PHYS 491

Physics Seminar

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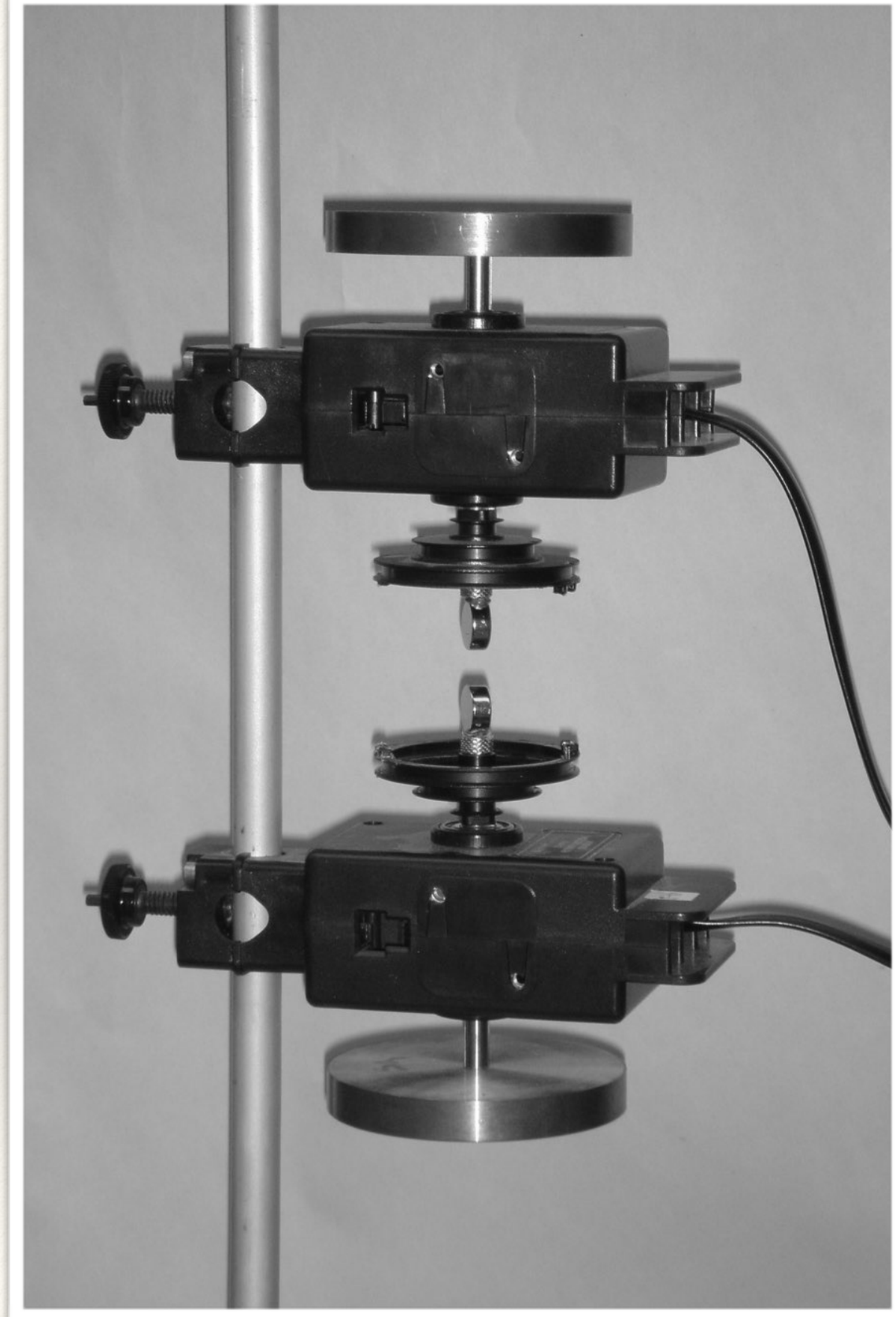
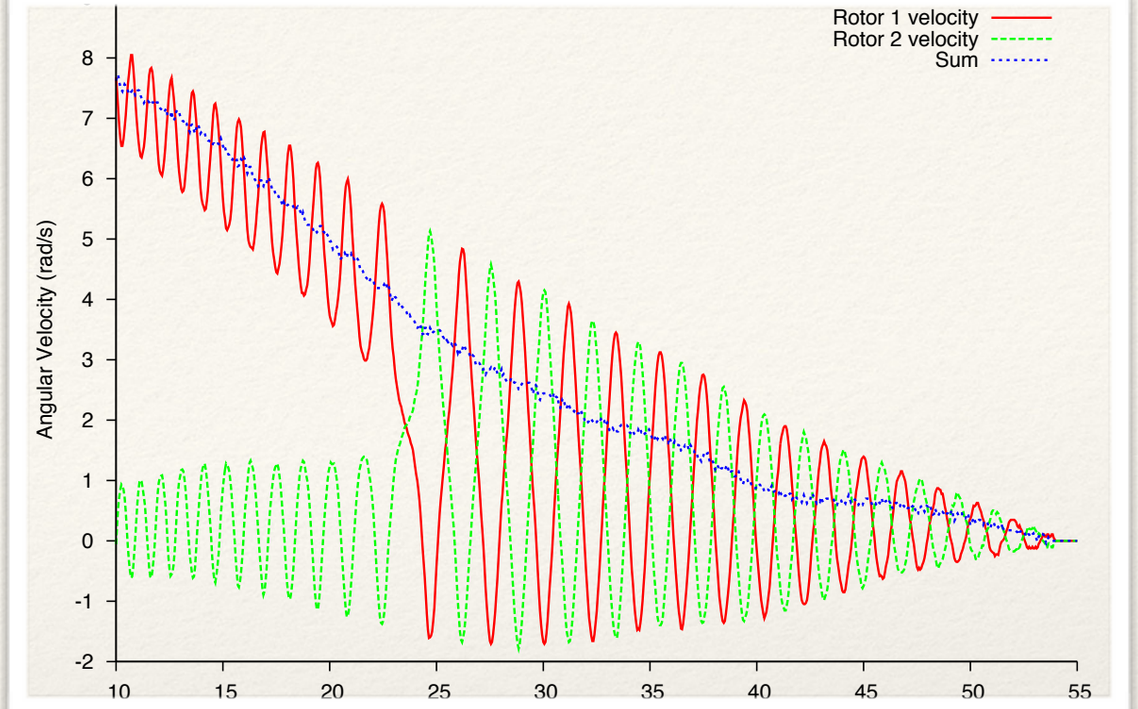
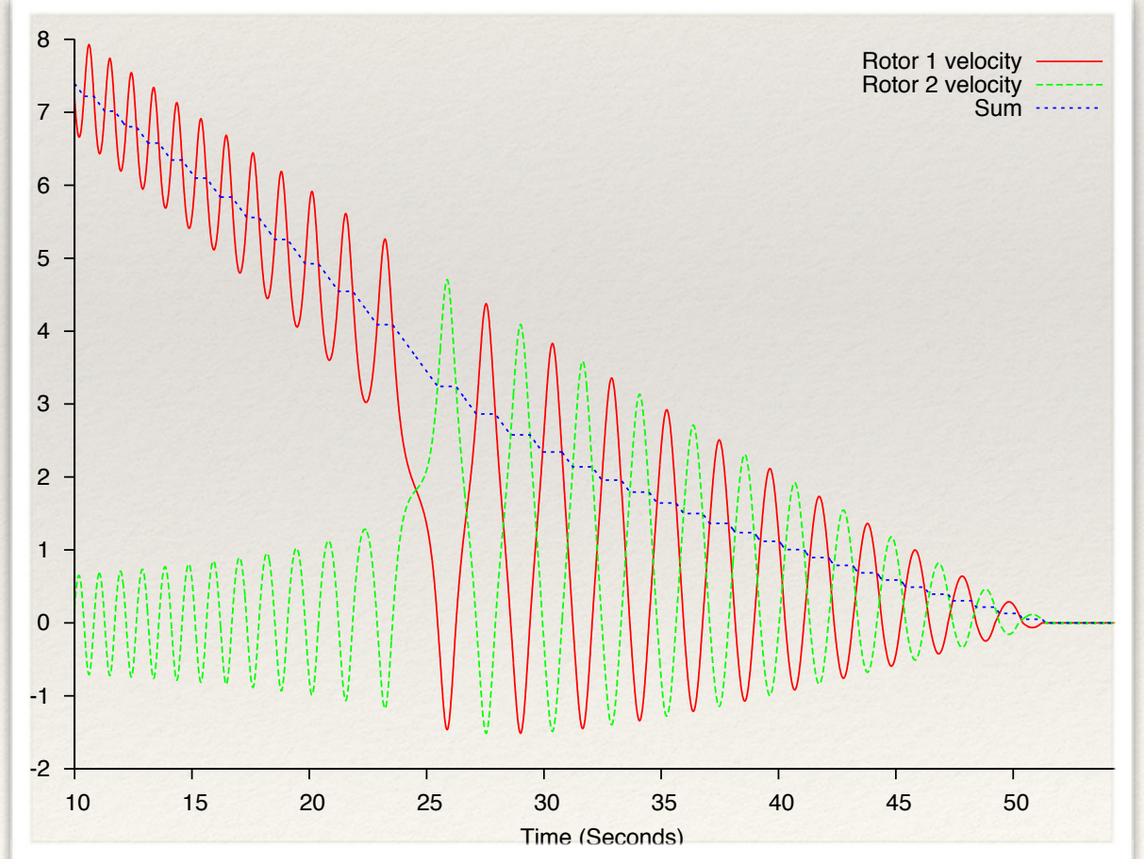
Three Questions to Address

