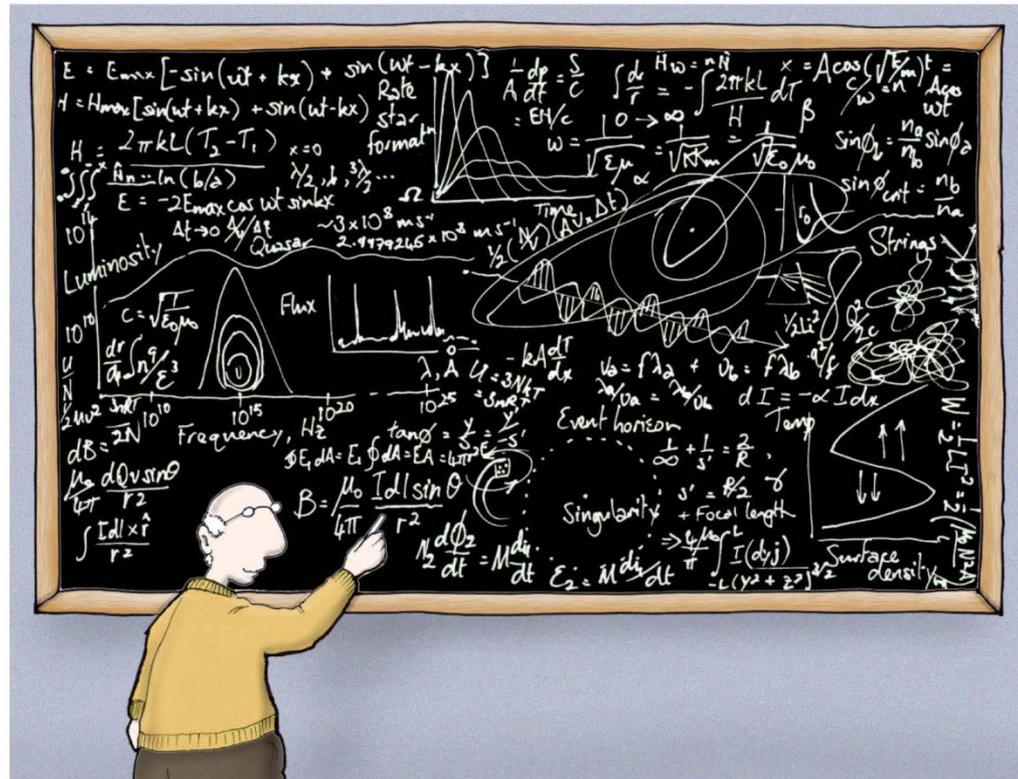


Celia's & Brian's Tips for Physics Talks



Astrophysics made simple

© Nick Kim, CSL Cartoonstock
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Goal: Tell a memorable story and teach the audience something



**Tip: What made a good story when you were 5?
Nothing has really changed since then.**

Essentials for preparing your talk

Know your audience!

Find out how much time you have to speak

Decide on the key points you want to communicate

Determine how best to use figures to illustrate your key points

Allow time for rehearsal, feedback, and revision

How do you start—with the ideas!

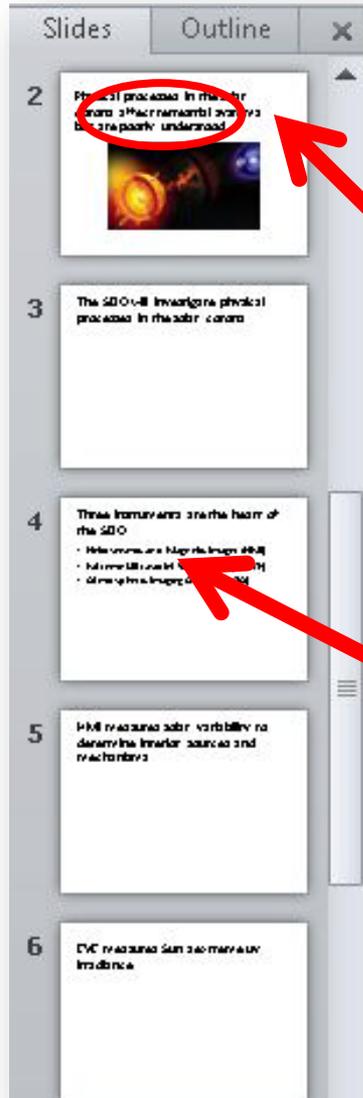
What are the (2 or 3, **at most**)
main ideas that I want to
convey to the audience?

