



MIRO
Millennium Institute for
Research in Optics

Hands on
**Science
communication**

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IV School on Light and Cold Atoms 2025

$$E=mc^2$$

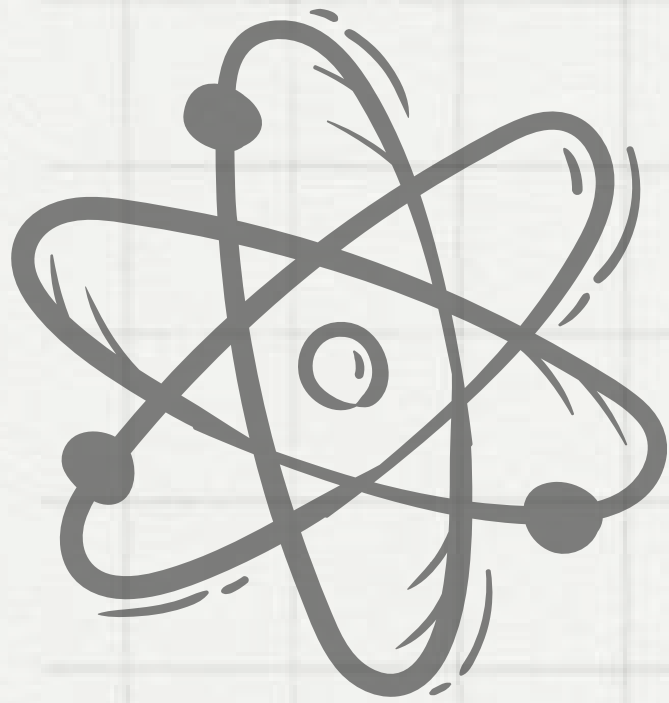
Part 2

Techniques for a good oral presentation

One clear idea

+ one clear thread

+ simple data

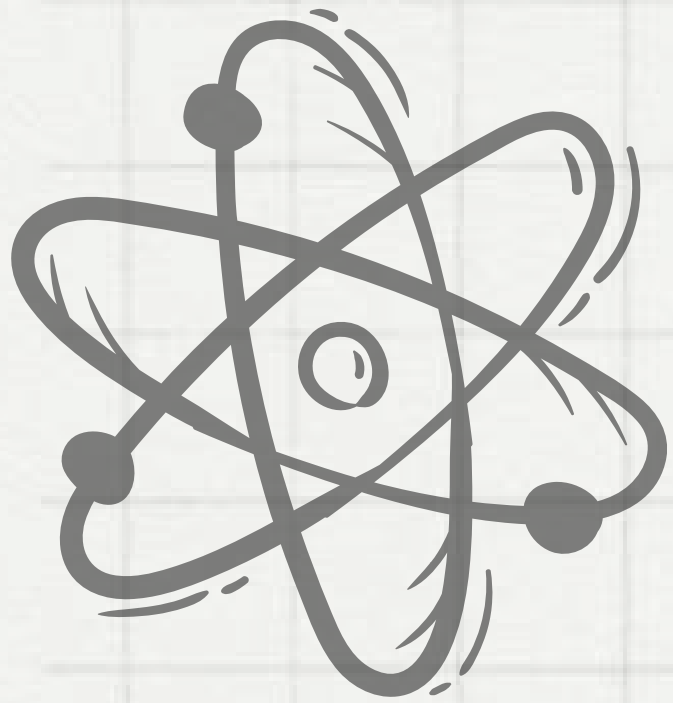


What do you remember from the best talk you've seen this year?

$$E = m \cdot c^2$$

Class objectives

- **Throughline**
- **Adjust message to the audience**
- **Voice, body, rhythm, movement**
- **High-impact slides: minimal, well-chosen information**
- **Rehearse efficiently + prepare Q&A with confidence**



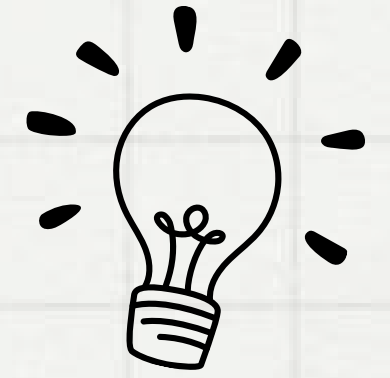
Throughline

$$E=m.c^2$$

1. **Hook:** opening hook (surprising fact, anecdote, etc.)
2. **Broaden problem:** motivation
3. **Narrow problem:** the specific issue to address
4. **Central idea**
5. **Explain how you developed your work**
6. **Outcome:** what key messages you want the audience to take home