- Why do this class at all?
- How do we do this class?
- How do we do this class *well?*

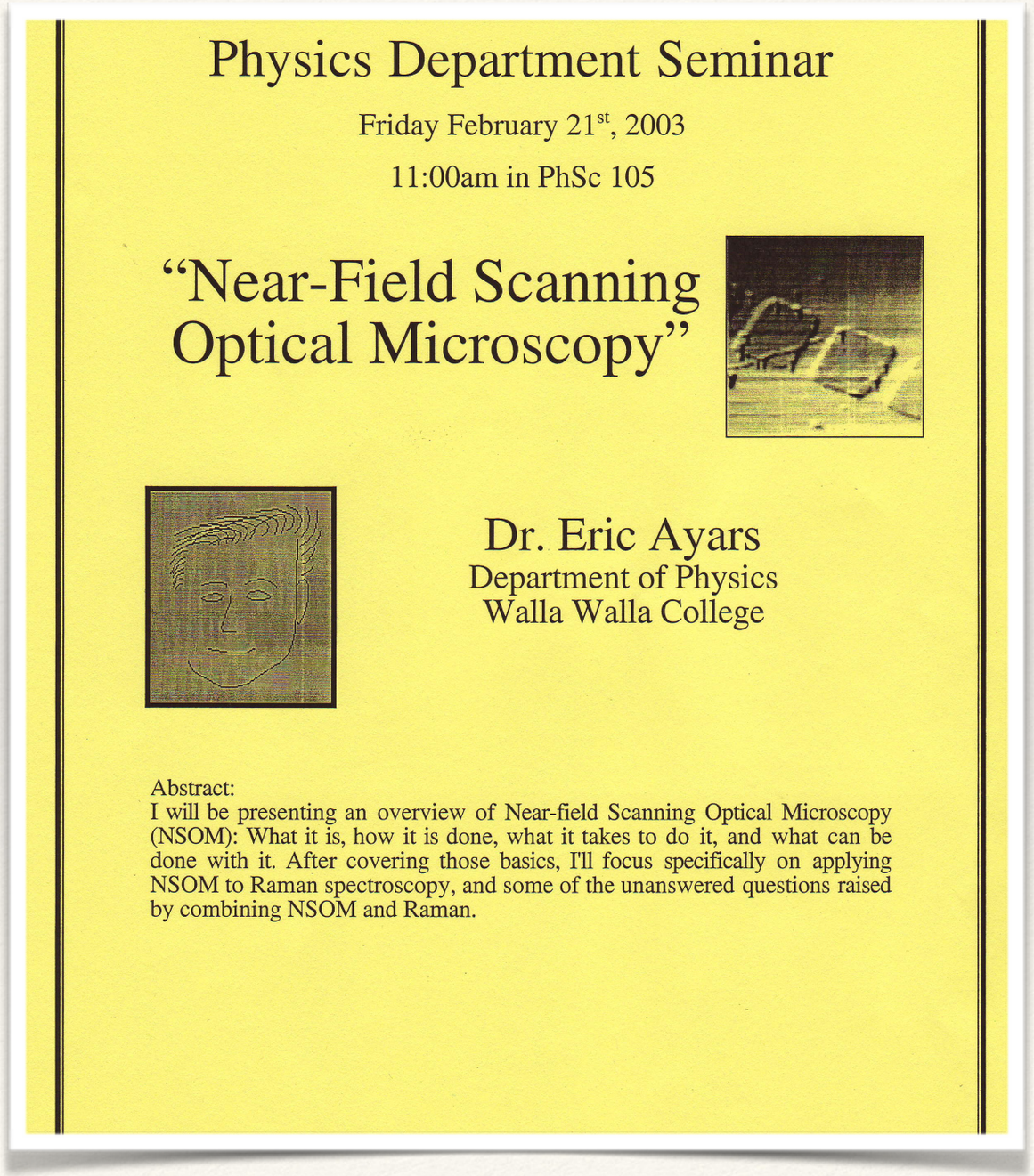



Rotor 1 velocity
Rotor 2 velocity
Sum
Angular Velocity (rad/s)
8
7
6
5
4
3
2
1
0
-1
-2
10
15
20
25
30
35
40
45
50
55


Rotor 1 velocity
Rotor 2 velocity
Sum
8
7
6
5
4
3
2
1
0
-1
-2
10
15
20
25
30
35
40
45
50
Time (Seconds)

Types of presentations

- Job interviews
- Contributed talks
- Class lectures
- Grant explanation talks
- Invited talks
- Seminars
- Nobel Prize acceptance speeches



Physics Department Seminar

Friday February 21st, 2003

11:00am in PhSc 105

"Near-Field Scanning Optical Microscopy"

Dr. Eric Ayars
Department of Physics
Walla Walla College

Abstract:
I will be presenting an overview of Near-field Scanning Optical Microscopy (NSOM): What it is, how it is done, what it takes to do it, and what can be done with it. After covering those basics, I'll focus specifically on applying NSOM to Raman spectroscopy, and some of the unanswered questions raised by combining NSOM and Raman.

Details for *this* class

- Course Webpage: physics.csuchico.edu/ayars/491
- During seminars, write a one-page critique of the speaker. Focus on the techniques of the presentation. Keep your eye out for formats and styles you would like to try in your talk! I will collect these at the end of each seminar.
- You must present a physics seminar at some time during the semester.

Deadlines

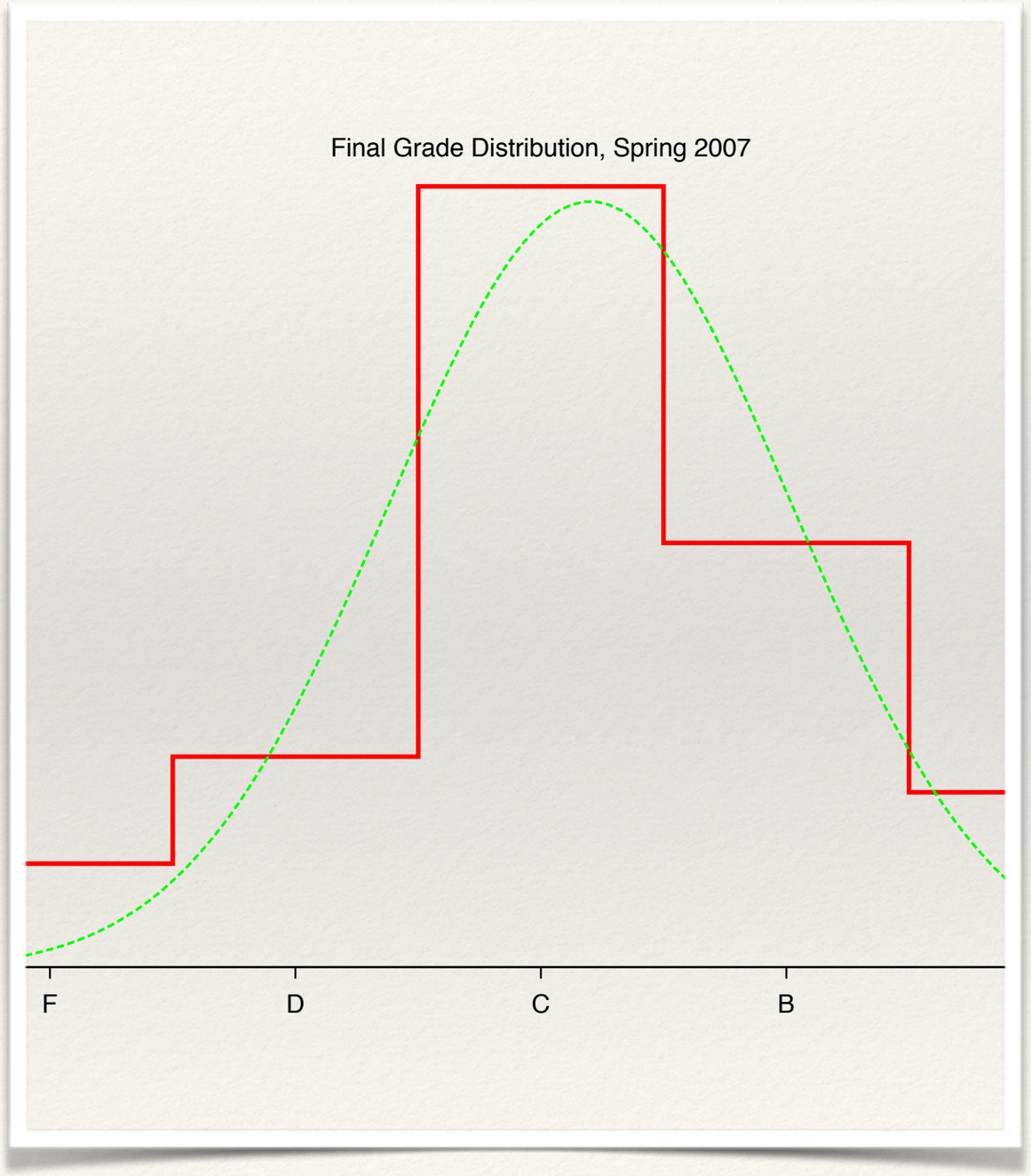
- February 14: One-page concept paper with references.
- Four Weeks out: Detailed outline with complete references.
- One week before your seminar: Practice talk.
- … Your seminar.

Available Dates

- February 14
- February 21
- … Etc… See Dr. Nelson for sign-ups!

