

Writing and reviewing Medical Physics papers: part II

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in conjunction with

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AAPM Annual Meeting Minneapolis

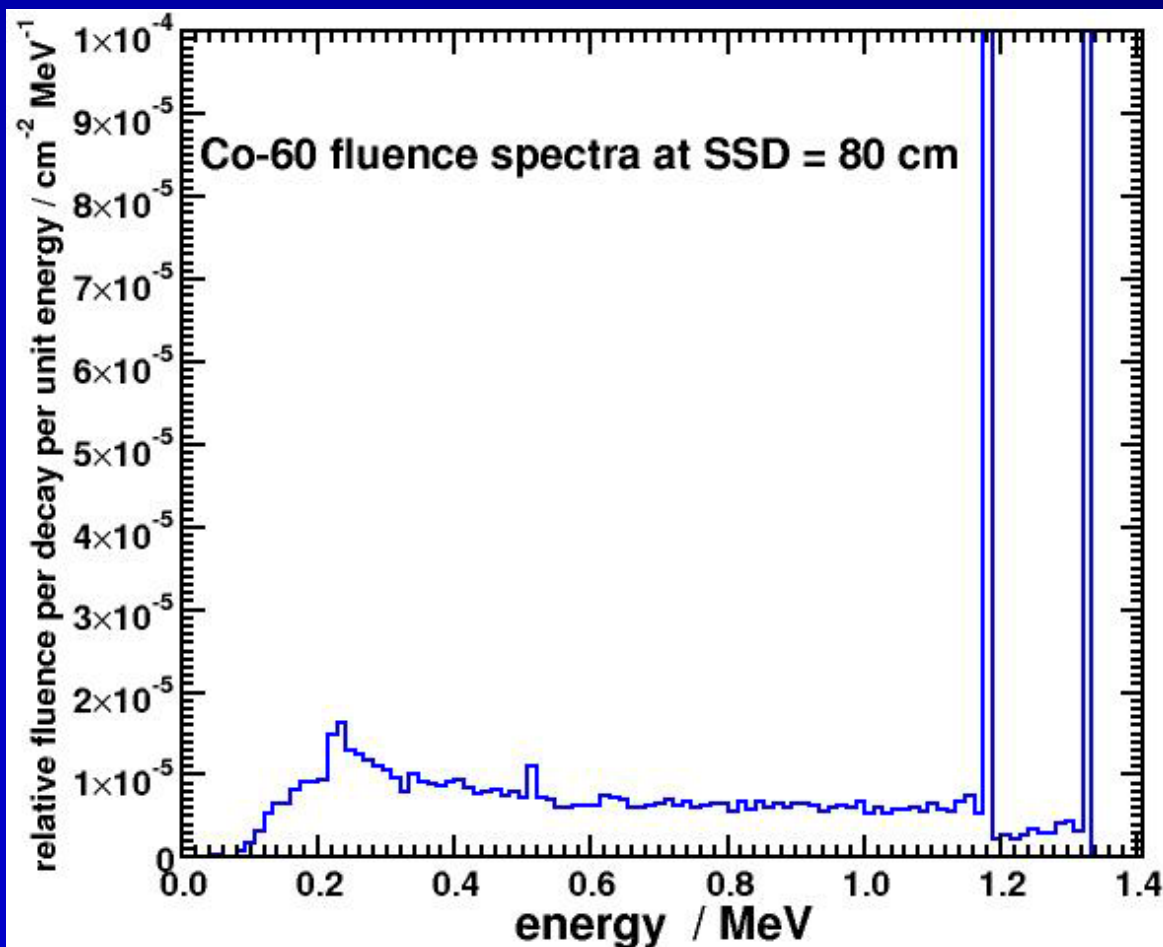
16:00-17:30 Mon 07/07/23

Outline of talk

- thoughts on proper graphs
 - Dave's rules for figures
 - (as imposed on my own students)
- Guidelines for authorship
- Random advice on refereeing well