One clear idea per slide

Scientific Story Spine



1. Before (context / gap / problem)
2. Now (your contribution, what you did, what you'll explain)
3. After (impact)

It connects with what we saw in the previous class

$$E=mc^2$$

Know your audience

- **Expert reviewer:** precision, controls, technical details; minimize metaphors and filler.
- **Examples:** applying for a fellowship, job position, or specialized seminar.
- **Colleagues but not specialists:** clear motivation, simple figures, avoid jargon.
- **Example:** seminar talk.
- **General public / industry:** usefulness, analogies, simple data, clear and appealing visuals.

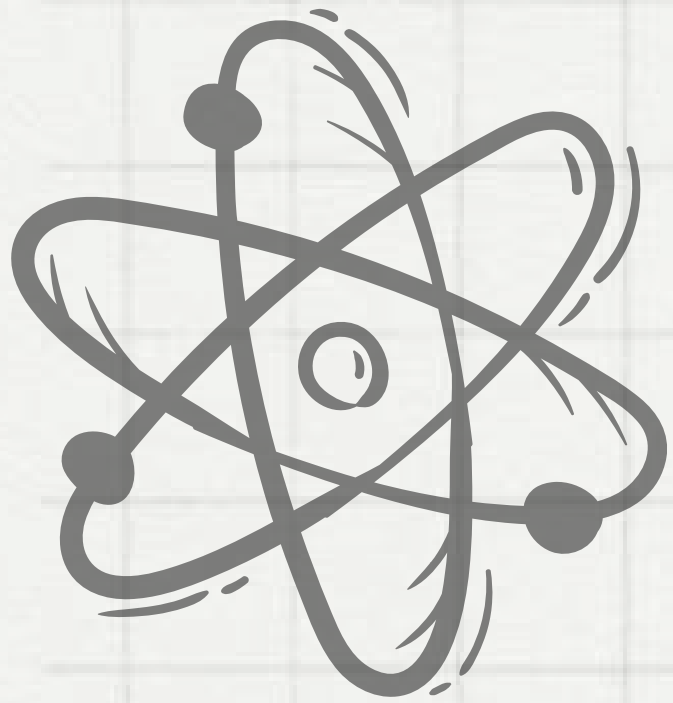
You absolutely must know who your audience is.

Transitions that maintain the throughline

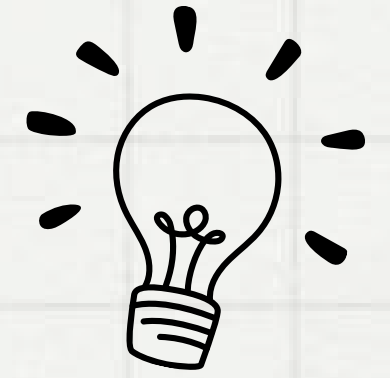
$$E=mc^2$$

- The important thing here is...
- This means that...
- That's why the next step is...

I recommend repeating the
central idea every 3-4 slides.

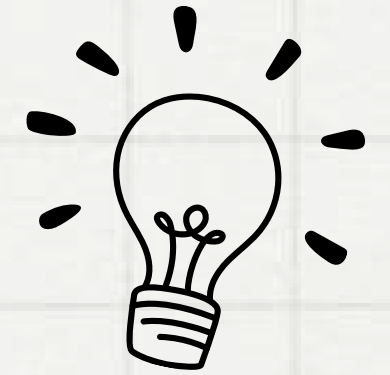


Principles for effective slides



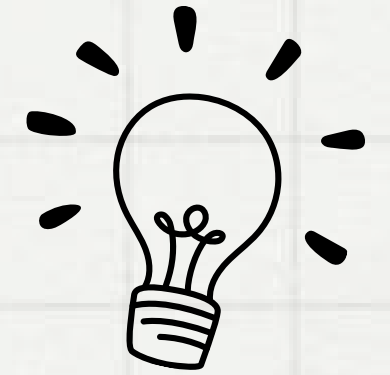
- One idea per slide
- Title with a message: "Technical noise dominates >10 kHz," "Detector saturates above XX," "Model reduces error to XX."
- Minimal text: avoid paragraphs.
- Images over text.
- Readable graphs: large axes, highlighted curve, and make sure you can explain them confidently.
- Equations: include only if they're central; otherwise, present the result in words + numbers.

