

**PowerPoint® Tips
for Science Talks**

Death by PowerPoint
(and how to fight it)
Alexei Kapterev

There are **300 million** PowerPoint users in the world*
* estimate

They do **30 million** presentations **each day***
* estimate

About a **million** presentations are going on right now*
* estimate

50% of them are **unbearable***
* conservative estimate

“Death by PowerPoint”
Alexei Kapterev
<http://www.slideshare.net/thecroaker/death-by-powerpoint/>

Celia M. Elliott
Department of Physics
University of Illinois at Urbana-Champaign


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In this session, we’ll look at some ways to enhance the communications value of your slides and some tips to avoid humiliation.

The standard presentation software for most scientific talks is MS PowerPoint. Like it or hate it, that’s what nearly all AV systems at conferences are set up to use. If you are determined to be an iconoclast and use some other presentation software, fine, but be prepared for last-minute technical difficulties that will annoy your colleagues and cut into your presentation time. If you demand to use something other than PPT, take along a PDF version of your talk on a memory stick that you can use when the computer in the seminar room can’t run *Photoshop* or *LibreOffice*.

Alexei Kapterev’s *Death by Powerpoint* is an Internet classic not to be missed:
<http://www.slideshare.net/thecroaker/death-by-powerpoint/>

No bullets unless you're presenting an actual list



Status of Projects

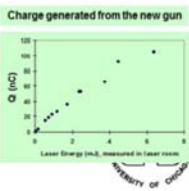

HEP at ANL

Theory

- Connection with UC through Carlos W. (appt) has brought two thesis students
- New Assistant level theorist (7)
- 7 international workshops
 - Broad participation
- Active work on workshops
- Physics

Accelerator

- Demonstration of wakefield and 2-beam configurations, two major developments of the
- Demonstration of acceleration to 100 MeV in 1m
- This has required a major upgrade of their facility, especially the electron gun and laser system
 - High power tests of externally powered dielectric loaded waveguides in collaboration with Naval Research Laboratory
- 2 new physics processes affecting electron acceleration discovered (and published)



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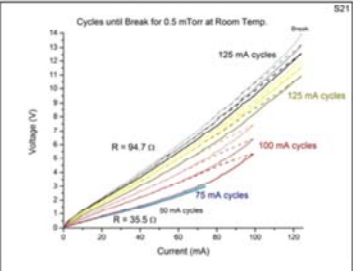
I recommend turning off the “bullet list” format, which is the default in PPT. Presenting ideas in bulleted lists implies hierarchies or relationships that may not, in fact, exist.

“Lists can communicate only three logical relationships: sequence (first to last in time), priority (least to most important, or vice versa), or simple membership in a set (these items relate to one another in some way, but the nature of that relationship remains unstated). A list can show only one of those relationships at a time.” Gordon Shaw, Robert Brown, Philip Bromiley, “Strategic Stories: How 3M is Rewriting Business Planning,” Harvard Business Review 76, 42–44 (1998).

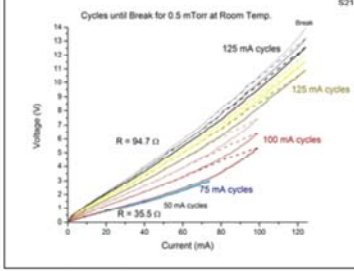
Turning off the bullets also gives you more slide real estate to work with.

Replace the content-less PPT “title” with a meaningful motivating statement

Results



/V curves showed an increase in resistance with Joule heating



Plot courtesy Thomas Hymel

Tip 1: Write the statement as a sentence and left-justify it

Tip 2: Turn off the “auto-correct” feature in PPT that reduces the font size if you exceed the number of characters that MS thinks you should have in a title

The default for PowerPoint slide “titles” is centered. Change it to left-justified.

Turn off the automatic “fitting” functions in PPT to avoid having PPT reduce your font size if you exceed the number of characters MS thinks you should have on a line.

In PPT 2003, on the “Tools” menu, click on the “AutoCorrect Options” tab, then select “Autoformat as you type” tab, and uncheck the two “AutoFit” options in the “Apply as you type” list.

In PPT 2010, right click inside the text box, then select “Format Shape” from the drop-down menu. In the dialogue box, click on “Text Box” on the left navbar, and then turn on the “Do not Autofit” radio button in the “Autofit” section.

Choose an easy-to-read font (40 pt)


Make sure your audience (36 pt)

Can easily read (32 pt)

Every one of your slides (28 pt)

From the back of the room (24 pt)

See what I mean? (14 pt)



Tip: The bigger the room—the bigger the font

You can use the “Master Slide” to format text on all slides. To get to the master slide in PPT 2003, click Shift+the slide icon in the lower left corner of the workspace, or use the “View” menu. To get out of “master slide” view, click CTRL+ the slide icon.