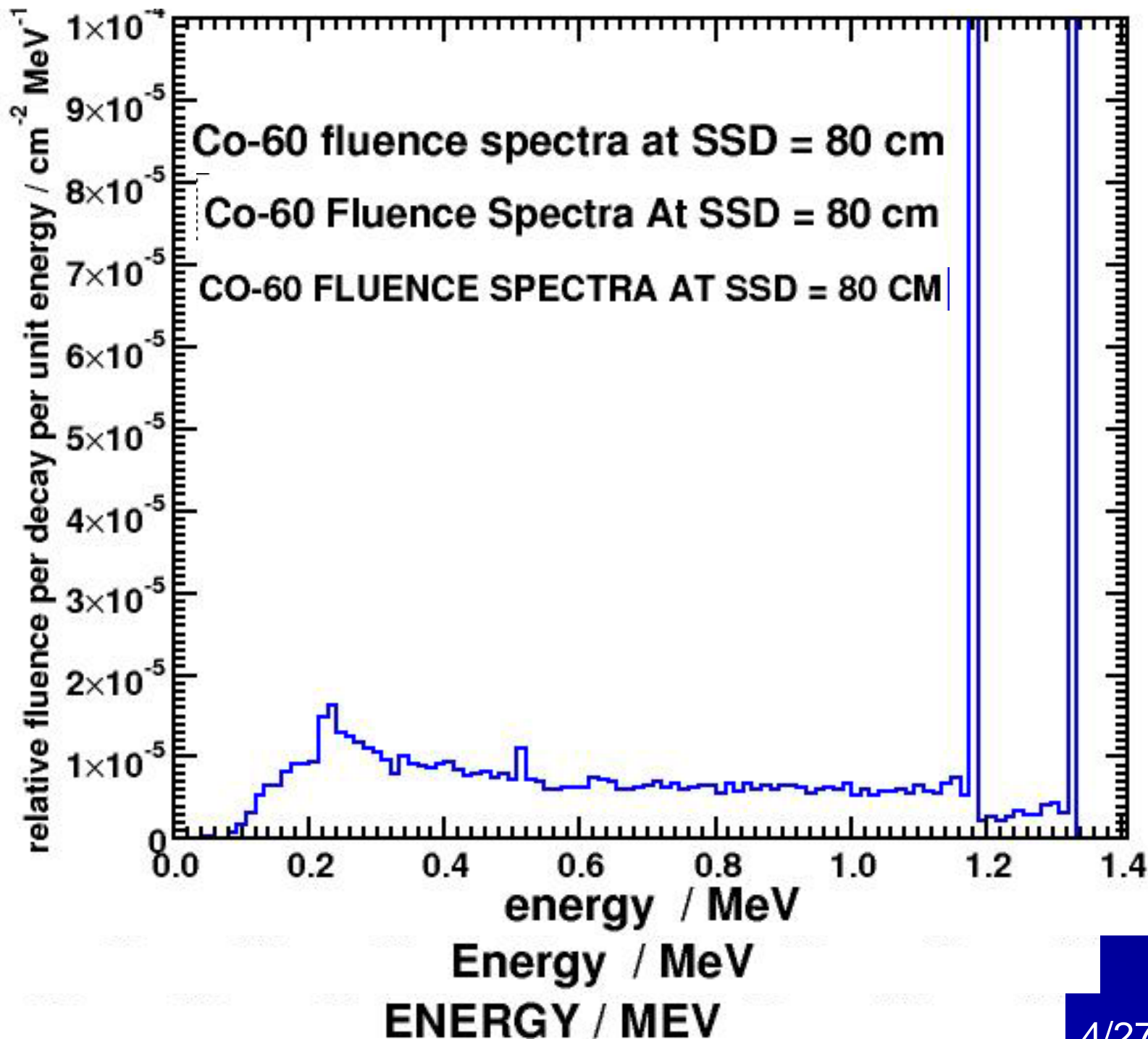
1) labels should be lower case

- except where capitals are mandatory (eg MeV, Gy)
- experts agree: **lower case** is far easier to read

