



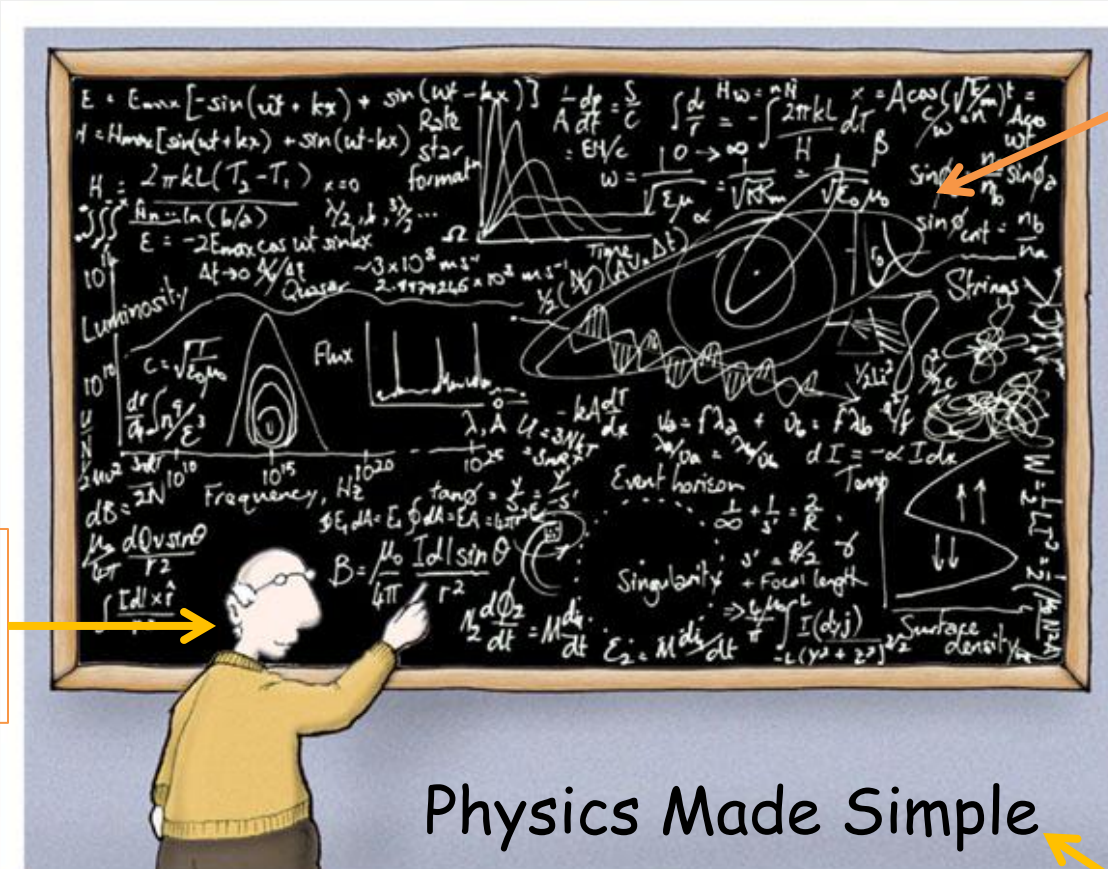
Physics 496

Introduction to Research

Lecture 1.2: Evaluating a Science Talk
(From CME)

What makes a good talk?

What material you present



What you say and how you say it

Physics Made Simple

And even what font you use (more on this later)

Purpose: Communicate ideas!



This fundamental goal should govern *every aspect* of the design and presentation of a talk!

Who is the audience?

- A working group?
- A funding agency?
- Colleagues at a conference?
- A Potential employer?
- The general public?



A successful talk is tailored to the audience.

- If it is at too high a level, the audience won't learn anything.
- If it is at too low a level, the audience won't learn anything.