To get to the master slide in PPT 2010, click Shift+the slide icon in the lower right corner of the workspace, or use the “View” ribbon. To get out of “master slide” view, click CTRL+ the slide icon.

<p>Use a simple sans serif font</p> <p>Serif fonts don't project as well, because the narrow parts tend to fade away</p> <p>Eschew weird fonts (including Comic Sans*)</p> <p>Use one main font color and, at most, one contrasting font color for emphasis</p> <p>Use one main font and, at most, one contrasting font for emphasis</p> <p>Use mixed upper and lower case for text—WRITING IN ALL CAPS LOOKS LIKE YOU'RE SHOUTING (and it's much harder to read—and proofread!)</p> <p>*or risk professional ridicule</p>	<p>Calibri Helvetica Arial</p>	<p>Tahoma Corbel Verdana</p>
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Keep text to a minimum—use just enough words to orient the audience to what they are seeing. You want them to be listening to you, not reading a novella off the screen.

Do as I say, not as a do. This slide, while typical of an academic lecture to facilitate note-taking, has **w-a-a-a-a-y** too much text on it for a science talk.

“Embed” special fonts in PPT to avoid embarrassing surprises at the conference

your computer


The Strickler–Berg relation opens the door for comparing measured spectral quantities

$$1/\tau_0 = 2.880 \times 10^{-9} n^2 \langle \nu_f^{-3} \rangle \int_{\Delta \bar{\nu}_a} \epsilon(\nu) d \ln \nu$$

Different computer—Voilà! Pencils!

conference computer

The Strickler–Berg relation opens the door for comparing measured spectral quantities

$$\frac{1}{\tau_0} = (2.88 \cdot 10^{-9}) \cdot (n^2) \cdot [\nu_f]^{-3} \cdot \int_{\Delta \bar{\nu}_a} \epsilon(\nu) d \ln \nu$$


Every computer has its own individual “library” of fonts; if PPT cannot find a font when you open your presentation on a different machine, it just arbitrarily substitutes a font that it thinks is “close.” Often, it isn’t...

PPT can “embed” your fonts in the file, but you have to tell it to do it every time

conference computer

The Strickler-Berg relation opens the door
for comparing measured spectral quantities

$$\frac{1}{\lambda} = (2.88 \cdot 10^{15}) + (n^2) + [\dots]^{-1} + \frac{h \nu(\dots)}{d}$$



**Professor DeMarco’s tip: Create your
equation in LaTeX, save it as a .png,
and insert the image in your PPT slide**

To embed fonts in your PPT file:

- (1). Open the document in PowerPoint
- (2). Click on the “File” tab on the ribbon
- (3). Click on the “Options” link on the left menu
- (4). Click on the “Save” link
- (5). Locate “Embed fonts in the file” option at the bottom of the dialogue box
- (6). Click in the check box to turn on the option

Choose a neutral background and a high-contrast color for the text

Use a light-colored background with dark text

Use a dark background with light text

This isn't high-enough contrast

Neither is this

Don't ever put red on blue

Or blue on red

And avoid using gradient fills, too

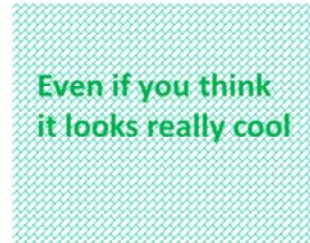
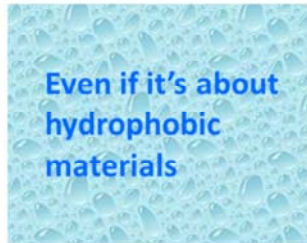
Be aware that colors that look bright and crisp on your monitor may look entirely different when projected. In particular, pastel colors and thin lines fade away. Use bright, primary colors, bold fonts, and thick lines.

Don't use photographic or "fill" backgrounds



They're distracting to the audience

They make your text too hard to read



Don't use photographic or textured backgrounds—just don't do it. They're distracting, they get boring after you've seen the first one, and the superimposed text is often impossible to read on them.