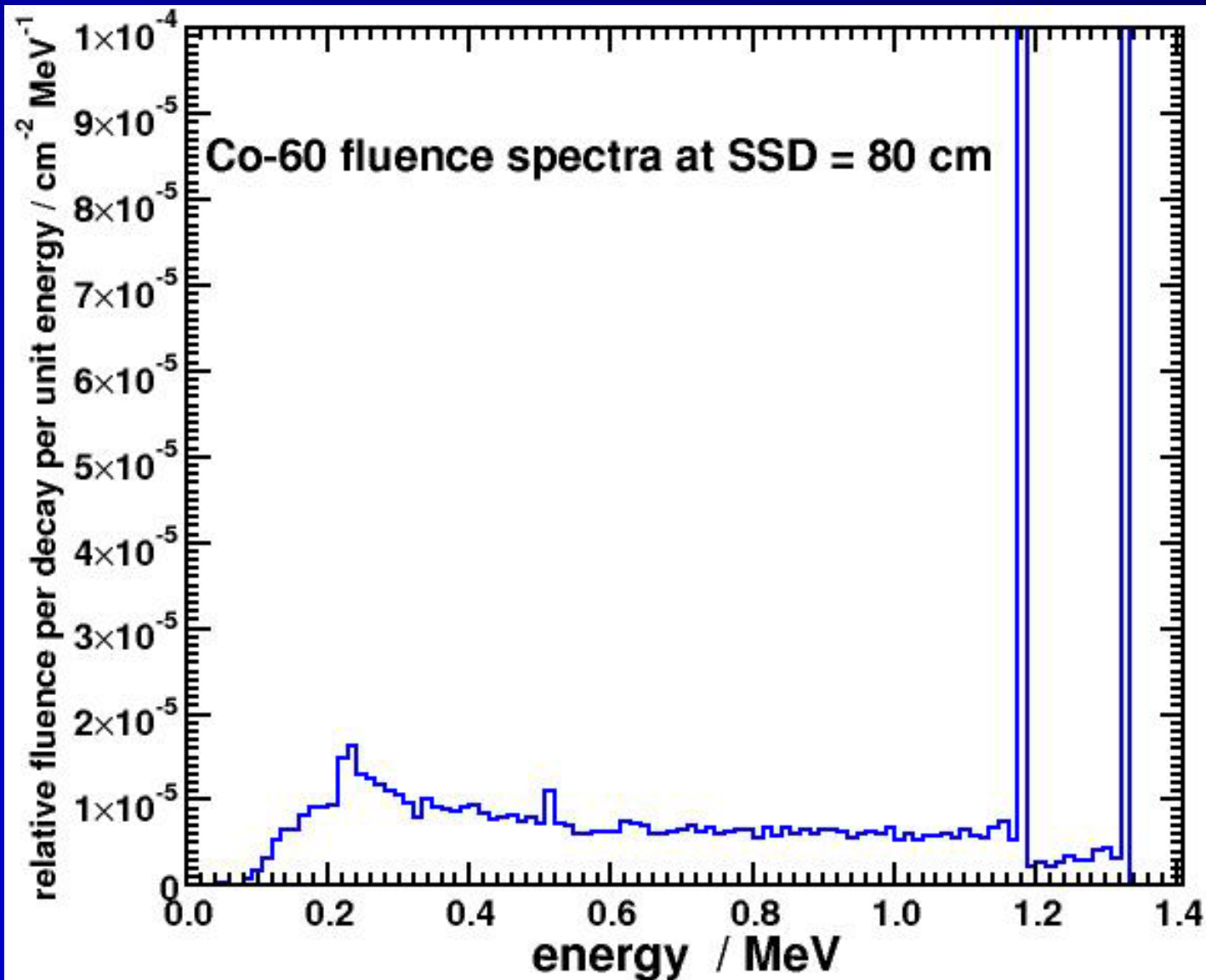


RELATIVE FLUENCE PER DECAY PER UNIT ENERGY / $\text{CM}^{-2} \text{MEV}^{-1}$

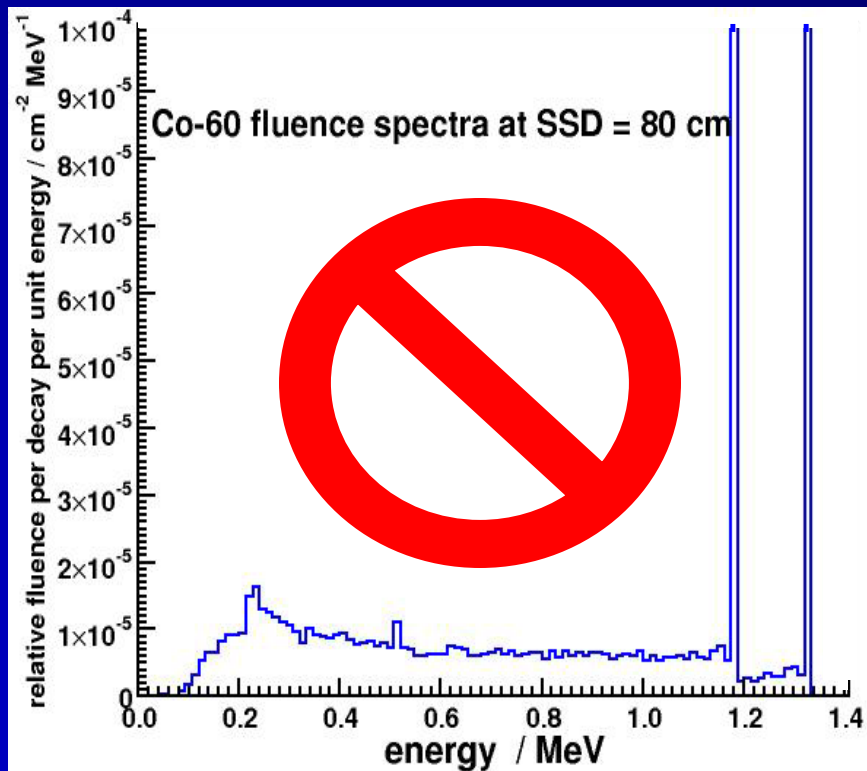
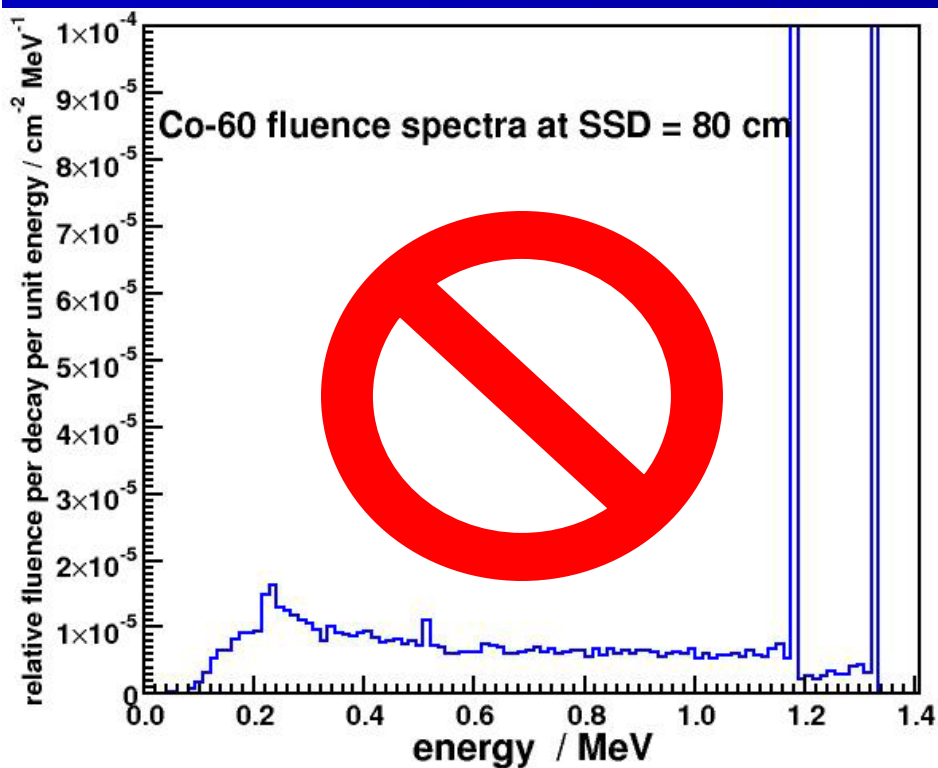
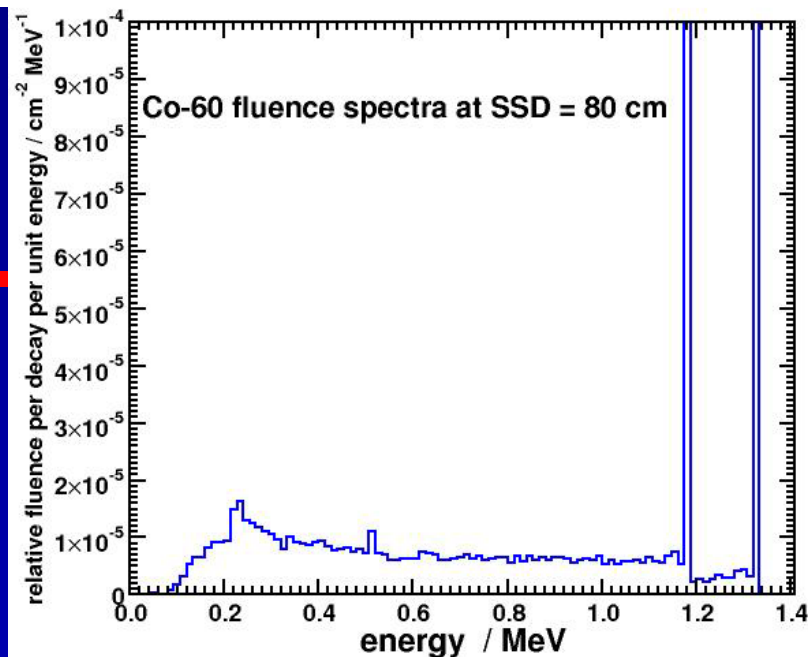
Relative Fluence Per Decay Per Unit Energy / $\text{cm}^{-2} \text{MeV}^{-1}$