Visuals that work



- **Simple diagrams:** inputs, processes, outputs — like Figure 1 in most papers.
- **Side-by-side comparisons.**
- **Direct annotations:** arrows and circles instead of distant legends.
- **Color palette:** high contrast, background variation, avoid rainbow schemes or anything tiring to the eyes.

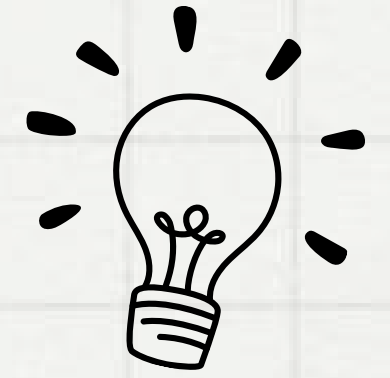
Voice:



- **Pauses:** breathe 1–2 seconds at key points.
- **Pitch:** vary your tone to emphasize ideas.
- **Cadence:** use short sentences; avoid filler words.
- **Emphasis:** pronounce key words more slowly and clearly.

Don't overuse the pointer

Body: posture and eye contact



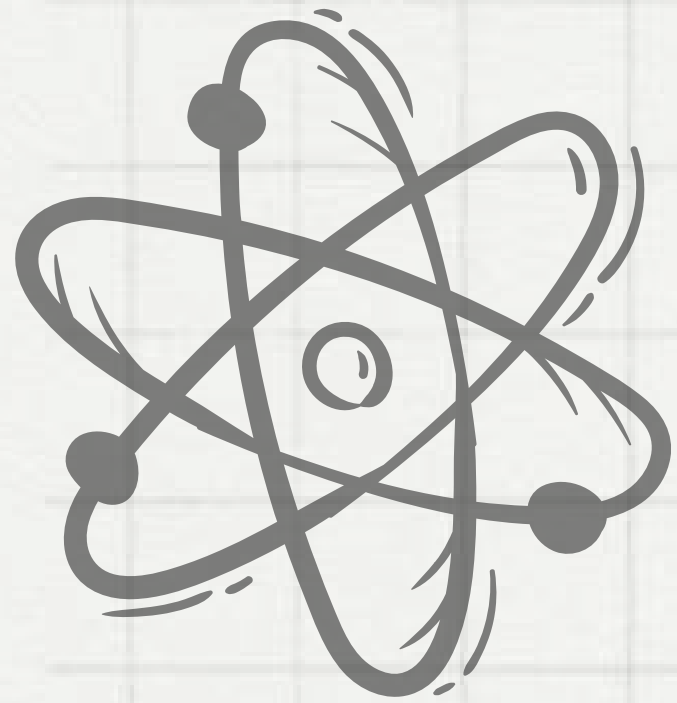
- **Neutral posture:** feet steady, shoulder-width apart.
- **Active hands:** point, count, open, articulate.
- **W-shaped gaze:** left-center-right-back — include the whole audience.
- **Move with purpose:** ideally to mark transitions (draw attention where needed).
- **Be mindful of clothing or anything that draws attention to you rather than your message.**

Practice in front of a camera

Power pose and humor

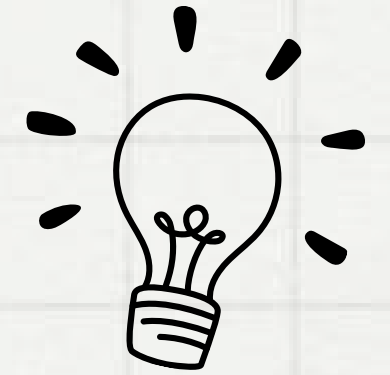
$$E=m.c^2$$

- **Power pose (2 minutes before):** a personal ritual to boost subjective confidence.
- **Humor / anecdote:** follow the 1-1-1 rule — one anecdote, one smile, one line — never at someone else's expense.



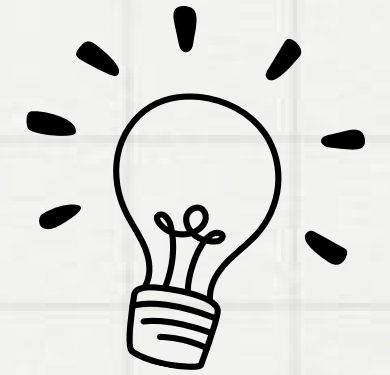
If it doesn't flow, skip it.
Authenticity > forced joke.