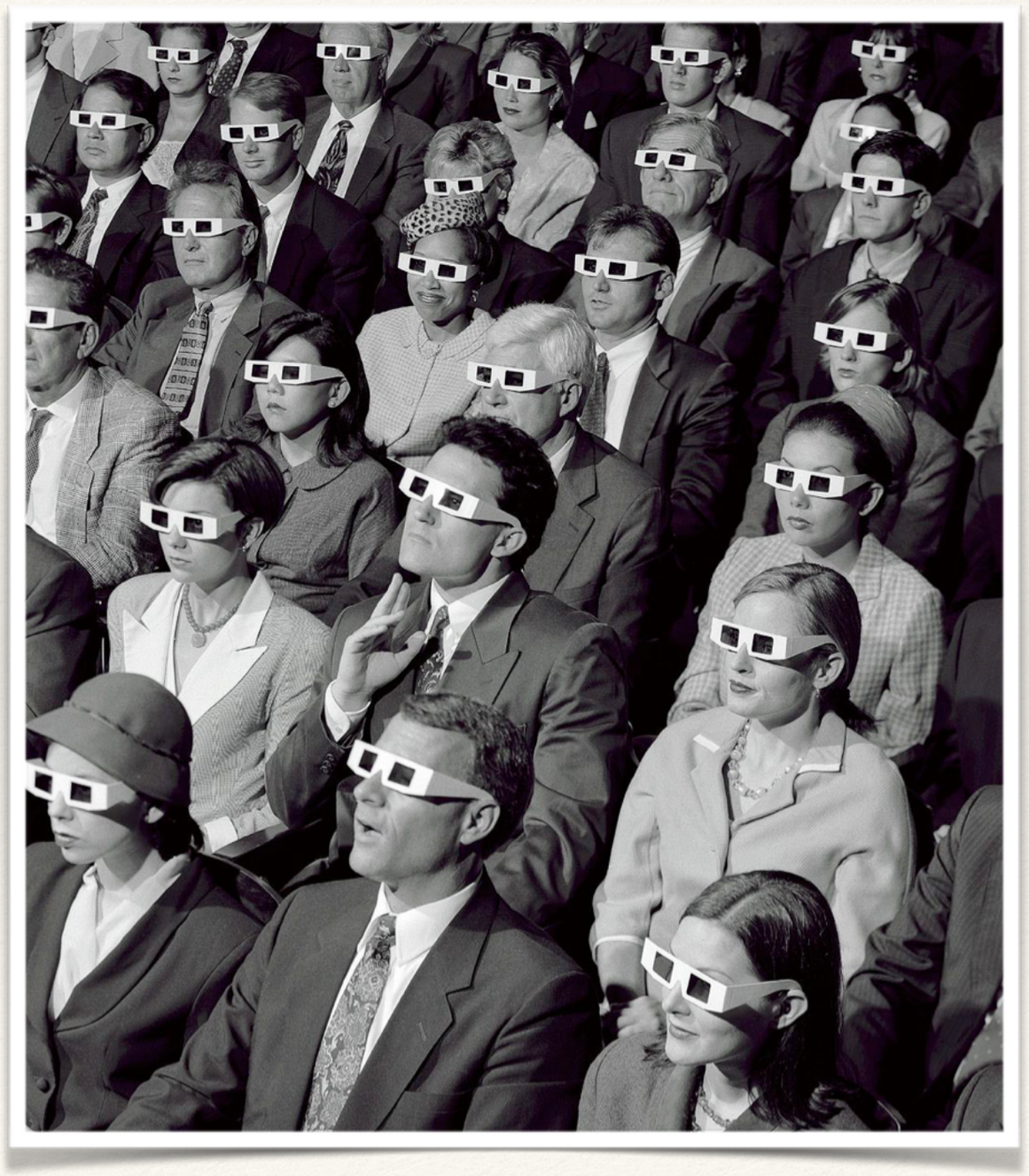
Grading

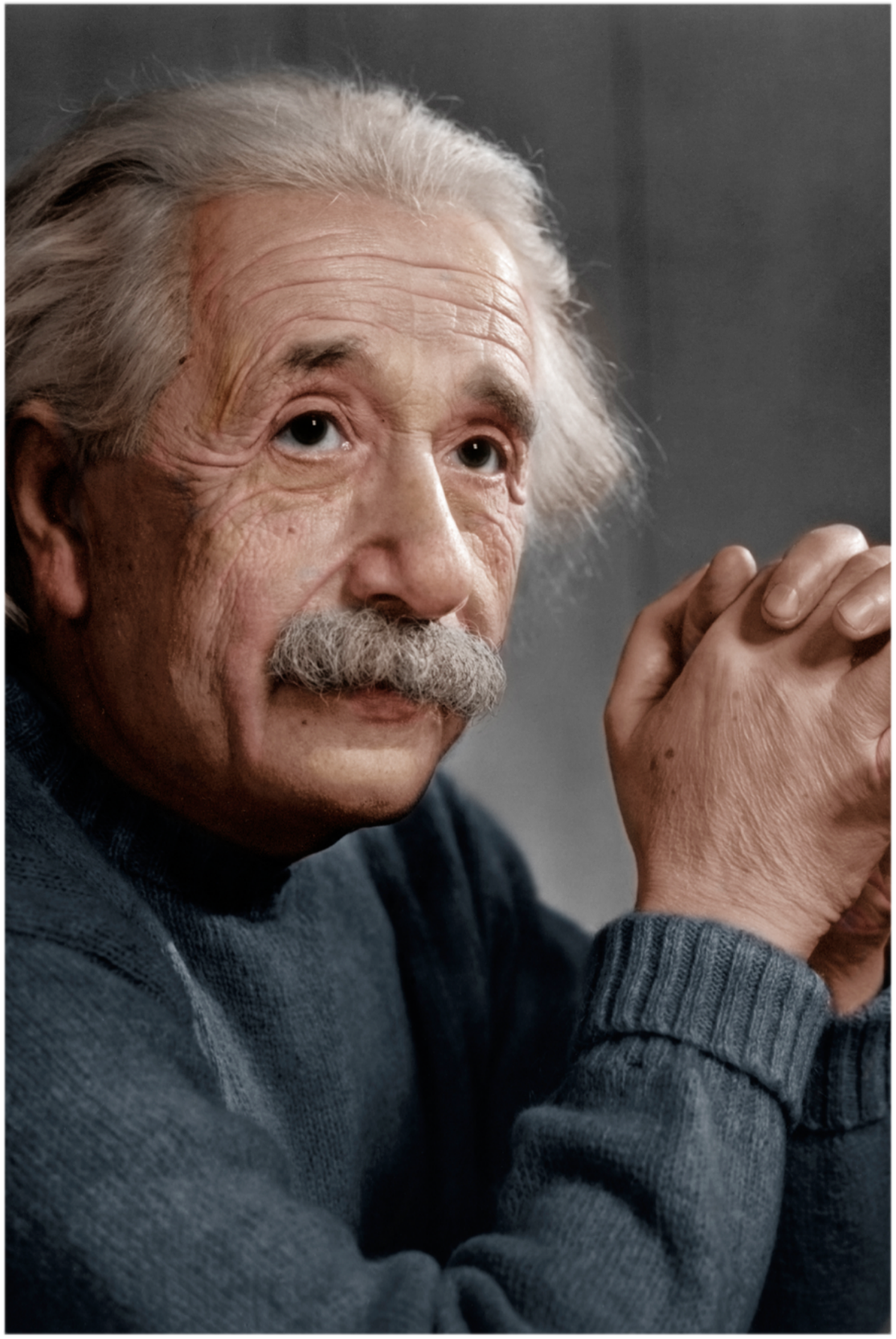
- Attendance at Seminars
- Written critiques
- Concept paper
- Outline
- Your seminar



Rule 1: Know.

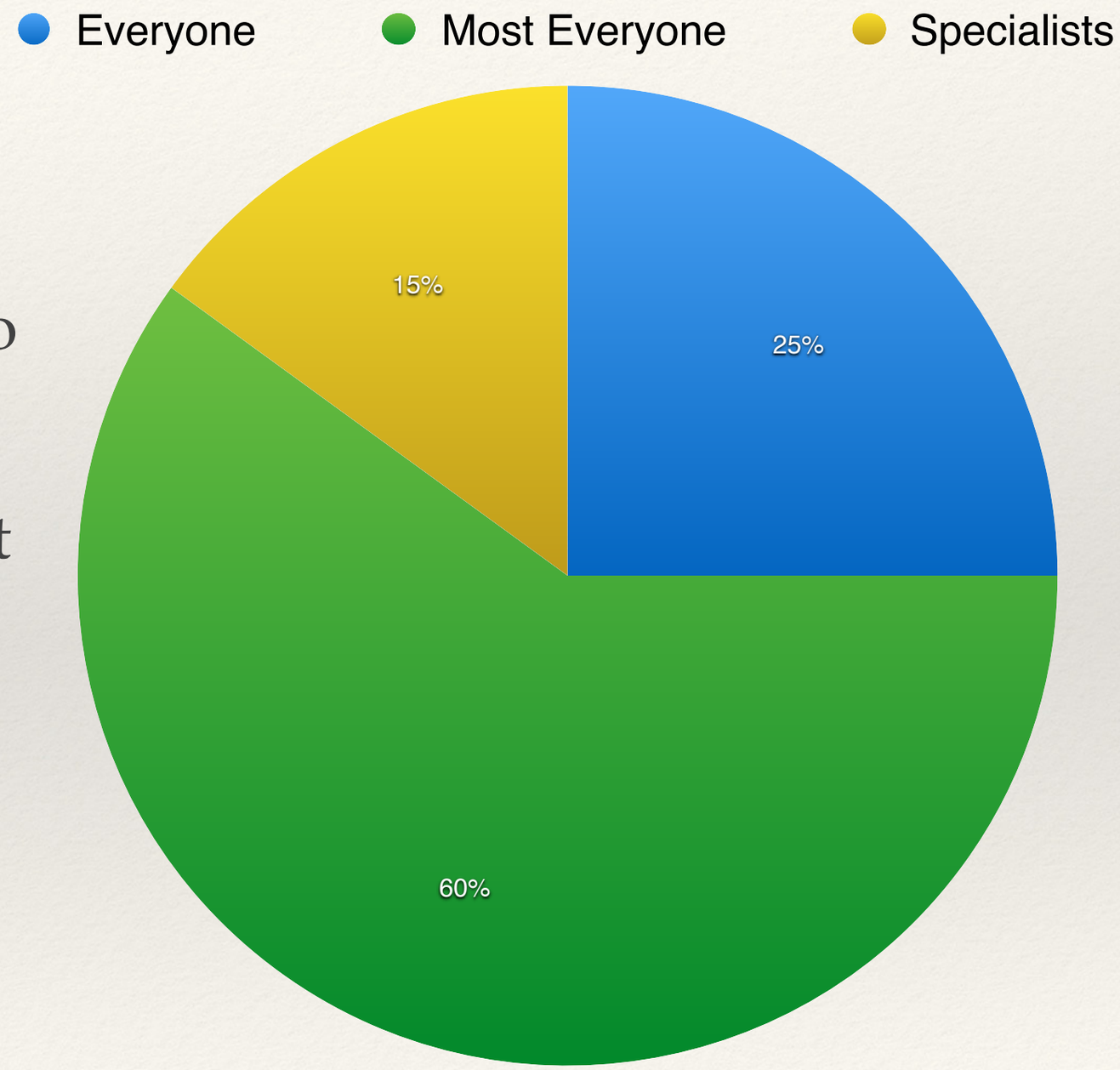
- Know your audience
- Know your message
- Know the results you want.





Good general rule:

- The first 25% of your talk should be readily accessible to your entire audience.
- The middle 60% should target non-specialist peers in the audience.
- The last 15% *at most* should target specialists.