What is the best (easiest to
understand, most memorable)
way to show them that information?*



***Hint: It's probably not by written words
that you read off the screen.**

Start by storyboarding



Sketch out each slide using words

Make a title that conveys the **single** main point of the slide

Use the rest of the slide to explain and support the topic

Never *ever* put *anything* on a slide
that you do not *thoroughly* understand

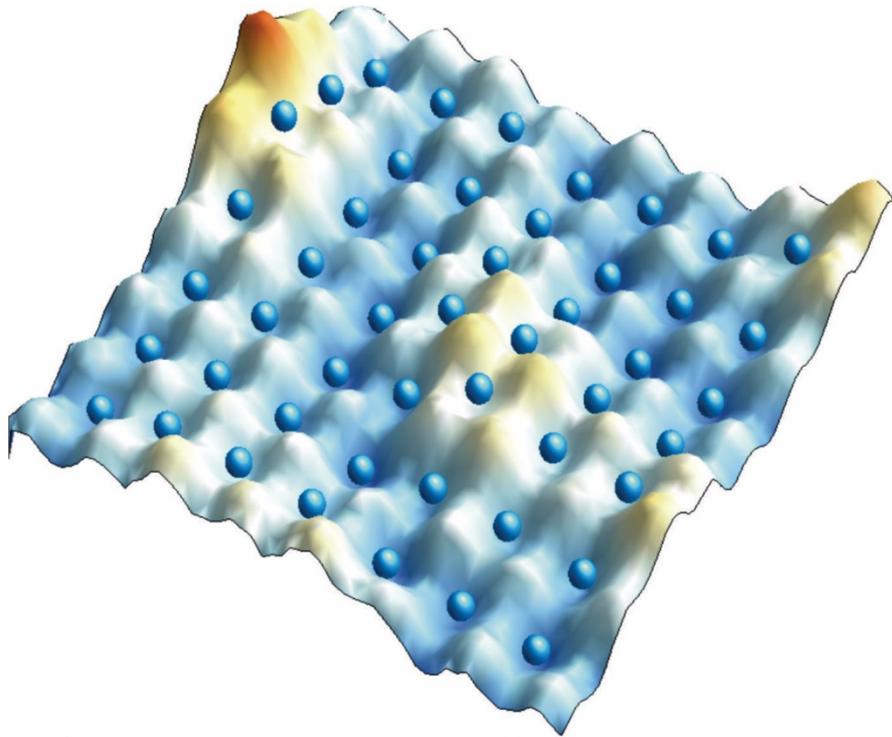


**That figure you got from somebody else
and added at the last minute...**



...will be all the audience asks questions about

Most people will remember your images better than your words...



Rubidium atoms isolated
in an optical lattice
Courtesy B. DeMarco

Figures promote audience interest, provide supporting evidence, help explain complex ideas and relationships quickly, and give the audience something to remember.

...and they'll look at the figures first, too

Who can tell me the four reasons to include figures in your paper?

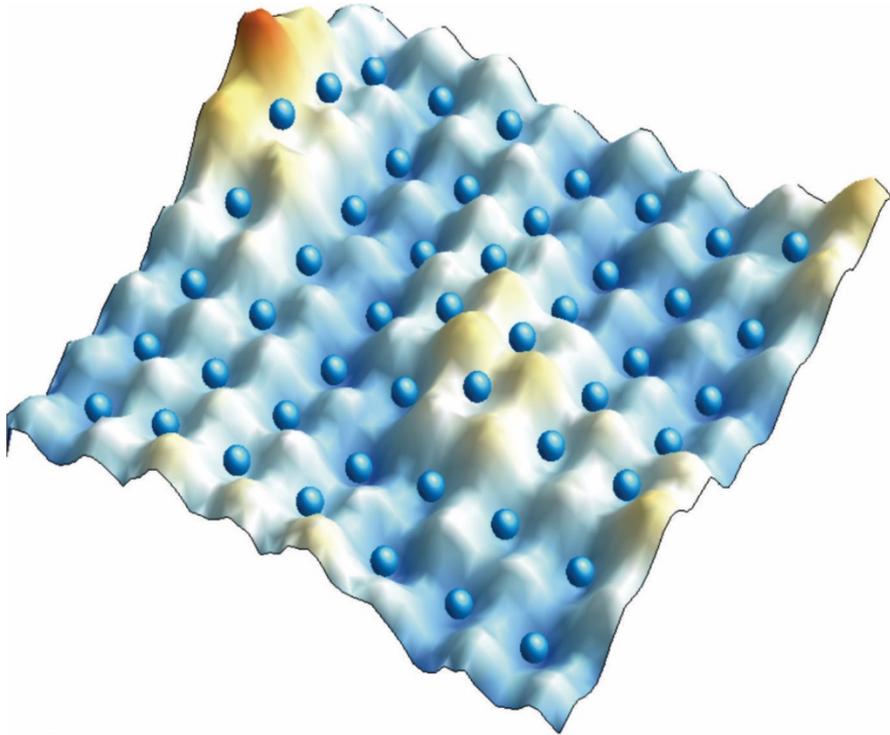
Three reasons?