Smart rehearsal



- **Content:** speak the script out loud without looking; prioritize flow; use your own slides to cue yourself.
- **Timed:** full run-through + 10% extra.
- **Rehearse the first 3 minutes very well**, and the last slides.
- **Conditions:** practice with distractions (noise, interruptions, people moving, etc.).
- **Do not improvise!!**
- **Practice with people** who will give you **feedback**.

Q&A: Pyramid Technique



- Start with a **short answer**.
- Give the **supporting** data or reason.
- **Return to the central idea.**

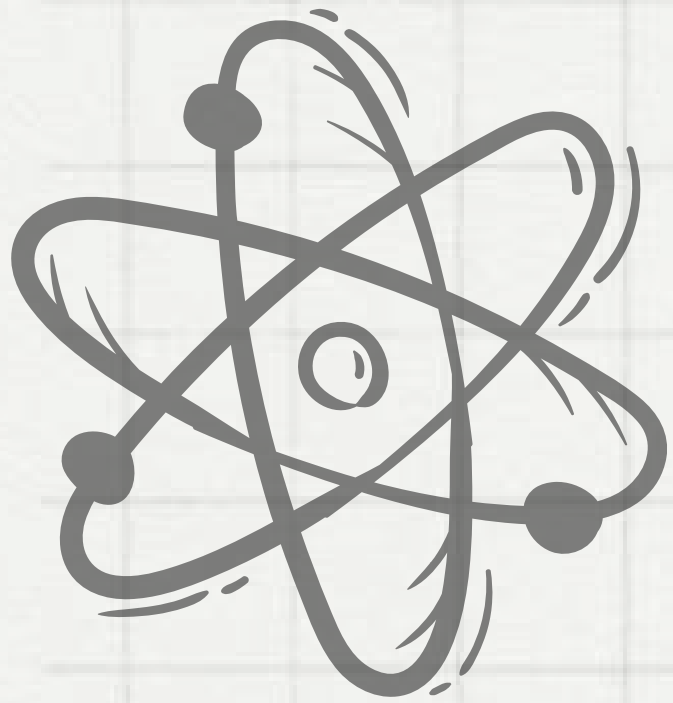
Handling situations:

- **Don't know:** offer a **reasoned conjecture** (between hypothesis and assumption, with basis) + promise to check + follow-up discussion later.
- **Off-topic:** "I'll note that and come back to it if there's time."
- **Hostile:** thank them, rephrase neutrally, answer the technical part, and suggest continuing the discussion afterward.

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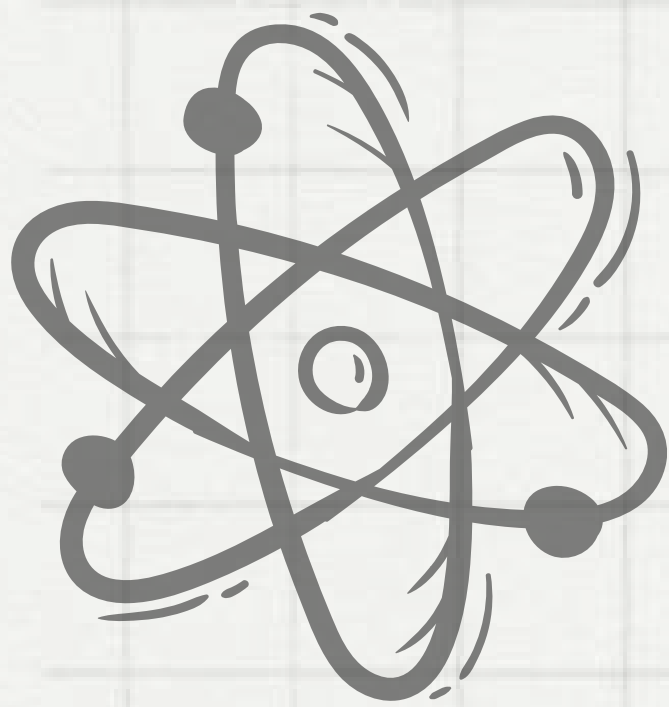
Visual tools

- QR codes.
- References on slides.
- Slide numbers.
- Check for spelling errors.
- Any graph you include — you MUST explain it and know how to explain it.



$$E = m \cdot c^2$$

Questions?



Now what?

Work on 3 minutes
presentations and present
your work!

$$E = m \cdot c^2$$

HANDS on...