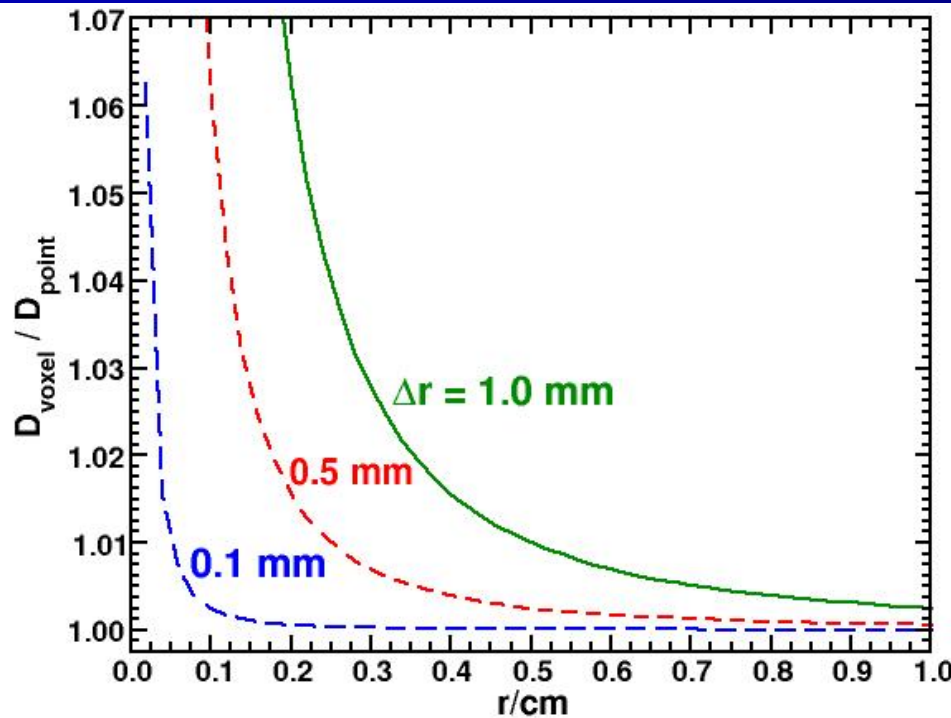
2) always use axes and tick marks on all 4 sides



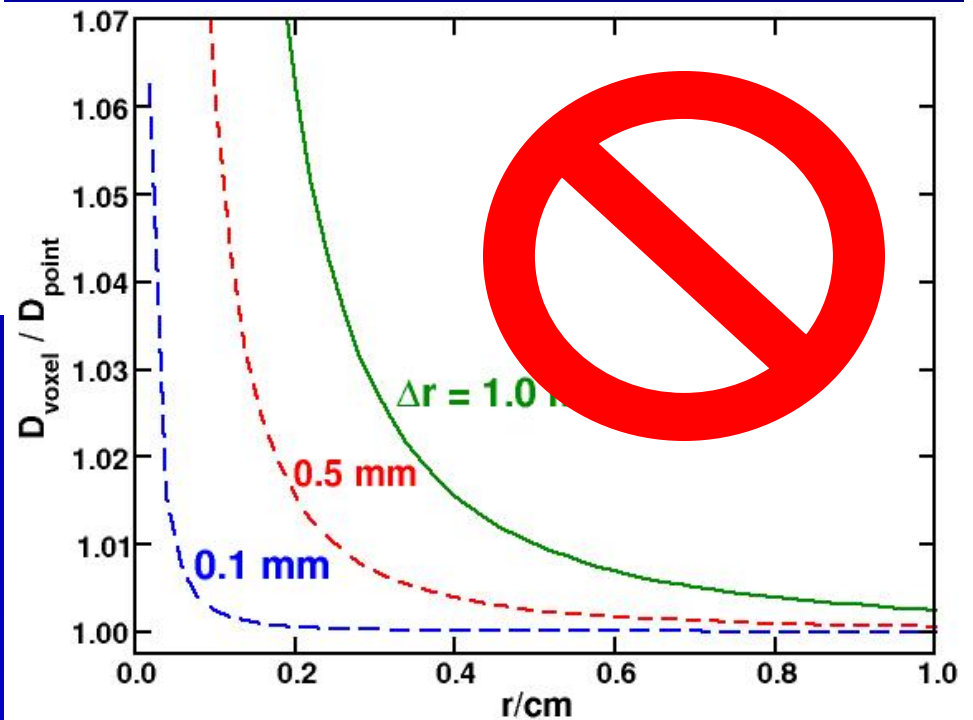
4 axes with
ticks



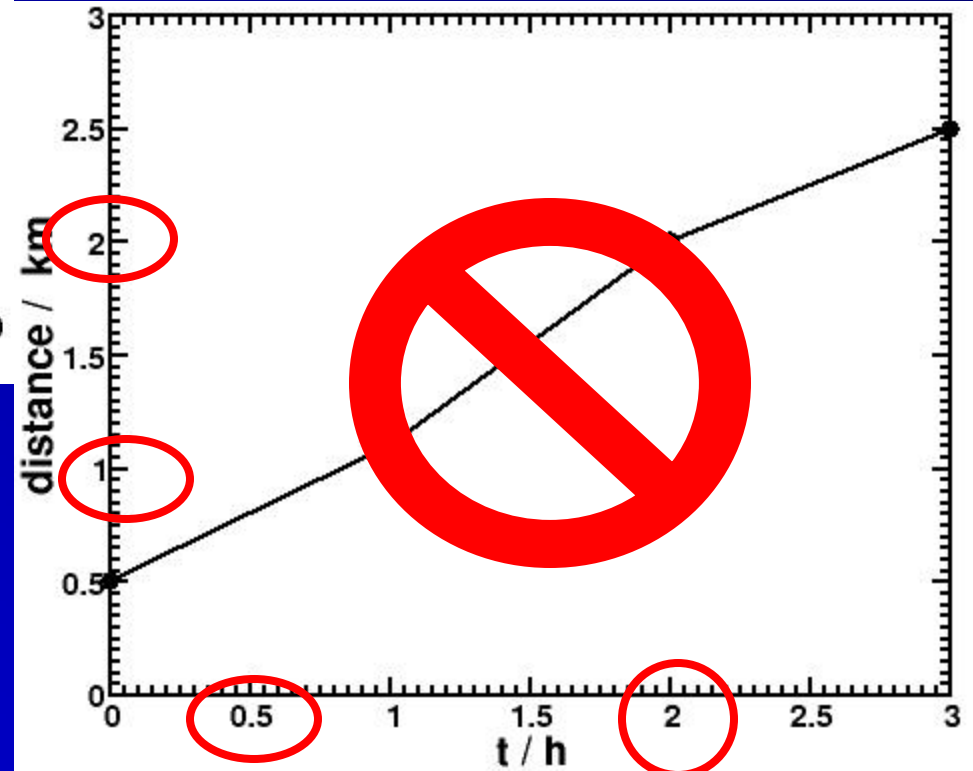