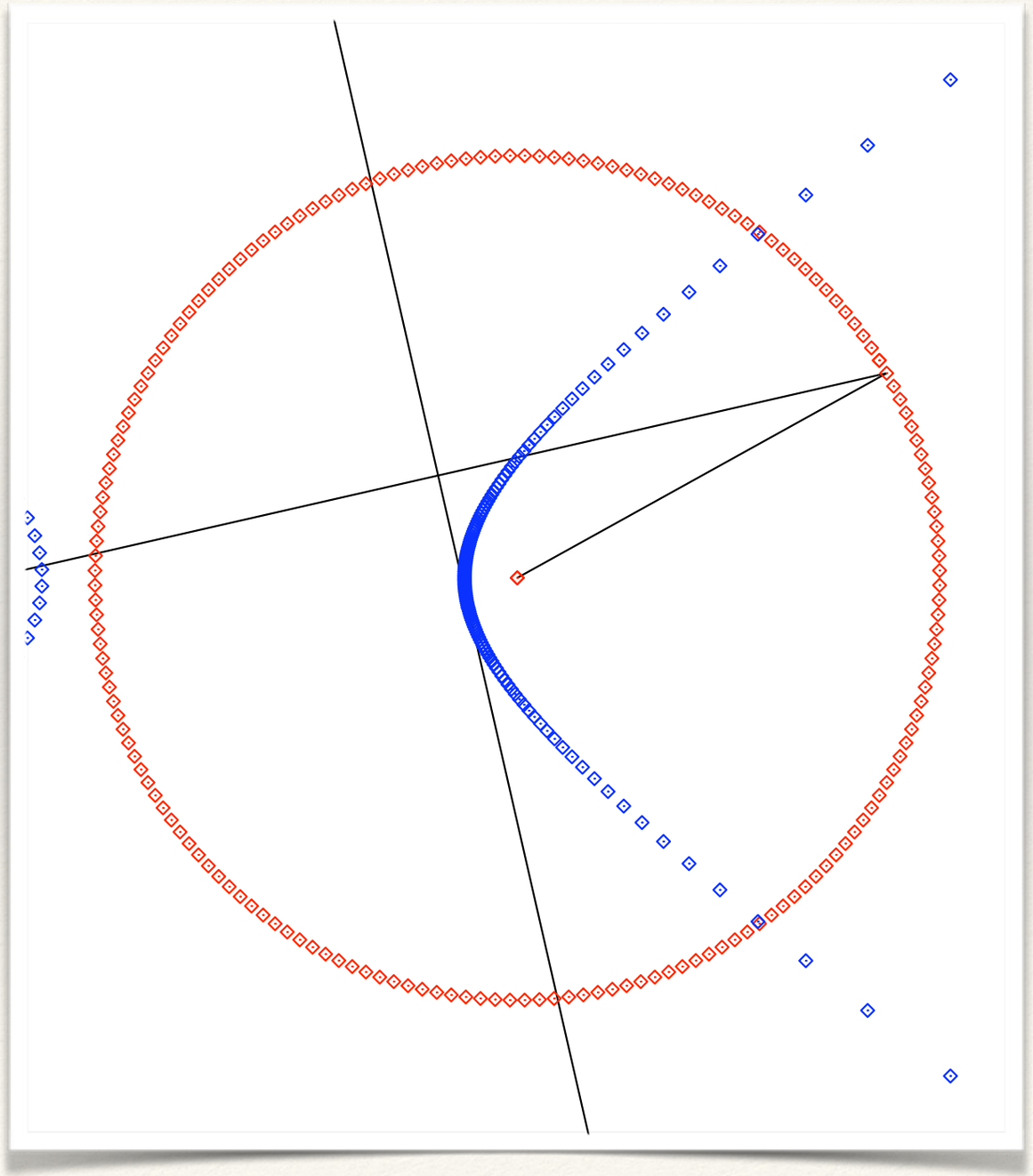


Haase's Second Law

You do not really understand a scientific phenomenon until you can explain it to your Grandmother.

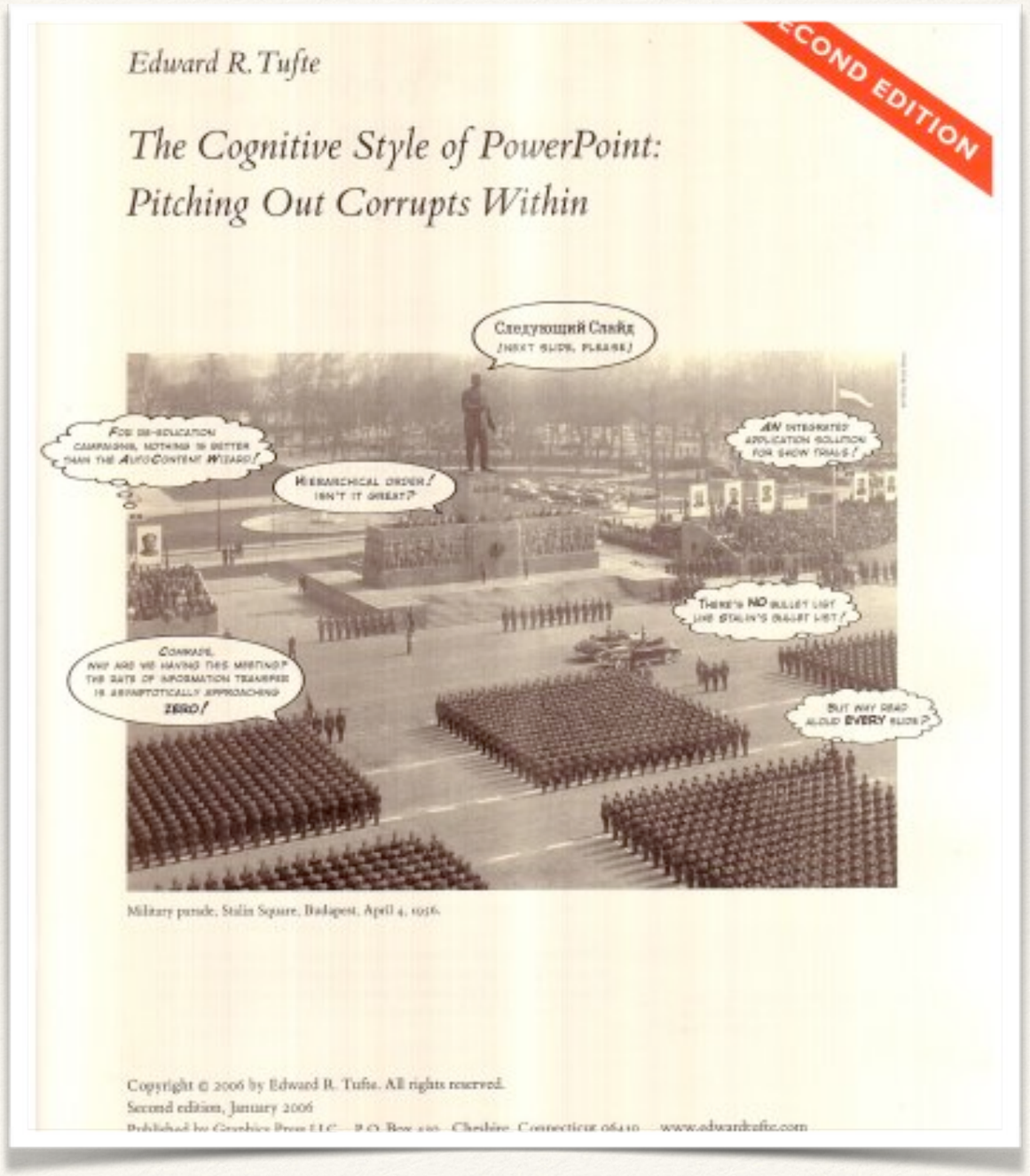
Why give the presentation?

- What response should your presentation generate?
- What do you want people to gain from it?



How to give the presentation

- Blackboard?
- Presentation software?
- Overhead projector slides?



Rule 2: Tell.