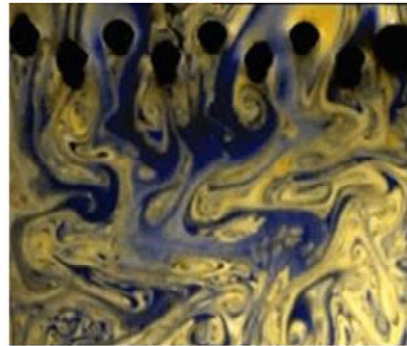
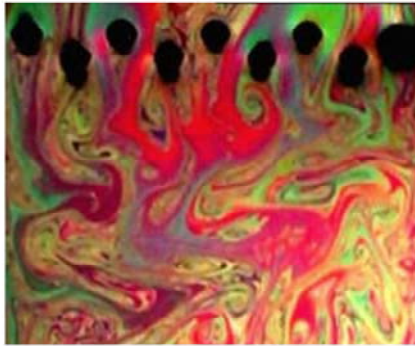
Don't use one of the PPT templates
They take up too much real estate with meaningless graphics
They force you to devote 25% of the slide to the title
They trivialize your message by promoting style over substance
Many are just ugly



The image shows three examples of PowerPoint slide templates. Each slide has a title bar at the top that says "TITLE AND CONTENT LAYOUT". The first slide has a green background with a bar chart and decorative elements on the left and right sides. The second slide has a purple background with a bar chart and decorative elements at the bottom. The third slide has a blue background with a bar chart and decorative elements at the top. Red circles highlight the title bars and the decorative elements on each slide.

You want the audience to be thinking about what you're saying and looking at the evidence you're presenting, not swooning (or snickering) over your artistic taste.

Don't use red or green to convey important information*



Development of turbulence in a soap film as its surface is raked by a wire comb. Courtesy Nigel D. Goldenfeld

***Between 8 and 12 percent of white males are red-green colorblind—who's your audience?**

If you use color to convey information, make sure that information transfers as you intended it and is accessible to everyone in your audience.

Another good resource is <http://www.colourblindawareness.org/colour-blindness/>.

Be sure the audience sees what you see*

*Check your images on a free color-blindness simulator:
<http://www.colblindor.com/coblis-color-blindness-simulator/>

To see what your image will look like to someone who is color blind, upload your image to the free emulator at <http://www.color-blindness.com/coblis-color-blindness-simulator/>.

Another great resource, including step-by-step instructions for labeling fluorescent microscope images and data plots so they can be distinguished by colorblind people:
<http://jfly.iam.u-tokyo.ac.jp/color/>.

Use manual line breaks so that the text is not interrupted in awkward places

- SPring-8: electron storage ring for synchrotron radiation, 8 GeV
- LEPS = Laser Electron Photon beam @ SPring-8
- Compton back scatter 351 nm Ar (UV) laser photons off electrons
- produces 1.5-2.4 GeV photon beam



Avoid big empty spaces, too


To make a line break without starting a new item, press Shift+space bar. Don't maroon a number at the end of a line and put the unit on the next line!

Use the "Order" command on the "Draw" toolbar in PPT 2003 to arrange text and figures in layers. In PPT 2010, right click on the item you want to arrange and then click on the arrow to the left of the "Send to Back" or "Bring to Front" options to arrange layers.

Extra text boxes don't cost *anything*. You can use more than one on a slide.

Here's how to do a slide make-over

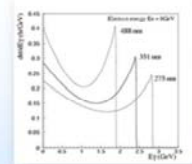
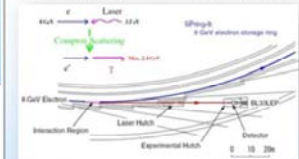
- SPring-8: electron storage ring for synchrotron radiation, 8 GeV
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- Compton back scatter 351 nm Ar (UV) laser photons off electrons
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Add an informative title

Show some data!


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



Position important info strategically

Maximize your slide real estate

Use short captions to orient the viewer immediately

Here's how I would improve the previous slide.

- Add a motivating statement at the top of the slide.
- Make the obligatory aerial photo of the accelerator smaller and stick it at the lower right of the slide, to convey to the audience that the image is not important.
- Turn off the bullets and tighten up the prose to reduce the number of lines of text.
- Use the additional space you've freed up to show a cartoon of the physical process, a schematic of the beamline, and the energy spectra of the photons, and put those images at the top of the slide to emphasize them.

If you just *have* to show the obligatory aerial photo of the accelerator, make it smaller, move it off center-stage, and crop to emphasize the ring, not the surrounding countryside. A scale would be really nice, but although I found 48 different aerial photographs of SPring-8 on the Internet, not one showed how big it is. A label superimposed on the photo that shows where LEPS is located on the ring would be a good addition, too.

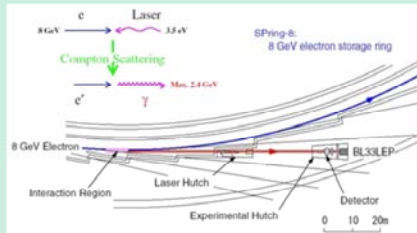
Some technical-editing changes:

- A hyphen is required between 8 and GeV in the first line, 351 and nm in the second line, and 1.5 and GeV and 2.4 and GeV in the last line of text. In every case, the number is combined with the unit to make an adjective that describes the size of the following noun; you indicate that it's an adjective by hyphenating the two components.
- The abbreviation for "ultraviolet" (and infrared) is always written lower case.
- Provide both lower and upper units for numbers in a range.
- Indicate a range by an en dash, not a hyphen.