The speaker previews the important points at the start

Gives an outline of the talk*

Previews key topics

- A) The evergreen Regge formalism
RFT and pQCD
- B) Direct measurement of σ_{inel} :
 - 1) cosmic-ray experiments
 $\sigma_{p-air}, \sigma_{pp}$ via Glauber models
 - 2) collider experiments
 σ_{inel} for specific final state
- C) Measurements of diffraction: σ_{SD}, σ_{DD}
- D) The art of elastic scattering:
 - 1) σ_{el} and σ_{Tot} via the optical theorem

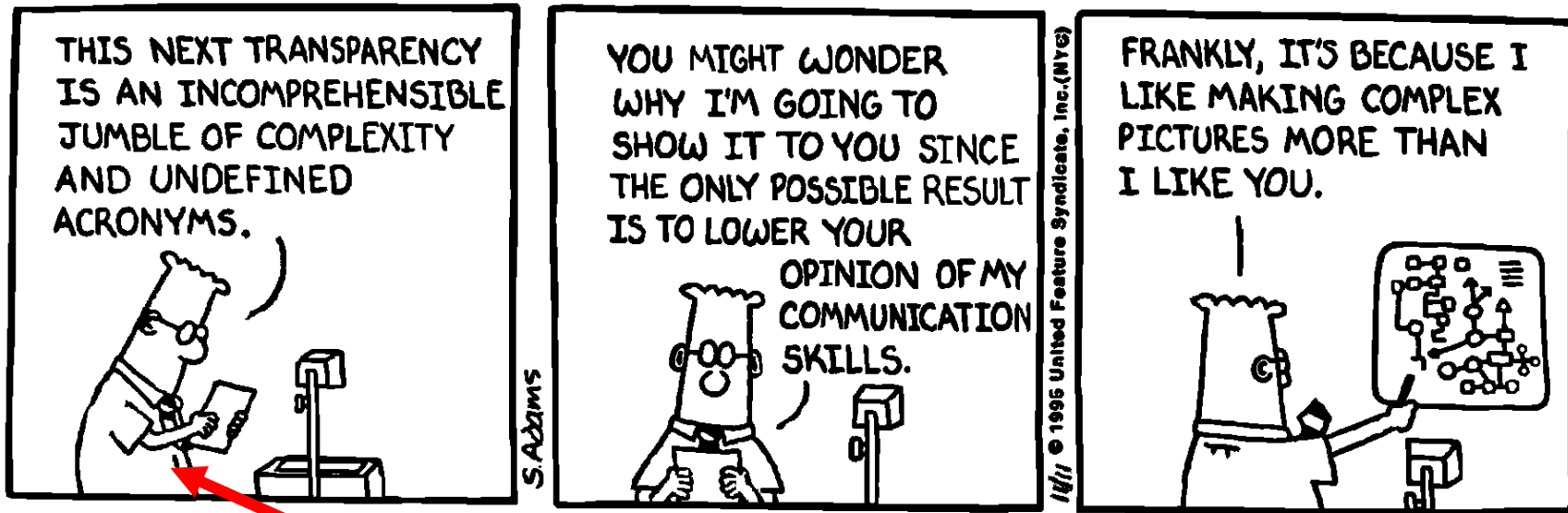
Beware of über-detailed outlines!

And of speakers who read every word of their outline.

It's just a guide to prepare the listener for what will be covered.

*More important for longer talks

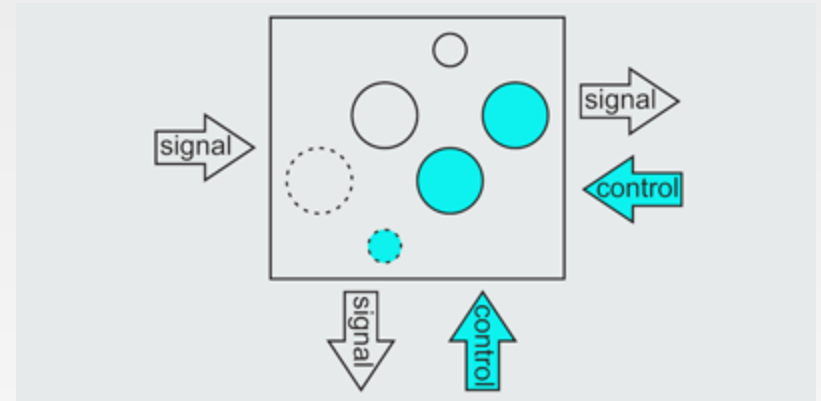
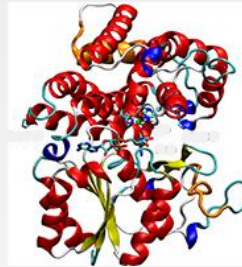
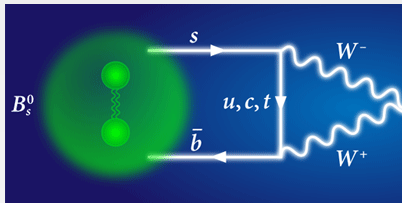
The important points (IPs) are clear



Scientificus physicus

- Language and detail are appropriate for the audience
- Speaker emphasizes IPs and explains *why* they are important
- Talk is logically structured around the IPs
- Figures are used to make IPs memorable

Figures are used to clarify or emphasize important points



They can also be used to break up the text on slides and make them easier to read and follow.

But the figures should be relevant to the talk and the speaker should describe them and explain what they show.



