with a quick <u>assignment</u> for your peers
  - 1-3 questions, can be analysis of data collected in lab
  - Students will spend 10 minutes working on it together and with you after your presentation.
  - This is meant to reenforce and practice the material in the lesson.

#### **Possible presentations:**

- Hyperfine structure in atoms
- Lasers (types of lasers, incl ECDLs)
- Detection of light (photomultiplication,
  - impedance/bandwidth, photon counting, etc.)
- Doppler broadening and laser techniques
- A better single (or few) photon experiment
- Statistics of light (shot noise, squeezed light, ...)
- Propose one to me!

### Presentation: what I'm looking for

Content:

- Clear understanding and explanations of presented physics and data
- Formulas, figures, etc. are explained well (intuitively/didactically).
  - Also, as with papers, figures and text must legible, and figures must have axes with units.
- Completeness

Presentation:

- The information is well-organized and easy for your classmates to follow.
- Slides have the appropriate amount of information (not too much on one slide).
  Slide format:
  - Each slide should be <u>numbered</u> with a descriptive <u>title</u>.
  - Each slide has the same format (background, text, color, etc.).
  - A <u>title</u>, <u>outline</u>, and <u>summary</u> slide are used.
    - A summary slide should review the 3-ish main pieces of knowledge that your classmates should take away from your presentation.

Assignment for class

#### **Practice presentations: timeline**

The presentations will be given in the last 3 weeks of class: April 15 - May 1

You are required to give me a full practice presentation and a copy of the assignment for the class 1 week before your presentation.

# Questions?

# Coming up:

Date	Tasks/Responsibilities
March 4	Guidance on Oral Presentations
March 6	Individual meetings with instructor (presentation topics)
March 11	Discussion (at 8 am!)
March 13	Oral presentation topic dues
March 17 – 21	Spring Break
April 1	Start final experiment
April 3	Manuscript 2 due
April 15 – May 1	Oral presentations
May 6 & 8	Makeup lab time, if necessary