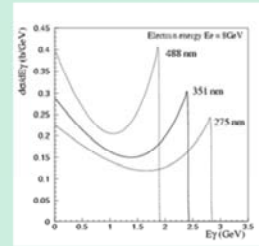
Images taken from <http://www.rcnp.osaka-u.ac.jp/Divisions/np1-b/lepsbl.html>.

Use PPT animation to control the audience's attention while you're speaking

Spring-8 "light" is ≈ 1 billion times more brilliant than conventional X-ray sources



Schematic view of the LEPS beamline and the Compton backscattering 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
off electrons
Produces 1.5-GeV–2.4-GeV photon beam



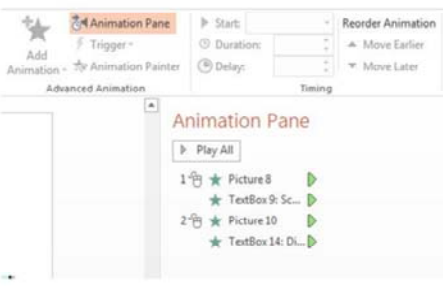

When you present an audience with a complicated slide like this one, they don't know what to look at first and they try to look at everything instead of listening to you. Control their attention by using animations to present bits of information one at a time, synchronized with what you are saying.

Using animations requires practice and rehearsal—we've all forgotten about an animation and then were surprised when something popped up when we were expecting that click to bring up the next slide. (And we always give it away by mumbling "Oops, I forgot about that...")

Mark up your "notes" pages to indicate animations so you can keep track of them as you are speaking.


You can “build” slides in one of two ways

Use PPT animation (learning curve)



***Use the “Insert Duplicate Slide” tool for smooth builds**

Create multiple slides*



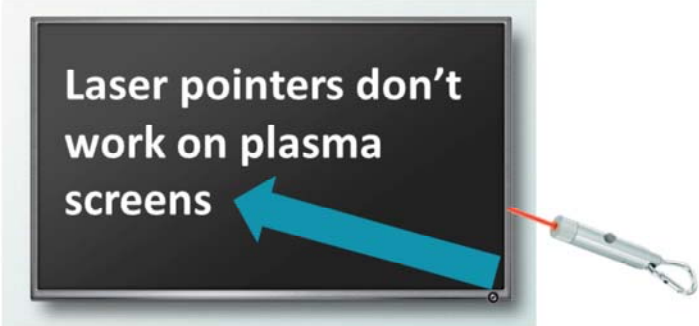
The animation tool gives you more control and offers a variety of special effects. However, like anything else, there’s a learning curve associated with it, and you’ll have to invest time to get good at it.

Creating multiple slides is easier—at least initially—and extra slides don’t cost a dime. For best results, do the first, stripped down slide, and then use the “insert duplicate slide” tool to make each subsequent slide. That way, you don’t have slight variations in the position of text and figures (which is distracting and annoying for the audience) when you switch from one slide to the next.

On the main toolbar in PPT, click on the “Insert” tab.

When the “Insert” ribbon comes up, click on the down arrow on the “New Slide” icon (first one on the far left), and scroll to the bottom of the menu to “Duplicate Selected Slides” and click on it. (I have no idea why MS uses this language; when you click on that item, PPT inserts a duplicate of the slide you are on—you cannot “select” multiple slides. <sigh>)

Technology presents its own challenges
Seminar and conference rooms are increasingly being outfitted with plasma monitors instead of projector screens



Laser pointers don't work on plasma screens

Use a dark background and the cursor to point
Add animated arrows to your slide to point out important features

You could point out features with your hand, but the monitors are often mounted on the wall across the room, above your head, or behind you, where you cannot easily reach them without really hopping around and distracting the audience.

Don't try to use your laser pointer and then say, "Huh! The laser pointer doesn't work. Wow! Now what do I do? Well, I guess you can see what I mean..."
USE THE MOUSE TO MOVE THE CURSOR and hope most people can see it.

To recap:

Turn off the bullets

Use motivating statements at the top of your slides, not bland, generic “titles”

Choose a neutral background

Use a sans serif font, at high contrast to the background, big enough to see from the back of the room

Embed your fonts!

Use color judiciously

Use animations to control the audience’s attention

Keep up with technology



cmelliot@illinois.edu

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

Notes and Questions: