Communication in Physics
How to give talks
(HDW)

- Outline:
  - Course website, sources of information
  - General rules
  - Structure of talk
  - Guidelines/rules for giving talks
  - Slides
  - delivery

Course PHY3091

- Class meeting Mon Wed 13:25 to 14:15
- Every student to give three talks, with files to be submitted as assignment in Canvas
- Will try to record your talks and post in Canvas
- Grade based on outlines and talks (rubric for talk evaluation on course website)
- Students evaluate each other – evaluation by your peers contribute to assessment of your talk
- Quality of your evaluation of others contributes to your grade

Sources of information

- Course website has links to useful documents
  - http://www.hep.fsu.edu/~wahl/phy3091/fa18
  - http://www.hep.fsu.edu/~wahl/phy3091/links.html

- Especially useful documents:
  - How to give short talks (Michael Morrison)
    http://www.hep.fsu.edu/~wahl/phy3091/shorttalks.pdf
  - Physics Oral presentations 101 (Jaroslav Fabian)
    http://www.physik.uniregensburg.de/forschung/fabian/pages/mainframes/lecturenotes/lecturenotes_files/giving_physics_talks.pdf
  - Guide to science writing and speaking
    http://www.physics.ohio-state.edu/~wilkins/writing/

General rules

- Know your subject
  - do not give talks about subjects that you are not familiar / comfortable with
- Know your audience
  - Adapt level of coverage to preparedness of audience
  - Better aim lower than too high
- Decide on message for audience to take home
  - For 15 min. talk: at most two major points
- Respect allotted time
- Practice a lot

About level of talk

Planck to Schrödinger:
About level of talk

In June 1926 Schrödinger was invited to visit Berlin to give a lecture, and he wrote to Planck for advice regarding the level of presentation. Planck's response[1] is still useful as a guide:

> You also ask about the level at which your lecture should best be given, or rather at which it should begin. I would like to propose, in agreement with my colleagues, that you imagine your audience to be students in the upper classes who, therefore, have already had mechanics and geometrical optics, but who have not yet advanced into the higher realms; to whom, therefore, the Hamilton–Jacobi differential equation, *if* they are acquainted with it at all, signifies a difficult result of profound research, deserving of reverence, and not by any means something to be taken for granted. Under no circumstances, however, should you be afraid that any one of us will consider one sentence of yours to be superfluous. For even if the sentence should not be necessary for an understanding of your train of thought, it would always offer the particular interest of seeing what special paths your thought takes and which particular forms your perception favors. For all of us the main point of your lecture will be what you yourself in your letter designated as a general survey of the fundamentals for the purpose of orientation without much calculation and without many individual problems.

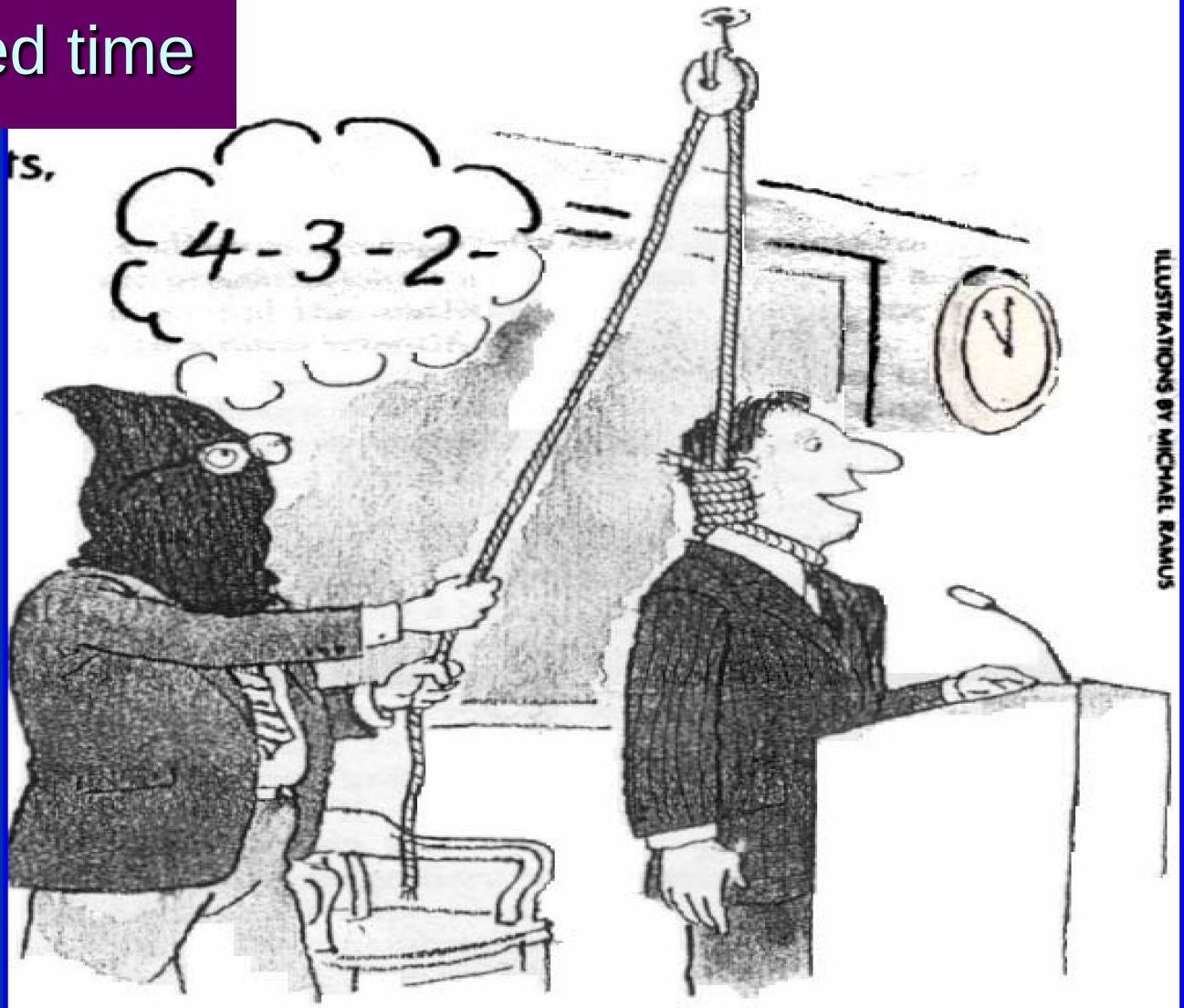
Planck then goes on to suggest that Schrödinger give a second lecture, at which time he can go into greater detail.

PHYSICS TODAY OCTOBER 1993 135

Respect the allotted time

James Garland:
Advice to Beginning Speakers,

Physics Today 42, July 1991



Structure of talk

- Title
- Contents (outline)
- Introduction
- Body
- Conclusions (summary)

Title page

- Title of talk
- Name of presenter
- If applicable:
  - Collaborators, acknowledgements,
- Possibly some picture relating to talk

http://aliceinwonderland.wikia.com/wiki/The_Mad_Hatter?file=MadHatterTenniel.jpg

Content/Outline

- Say what you are going to talk about
  - Give list of main points, with focus on your main message
  - In a short talk, essentially a list of the slides
  - In short talk, do not spend too much time on this

Introduction

- Put your talk in broader context
  - How does topic covered in your talk fit into more general body of knowledge, understanding
  - Other/previous work in the field
  - Try to establish link to something the audience already knows
- Motivate the audience –
  - Why should the audience listen to you?
  - Why is your topic interesting?

Body of presentation

- Well organized, logical order
- Streamline towards your main message
- Easy to follow – match spoken word to slides
- Use colors, FONTS,.. to help audience
- Illustrations (rather than 1000 words..)
- Few equations
- Stress main points
- Do not overcrowd

Conclusion / summary

- Tell the audience what you told them
- Stress the main message that you want the audience to remember from your talk
- Credits, references (may need separate slide after conclusion slide)

(more detailed☺)
Rules for giving a good talk

0. Topic must be interesting
1. Know the audience
2. Time the talk
3. Be qualitative
4. Engage the audience
5. Keep Pandora's box closed
6. Give proper credit
7. Anticipate questions
8. Practice
9. Develop your own style
10. Enjoy the talk

Rule 0

- Talk should report something interesting (ideas, results, observations,…)
- In this course: related to science (physics preferred)

Rule 1: Know the audience

- What is the level?
  - general public
  - undergrads
  - grads, experts
  - husband/wife/(girl/boy)friend

- adjustment of level:
  - Imagine yourself in their shoes and adjust your talk (especially the length of the introduction) to be comprehensible to an average person in that level. ***Then make your talk one level simpler!***

Rule 2: Time the talk

- Intrinsic timing for 15 minute talks:
  - Title, outline – 1 minute
  - Introduction – 3 minutes
  - Body – 10 to 11 minutes
  - conclusion/summary – 2 to 1 minute
- guideline for timing:
  - Allow at least one minute per slide
  - Better less than more (but not too little either!)

Rule 3: stress concepts

- Physics is an exact science – equations important, but pleasure derives from qualitative understanding
- Make sure to get the concept across rather than details
- Give simple pictures and graphs
- Keep formulae simple
- Give tables only when necessary or when they convey your point better than a graph

Rule 4: engage the audience

- interesting topic is a necessary, but not sufficient condition for interesting talk
- Do not be afraid to use gestures or movements (but should be natural – watch yourself!)
- Jokes are allowed, even encouraged
- Use voice and color/font variations to stress important points
- Make audience think, keep them alert -- ask a question, pause, provide answer
- Maintain eye contact with audience (not only the (blonde beauty)/(athletic looking hunk) in the third row)

Rule 5: talk about what you know

- Do not talk about or even mention things of which you have only a faint idea.
- If you open “Pandora’s box”, somebody in the audience may be inspired to ask a question $\Rightarrow$ potential source of embarrassment

Rule 6: Give proper credit

- display acknowledgements
- Give sources of your knowledge, formulations (references,..)
- give credit to relevant work
- Cite the sources of the pictures that you borrow or are inspired by

Rule 7: anticipate questions

- Being able to answer questions makes you appear competent
  - Try to think of possible/expected questions and prepare for them
  - Maybe have back-up slides to answer some of them
- Be honest if you do not know the answer; possible responses:
  - This is an interesting question, but I would need more time to think about an answer.
  - A very good question. Work is in progress on a related problem so if you come to my next talk in 2018 I will let you know.
  - I should have thought about that, this is very good.
  - Honestly I do not know the answer. But you appear to know more than I do on this issue so I would be interested in talking to you after my talk / after the session
  - I am not familiar with that work of Prof. Einstein so I cannot comment on it

Rule 9: develop your own style

- Be creative, play with colors and fonts
- Include graphs, illustrative pictures that you find on the web
- But avoid gimmicks , e.g. lines flying in with sound effects (unless it is absolutely necessary to make your point)

Rule 10: enjoy your talk

- You should be excited to talk about an interesting subject
- You should be excited to share your knowledge with your audience
- You should be happy that people actually listen to you
- .. And you should let the audience feel your enthusiasm
- … and being nervous is OK and normal -- try to relax

About slides

- Should be concise, but not too concise
- No long winded sentences on slides
- Use legible font (sans serif preferred)
- Avoid gimmicks, crazy backgrounds,..
- Make sure contrast writing/background is good
- every slide clear message
- Figures need captions
- Figures must serve a purpose, not just decoration
- Avoid jargon, undefined acronyms

Delivery

- Maintain reasonable posture
- Speak sufficiently loudly
- Enunciate clearly, don’t mumble, slur,..
- Make sure there is correspondence between content of the slide and your spoken word
- Do not read from slides, except when quoting literally
- Use a pointer to guide audience
- Interact with audience, maintain eye contact

Additional Random Rules 11-14

11. Show audience when your talk is over (but do not include a slide with “Thank you”)
12. Reading from a slide is OK if you read a literal citation; otherwise to be avoided
13. Dress in a socially acceptable way (but in this environment, no formal wear is required or expected (physicists !))
14. Repeat questions before answering

PowerPoint Skeptics

- Learning to love Powerpoint
  - http://archive.wired.com/wired/archive/11.09/ppt1.html
- Power point is Evil
  - http://archive.wired.com/wired/archive/11.09/ppt2.html
- The Gettysburg Powerpoint Presentation
  - http://www.norvig.com/Gettysburg/index.htm
  - http://www.norvig.com/

Some references

- http://www.physik.uniregensburg.de/forschung/fabian/pages/mainframes/lecturenotes/lecturenotes_files/giving_physics_talks.pdf
- http://www.cs.cornell.edu/cv/shorttalk.htm
- http://www.inc.com/bill-murphy-jr/7-things-to-do-when-you-have-to-give-a-short-speech.html
- http://www-psych.stanford.edu/~lera/290/lecture5.html
- http://software.ac.uk/home/cw11/giving-good-lightning-talk
- http://www.cs.tufts.edu/~nr/students/talks.html
- http://www.phys.unsw.edu.au/~jw/talks.html
- http://www.forbes.com/sites/nickmorgan/2012/05/14/how-to-create-a-short-speech-fast/