Graphs and tables are kept simple

Verbosity Index

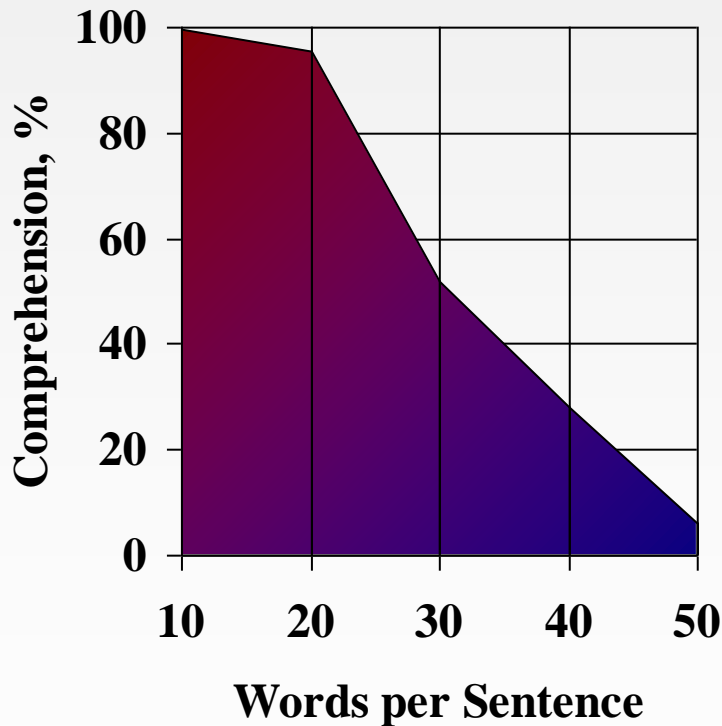


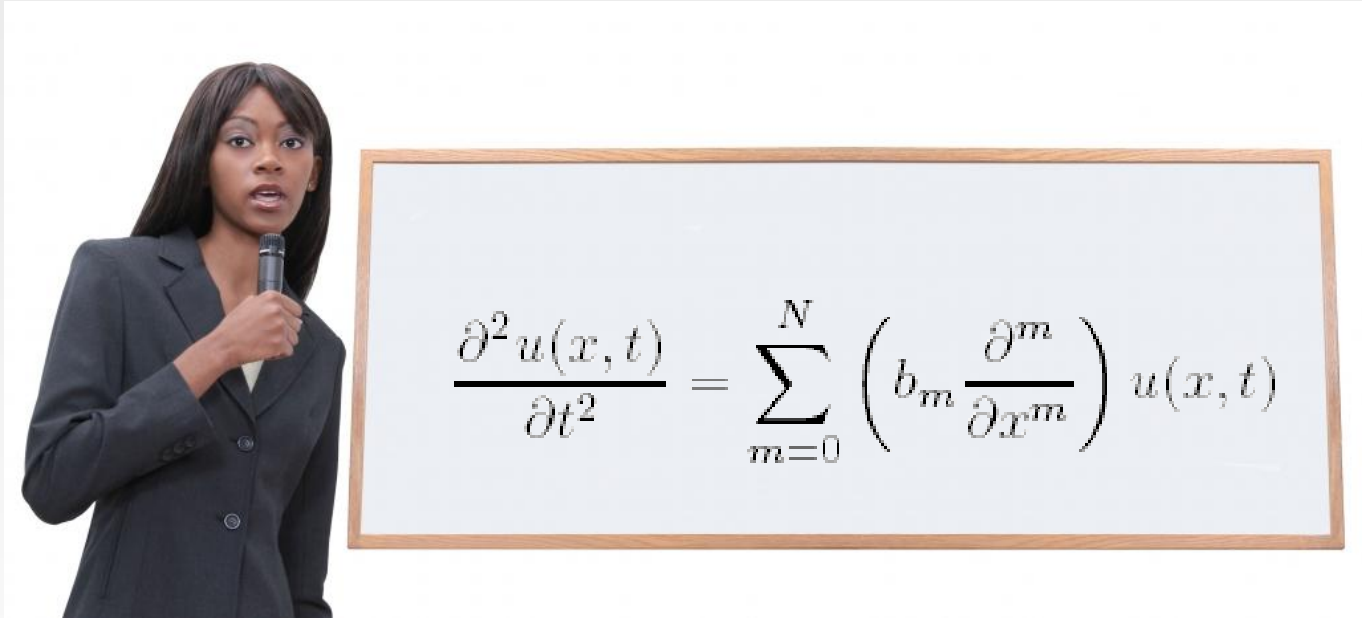
Illustration only, does not represent actual data

Women in Top-Ranked Physics Ph.D. Programs (1998)

University	NRC Rank/Score	PhD Students	Women %	PhD Recipients % Women
Harvard	1 / 4.91	149	13	14
Princeton	2 / 4.89	110	13	3
MIT	3 / 4.87	315	10	12
California-Berkeley	4 / 4.87	283	9	8
Cal Tech	5 / 4.81	154	18	8
Cornell	6 / 4.75	182	18	12
Chicago	7 / 4.69	154	14	6
UIUC	8 / 4.66	295	8	7
Stanford	9 / 4.53	135	13	12
California-Santa Barbara	10 / 4.43	117	13	5

Regrettably, *does* represent actual data

Equations are tied to important points and are needed to understand them



- Did the speaker...
 - Define terms?
 - Talk through step by step?
 - Explain relevance?
 - Make equations large enough to be easily read?

The important points are reiterated at the end of the talk

- Recap key results
- Reiterate principal conclusions



A short summary..



Total cross section raises with energy.

This behavior is parameterized using “Regge Theory”, with 3 trajectories: softPomeron, hardPomeron, and Reggeon:

$$\sigma_{\text{TOT}}(s) = \alpha s^{0.08} + \gamma s^{0.4} + \beta s^{-0.5}$$

The total cross section is understood as a sum of components:

Elastic + diffractive + everything else.

The “RFT” and the “pQCD” models will help in understanding what is going on..

Questions are an essential part of a scientific talk

- Did the speaker ask for questions?
- Did the speaker repeat a question so everyone in the room heard it?
- Did the speaker treat questioners with respect?
- How did the speaker respond if s/he didn't know the answer?



For your first homework assignment

- Attend the Undergraduate Research Symposium, January 25, 141 LLP, 2:00-5:00 PM
- Listen actively and attentively
- Think critically about the science being presented
- Take notice of speakers' strengths and weaknesses
- Identify styles you'd like to emulate (or avoid)
- Ask questions

About the font...