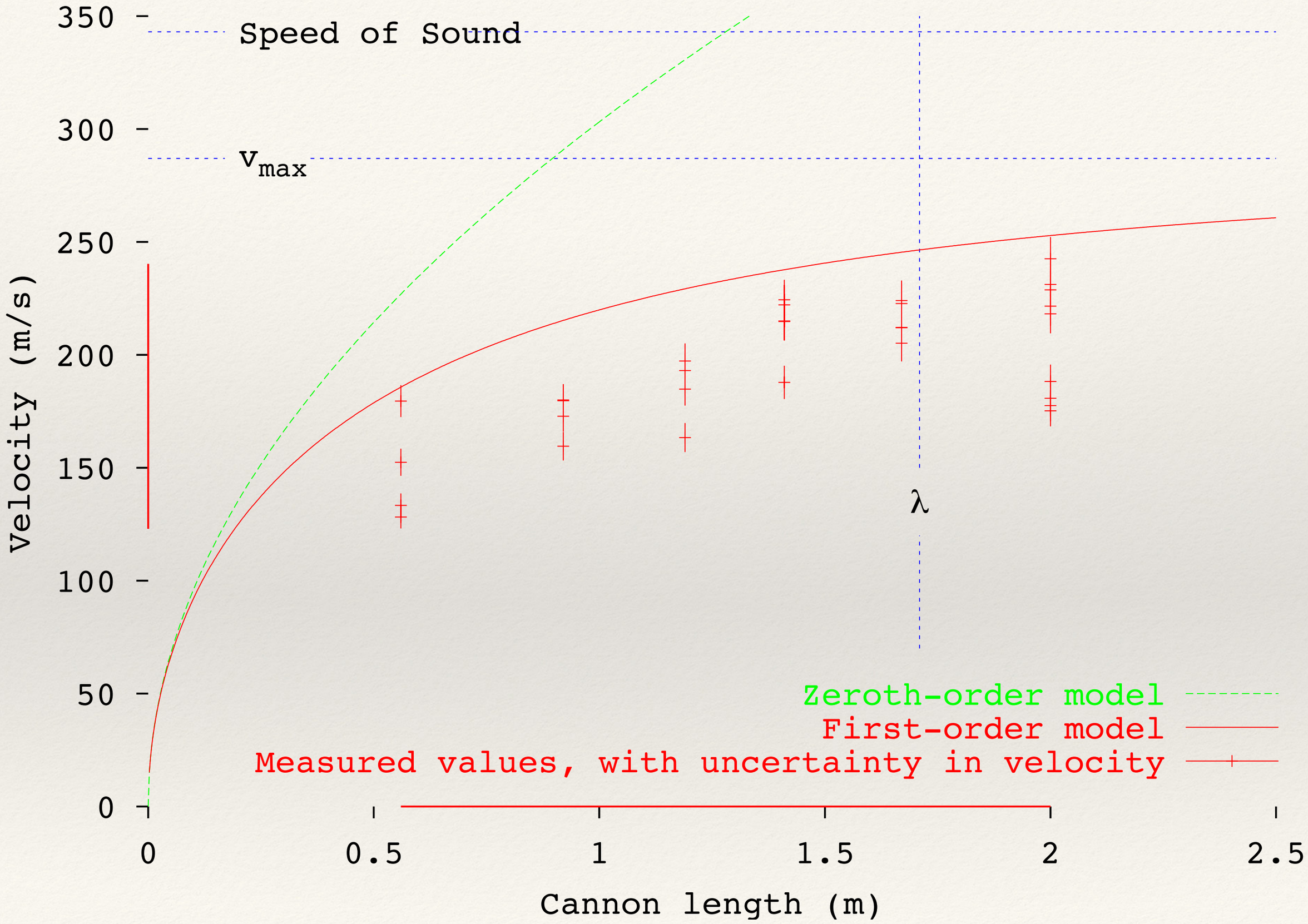
- Tell ‘em what you’re gonna tell ‘em.
- Tell ‘em.
- Tell ‘em what you told ‘em.

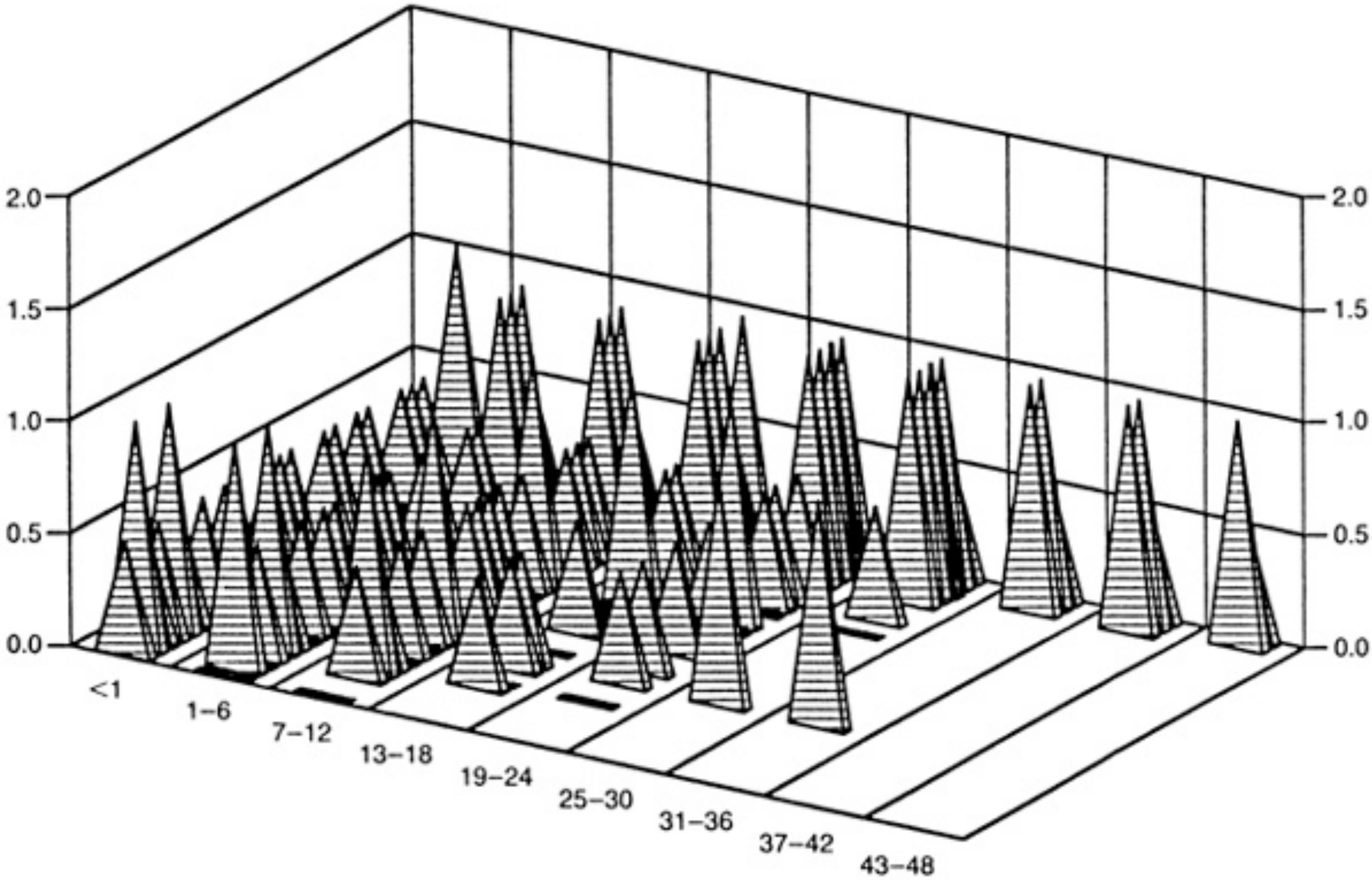
Three Questions to A

- Why do this class at all?
- How do we do this class?
- How do we do this class *well?*

Title page

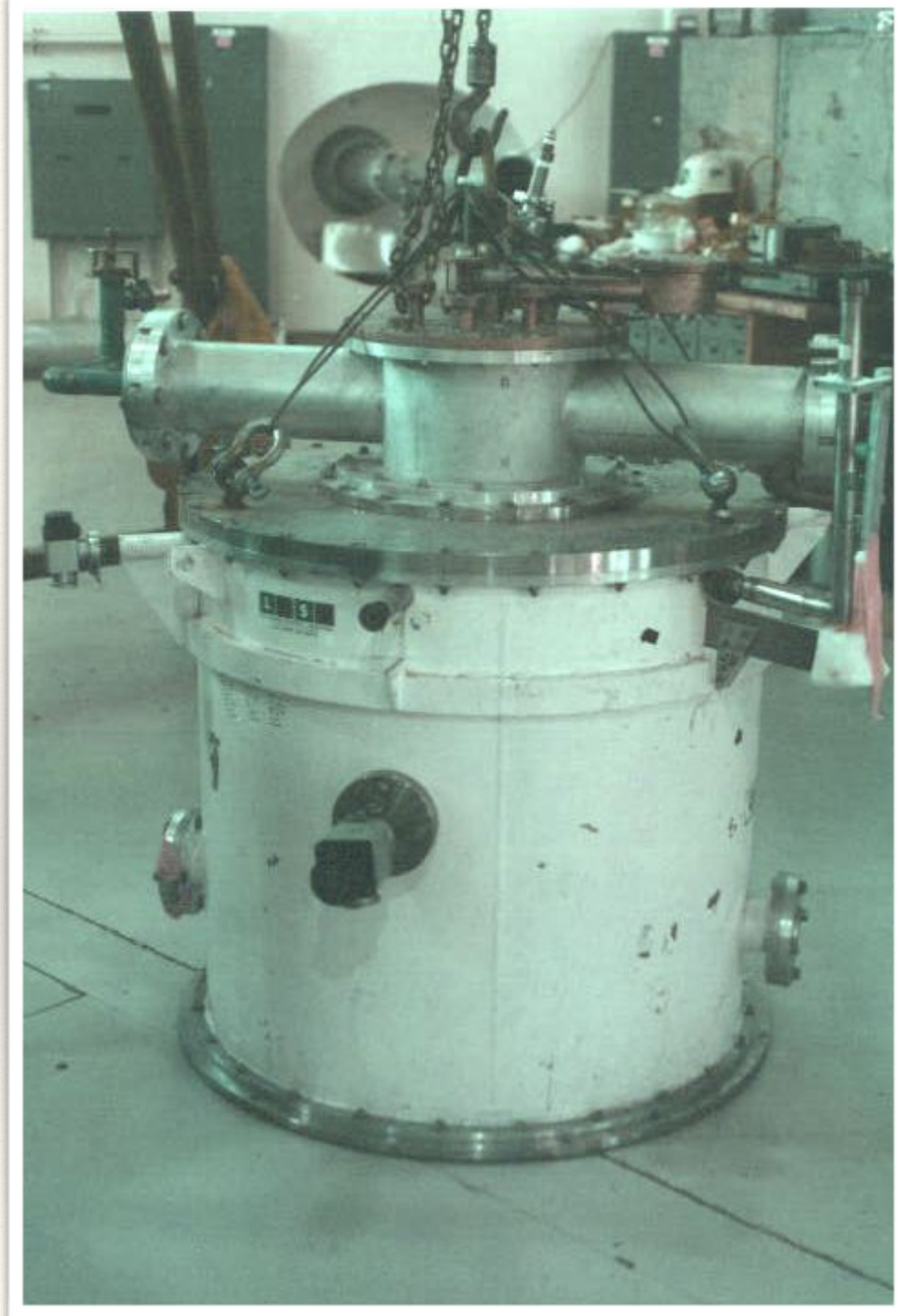
- Who are you?
- Where are you from?
- What will you talk about?


Speed of Sound
v_{max}
λ
Velocity (m/s)
350
300
250
200
150
100
50
0
0
0.5
1
1.5
2
2.5
Cannon length (m)
Zeroth-order model
First-order model
Measured values, with uncertainty in velocity


2.0
1.5
1.0
0.5
0.0
2.0
1.5
1.0
0.5
0.0
<1
1–6
7–12
13–18
19–24
25–30
31–36
37–42
43–48

Pictures

Pictures are great, but…

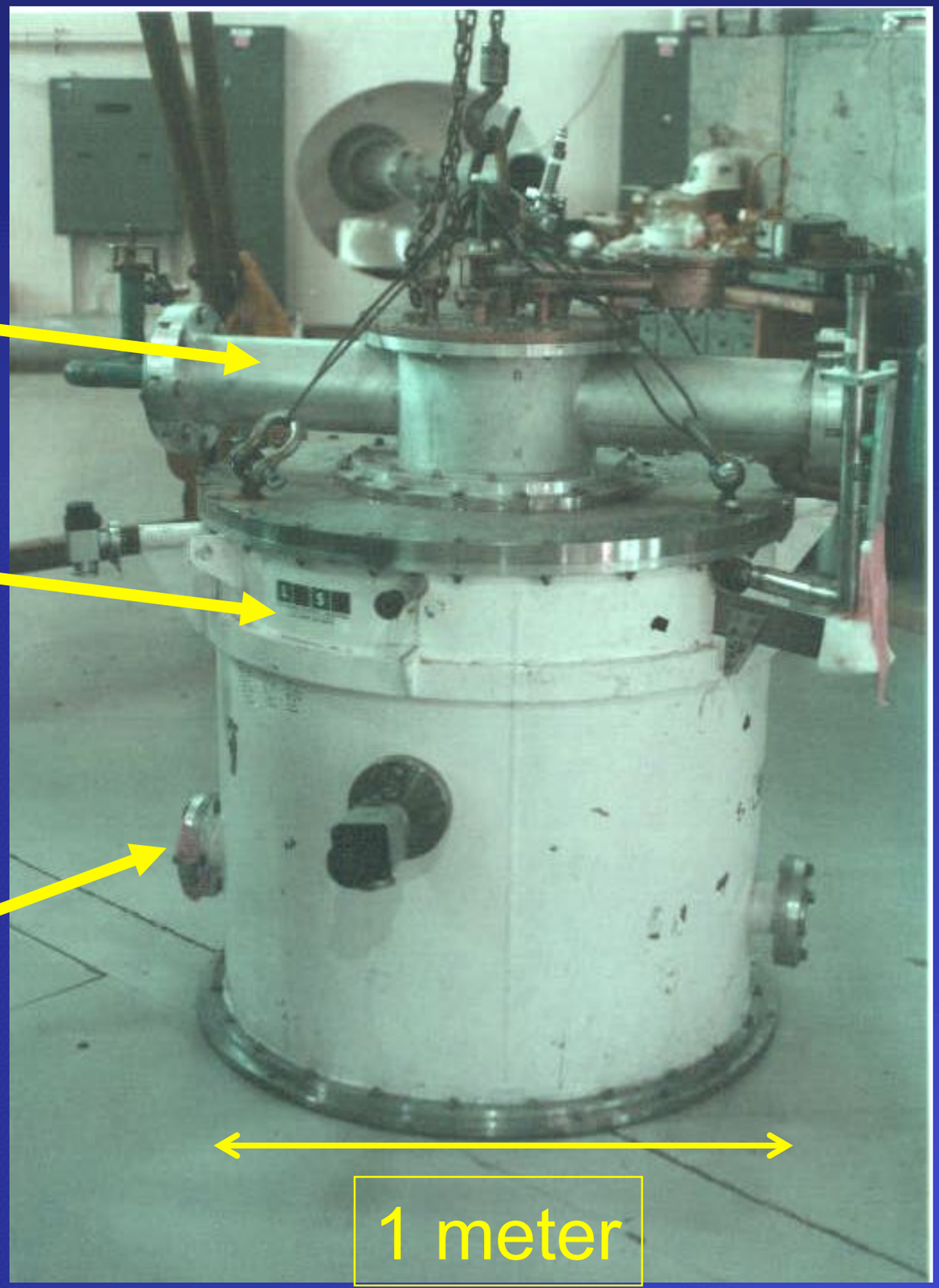


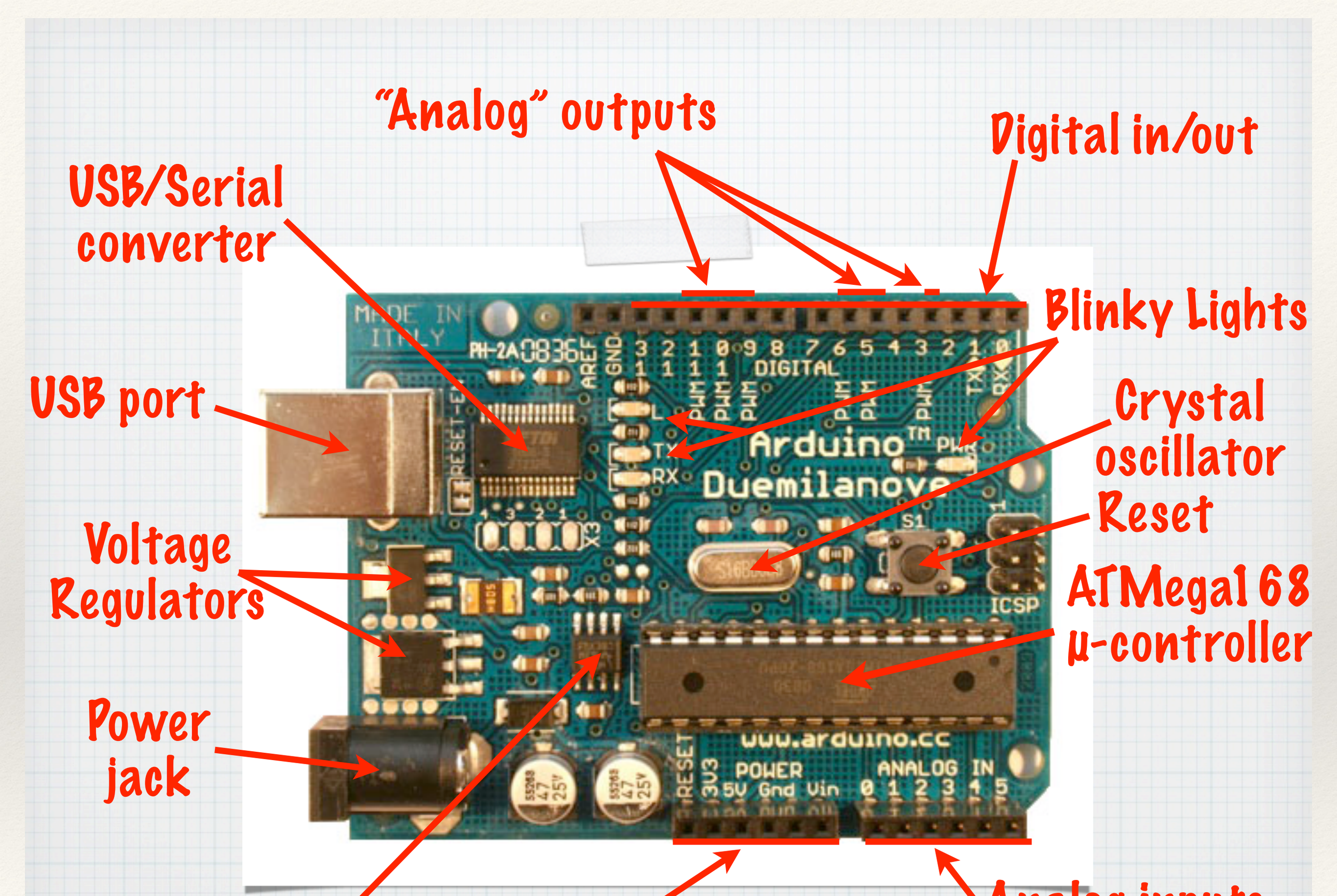
Polarized Target Cryostat

Pumping lines

Vacuum vessel

Beam line port




"Analog" outputs
Digital in/out
USB/Serial converter
Blinky Lights
USB port
Crystal oscillator
Reset
Voltage Regulators
ATMega168 µ-controller
Power jack
No clue, sorry.
Power outputs
Analog inputs (10-bit)
Arduino Duemilanove
www.arduino.cc
DIGITAL
POWER
ANALOG IN
ICSP

Tables: *only* if they increase understanding!

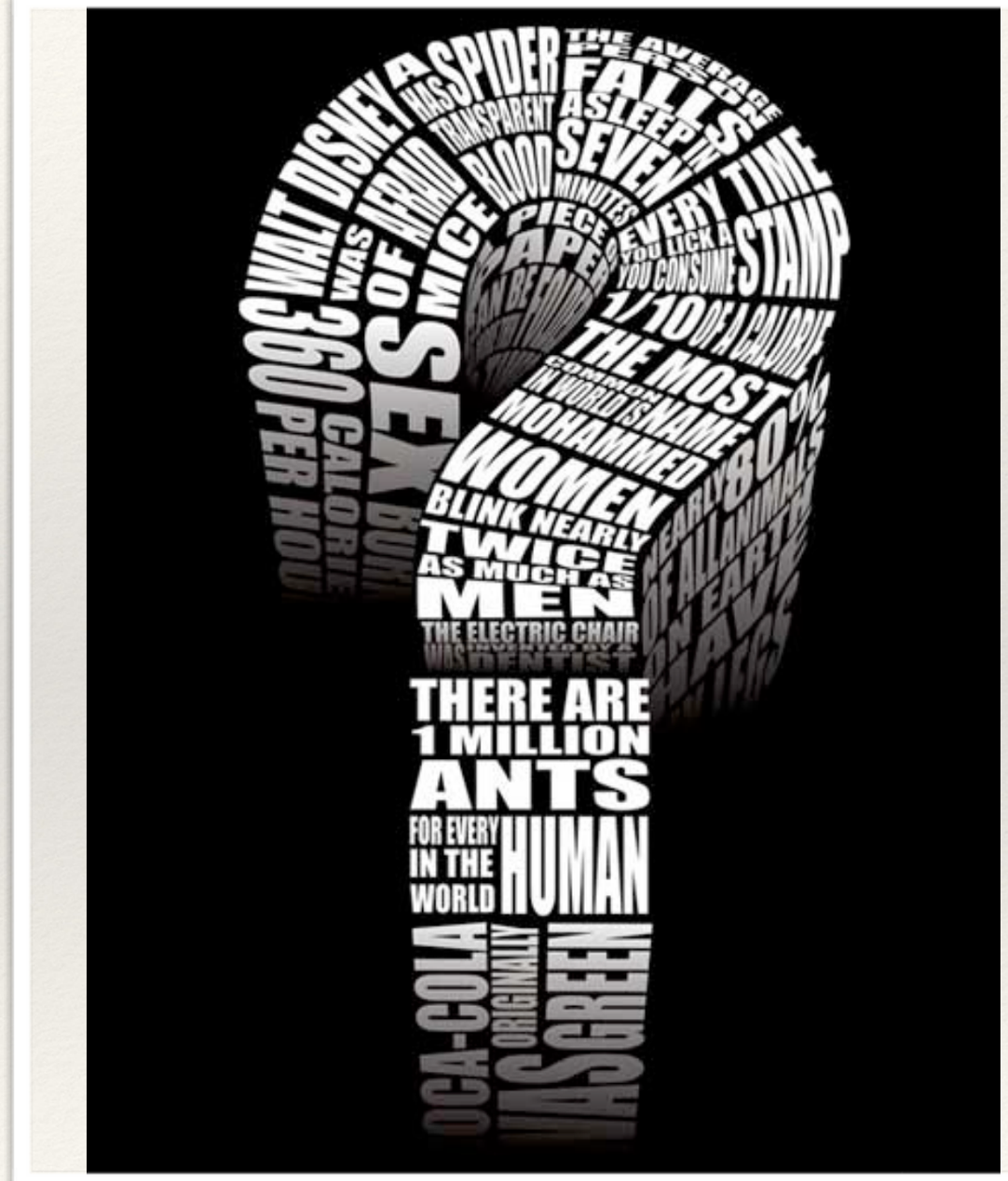
Temperature	Polarization 1	Beam Current	Meaningless	Numbers
0.0001	0.95533649	5	45.6333904	7.23606798
0.0002	0.82533561	205	34.0589439	19.3178211
0.0003	0.62160997	405	19.3199476	25.1246118
0.0004	0.36235775	605	6.56515711	29.5967478
0.0005	0.0707372	805	0.25018758	33.3725219
0.0006	-0.2272021	1005	2.58103959	36.701735
0.0007	-0.5048461	1205	12.7434795	39.7131099
0.0008	-0.7373937	1405	27.1874746	42.4833296
0.0009	-0.9040721	1605	40.8673219	45.0624512
0.001	-0.9899925	1805	49.0042572	47.4852916

Equations

- Use LaTeX: Specifically LaTeXit. (Microsoft Equation Editor works in a pinch, but is not recommended.)
- Don’t necessarily grind through every step in the derivation: *know your audience, and know the desired outcome of your presentation!*

Questions

- Allow time for questions.
- Remember the audience is on your side.
- Repeat the question, pause, answer the question.
- Be direct and succinct.
- Say “I don’t know” if you don’t know.



What we've covered

- Why this class is important: It'll make you more effective as a scientist.
- Class requirements: Summaries of each talk, three deadlines on the way to your talk, then the talk itself.
- Suggestions for giving good talks: Rule 1 — *Know audience, material, and results*; Rule 2 — *Tell 'em what you are going to tell 'em, Tell 'em, Tell 'em what you told 'em.*

Any questions?

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