Two reasons?

Who can describe the image shown on the previous slide?

I rest my case...

Most people will remember your images better than your words...



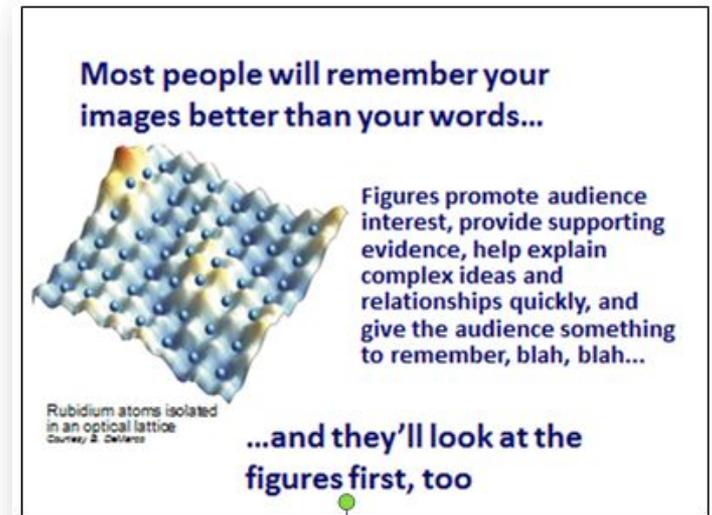
Rubidium atoms isolated
in an optical lattice
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Figures promote audience interest, provide supporting evidence, help explain complex ideas and relationships quickly, and give the audience something to remember.

...and they'll look at the figures first, too

Figures serve four purposes in talks

1. Engage the audience and capture their interest.
2. Provide supporting evidence.
3. Help explain complex ideas and relationships quickly.
4. Give the audience a visual, memorable “hook” to hang your key ideas on*



***Tip: People remember pictures better than words, and they look at color first**

Use equations only if **absolutely necessary** to convey your message



$$\frac{\partial^2 u(x, t)}{\partial t^2} = \sum_{m=0}^N \left(b_m \frac{\partial^m}{\partial x^m} \right) u(x, t)$$

If you use equations...

Slow down; talk through step by step

Explain relevance

Make them large enough to be easily read

Define your terms!

Be careful how you create equations

Strickler-Berg Relation

$$\frac{1}{\tau_0} = 2.880 \times 10^{-9} n^2 \langle \nu_f^{-3} \rangle_{A_\nu}^{-1} (g_\tau / g_u) \int \varepsilon d \ln \bar{\nu}$$

Different
computer—
Voila! “pencils”!

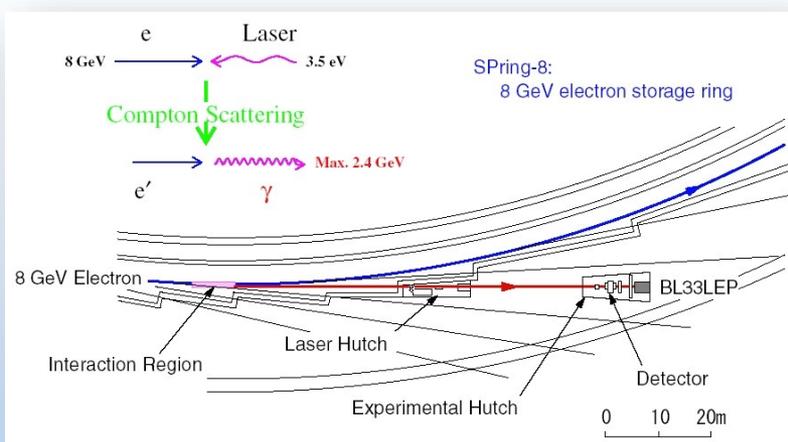
Strickler-Berg Relation

$$\frac{1}{\tau_0} = (2.88 \cdot 10^{12}) * (n^2) * [\bullet^3]^{-1} * \frac{\mu(\bullet)}{d \bullet}$$

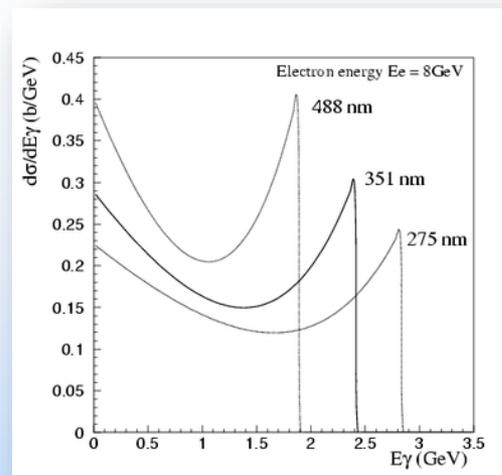

Safest method:
create png file using LaTeX; paste into slide

Maximize your slide “real estate” and position important points strategically

SPring-8 “light” is ~1 billion times more brilliant than conventional X-ray sources