Short Sharp Science

Cutting-edge science, cut up

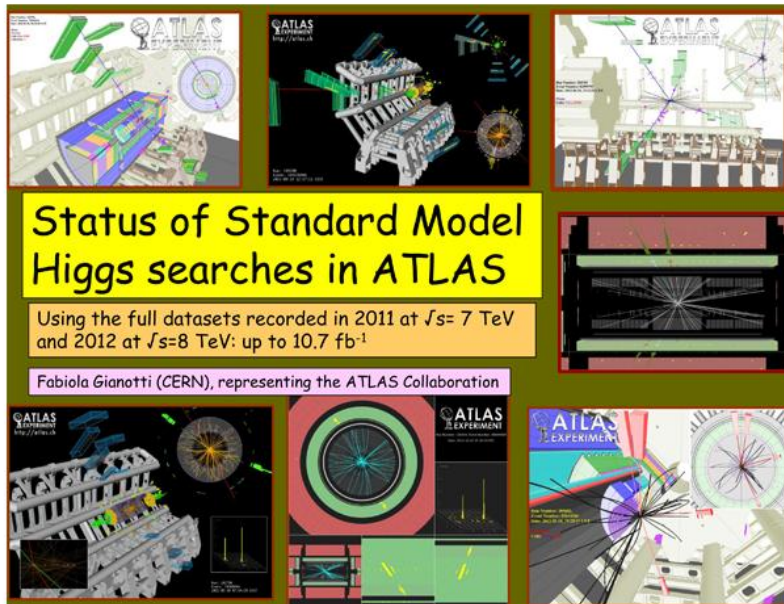


Higgs in Comic Sans: the right font for physics?

17:18 6 July 2012

Physics & Math

Jacob Aron, reporter



(Image: CERN)

The Higgs results presented at CERN this week were met with applause and cheers from Geneva to Melbourne, but one group was less pleased: font devotees. That's because the slides of one of the two presenters, Fabiola Gianotti of the ATLAS experiment, bore text set in Comic Sans. The typeface mimics handwriting and is much maligned for its irreverence and overuse.

theguardian

News | US | World | Sports | Comment | Culture | Business | Environment | Science | Tr

Culture | Art and design | Comic sans

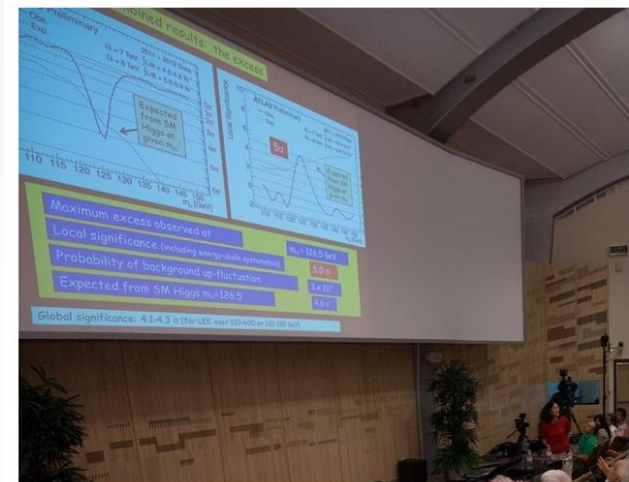
Higgs boson and Comic Sans: the perfect fusion

There is outrage on Twitter over Cern's use of Comic Sans on presentation slides. But if ever there was an announcement that needed to be made in an easy-to-read font, it's this one

Share 680
Tweet 345
+1 34
Share 10
Email

CERN scientists inexplicably present Higgs boson findings in Comic Sans

By Sam Byford on July 4, 2012 04:56 am | Email | @s3trangle



9.5k
Like

5,517

For many of us, the most shocking revelation to come out of CERN's Higgs boson announcement today was quite unrelated to the science itself. Rather, we were blown away by the fact that a team made up of some of the most undoubtedly brilliant people in the world believe that Comic Sans is an appropriate font for such a historic occasion. While criticizing the much-maligned typeface is almost as much of a cliché as using it by



15 UPDATES TO
The Higgs boson: CERN to discover the elusive