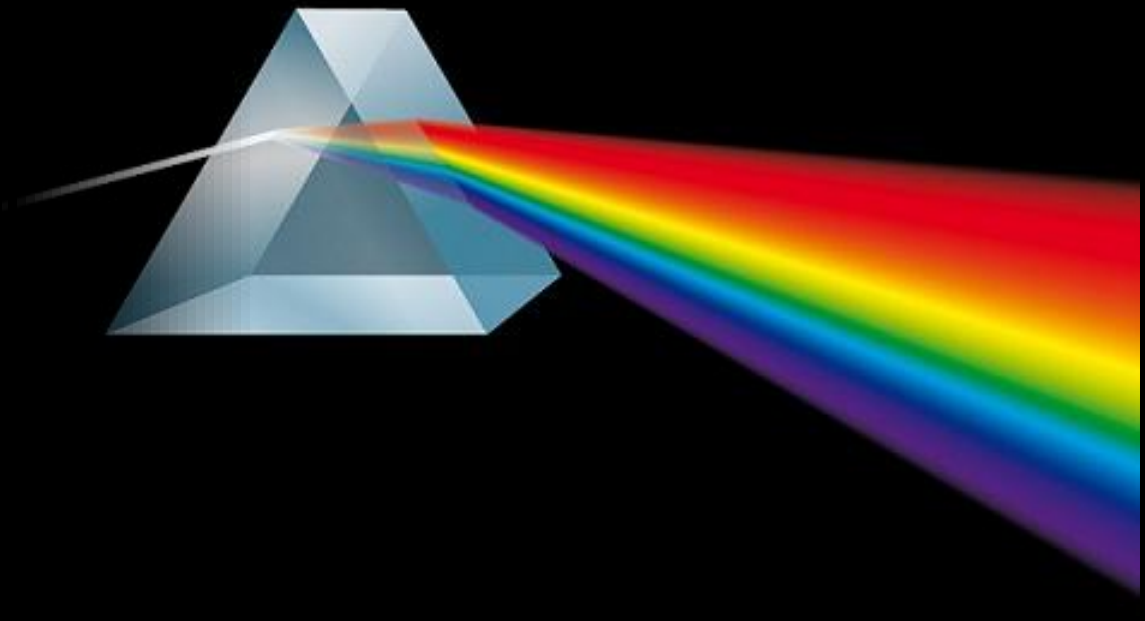
MICRO-423/424
Optics Laboratories I/II

Ye Pu



Goal of the Course

- Gain hands-on experience in optical setups, instruments, and devices
- Acquire practical skills in optical alignments and diagnosis
- Get acquainted with data distillation and reporting in efficient technical communications

Rules of Laboratory Usage

- Eating and drinking are strictly prohibited
- Ventilation must be ON during the entire stay in the lab
- Laptops should be returned to the cabinet at the end of TP
- TP setup should be covered if cover is available

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TP MODULES

- Unique course focused on experimental skills
- 17 TP modules available in total
- More under development
- 5 active TPs in spring 2025
- 5 TAs enrolled in spring 2025

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COURSE SETTING

- TPs run on Friday afternoons
- You will work in groups of 2
- Each group will do 4 TPs
- Each experiment runs in 2 sessions
- Each session lasts 4 hours
- You must prepare yourself before the TP start
- You must take lab notes
- You must deliver a report 2 weeks after finishing the TP

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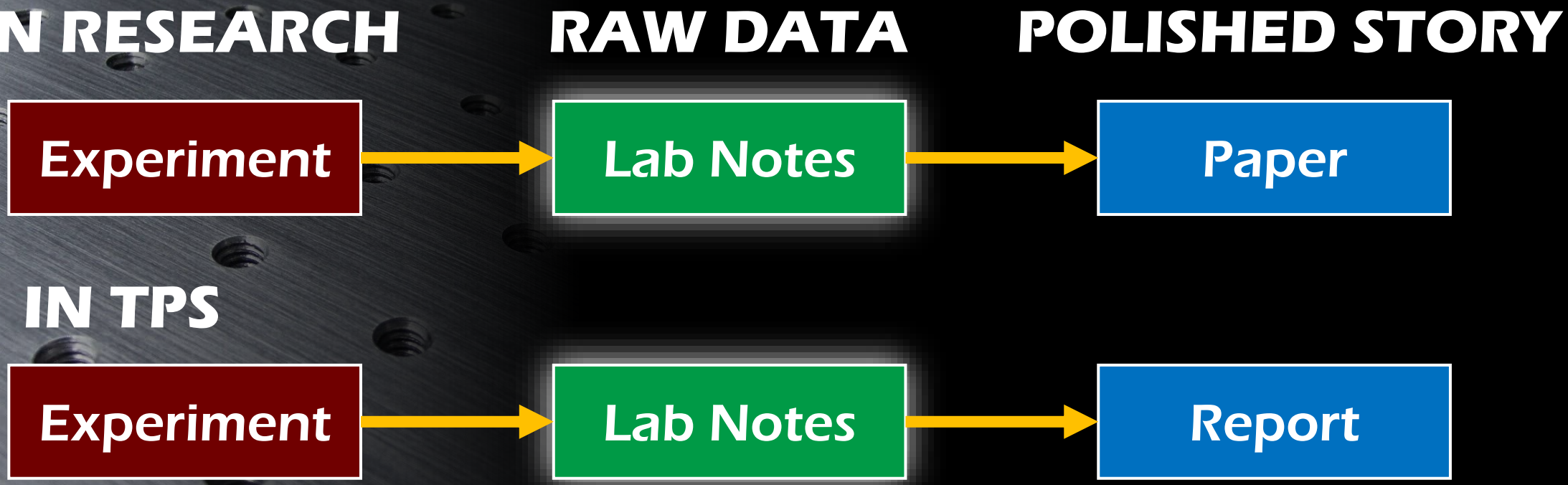

"Termites ate my data!"

Grade Evaluation

ACCOUNTING

- All components: 1-10 points
- Final score: weighted average of all components
- TP: prelab questions + experiment (40%)
- Reports + lab notes (60%)
- Extra points (10%)
- **Full score: 6.0**

TIMING

- Report/lab note due two weeks after TP completion
- Timely submission will receive TA feedback
- No feedback for late submissions
- Late submissions receive 1 point penalty from final score (10 points scale)

About the Report

JOURNAL-STYLE REPORT

- **Abstract:** highly condensed version of the report
- **Introduction:** purpose, background, theory, overview
- **Methods:** details and specifics of what was done
- **Results:** presentation of data from the TP
- **Discussion:** issues observed, source of error, accuracy analysis
- **Conclusion:** summary of what was found from the data
- **References:** claims not backed by data (books, papers, lab manuals)

Why Journal-style Report?

PURPOSE

- Skills in collaboration
- Skills in data presentation
- Skills in technical communications

What about ChatGPT and Other AI Tools?

GUIDELINES

- Adhere to current policies on academic integrity
- The report should contain students' own original work
  - Improving the text and finding references with AI is acceptable
  - AI-generated reports will be considered as academic misconduct
  - Do not generate your data with AI
  - Do not beautify your data with AI
- Limitations and risks of using generative AI should be understood
- You are responsible for the report containing AI-generated content
- Use of AI should be acknowledged

Unexpected Events

Unexpected events always happen in experiments

- **Equipment malfunction**
  - Report the event to TA and me
  - Perform theoretical calculations based on TP requirements
  - Use independent analysis rather than replicate the TP manual
- **Data loss**
  - Retaking data highly encouraged
  - If not possible, perform theoretical calculations
  - Legitimate reasons: no available timeslot, medical reasons
  - Prior approval required

Specifics in Spring 2024

Current surge of lab use

- 3 courses, 58 students in total
- Limited number of optical tables

Adapting to the situation …

- 7 students in 3 groups (one 3-member group)
- Five TPs activated
- Table sharing when possible