Schematic view of the LEPS beamline and the Compton back-scattering process



Differential cross sections for the BCS process between 8-GeV electrons and laser photons

SPring-8: Storage ring for 8-GeV synchrotron radiation

Compton back scatters 351-nm Ar (uv) laser photons off electrons

Produces 1.5-GeV–2.4-GeV photon beam



Use minimal hand gestures

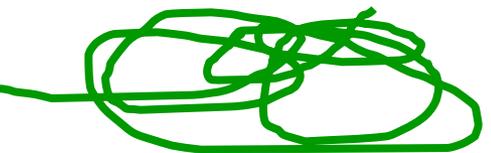


Distracts the audience if you're flapping around

Use a laser pointer, not your arm*

An innocuous gesture in your culture may mean something entirely different in another culture

*And avoid laser-pointer acrobatics



**If English is not your native language
(and even if it is!)...use the simplest word**



***Tip: for longer talks, watch for cues from the audience—if they look confused, slow down, back up, solicit a question, explain**

Provide a “summary” slide and make it count!

Recap key results

Reiterate principal conclusions

Repeat your contact information

...it will probably get the longest exposure, since it will be the first thing people see when they wake up

Summary and the future

- ▶ Post-processed CNT fiber could be a material useful in many applications
- ▶ **Joule heating** was applied to induce **cross-linking**
- ▶ Cross-linking was neither confirmed nor denied
- ▶ Tensile strength test results inconclusive
- ▶ **Future plans:**
 - characterize plasma-irradiated fibers with resistance measurements
 - Use pulses of current instead of steady current
 - Strength test more samples

Questions? Contact me!

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1/27/2012

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Before you leave for the conference,
email an editable copy of your talk and
store in the cloud and on a USB drive

Laptops fail

Thumb drives get lost

Files get corrupted

The person who was

supposed to load your talk on the seminar
room's computer gets sick or forgets



**Check everything
before your talk**

**If it can go wrong,
it will**



Handling questions is an essential part of giving a talk

Don't be nervous: enjoy the discussion!

Always repeat the question

What if you don't know the answer?

If the questioner disagrees, don't argue

***Never* insult
the questioner**

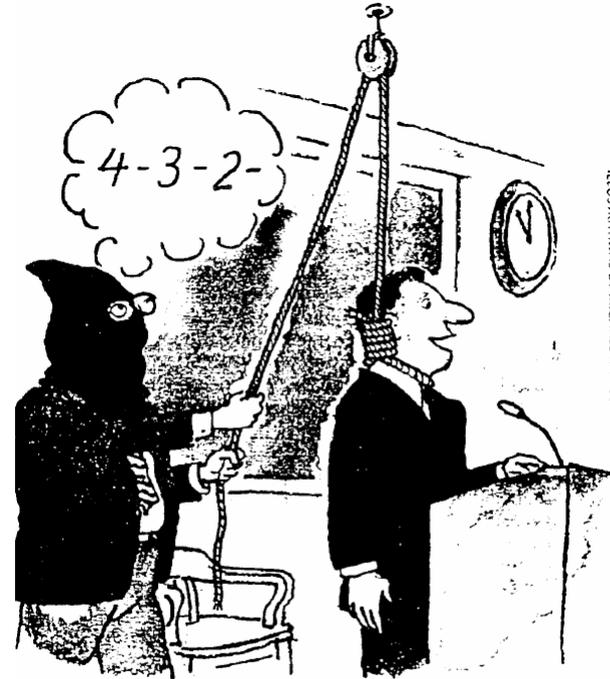
**If the question is off
topic, deflect**



Garland's advice

ADVICE TO BEGINNING PHYSICS SPEAKERS

Never exceed your time
Never exceed your time
Never exceed your time
Never exceed your time
Never exceed your time



*It's a capital crime to exceed
your allotted time*

As a beginning speaker: rehearse and time

To recap...

Decide on your goals and analyze your audience

Identify one or two main points that you want the audience to take away with them

Design your talk to make these points clearly, concisely, and memorably

Rehearse and revise (shorten)

Take every opportunity to speak

Finish on time!



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<http://physics.illinois.edu/people/Celia/>

10-minute APS-style talks

10 minutes + 2 minutes for questions

7-8 slides

Rarely interruptions

Session chair: keeps everyone on time, moderates questions

Usually for experts:

just one slide of motivation

Still needs to be understandable to almost experts

Make just one point!

Your talk for class on 12/4

8 minutes + 2 minutes for questions

4-5 slides maximum!!

Should be understandable by the entire class!

Make just one point! It will not be possible to talk about all the work in your thesis. Choose one piece of your thesis to talk about.