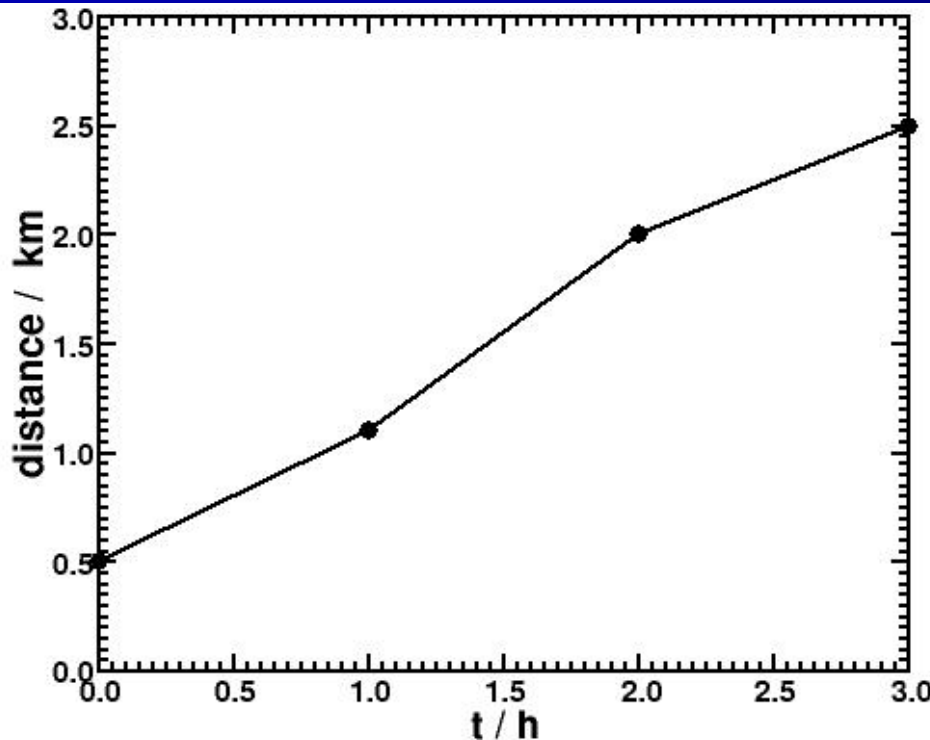
3) # ticks commensurate with accuracy



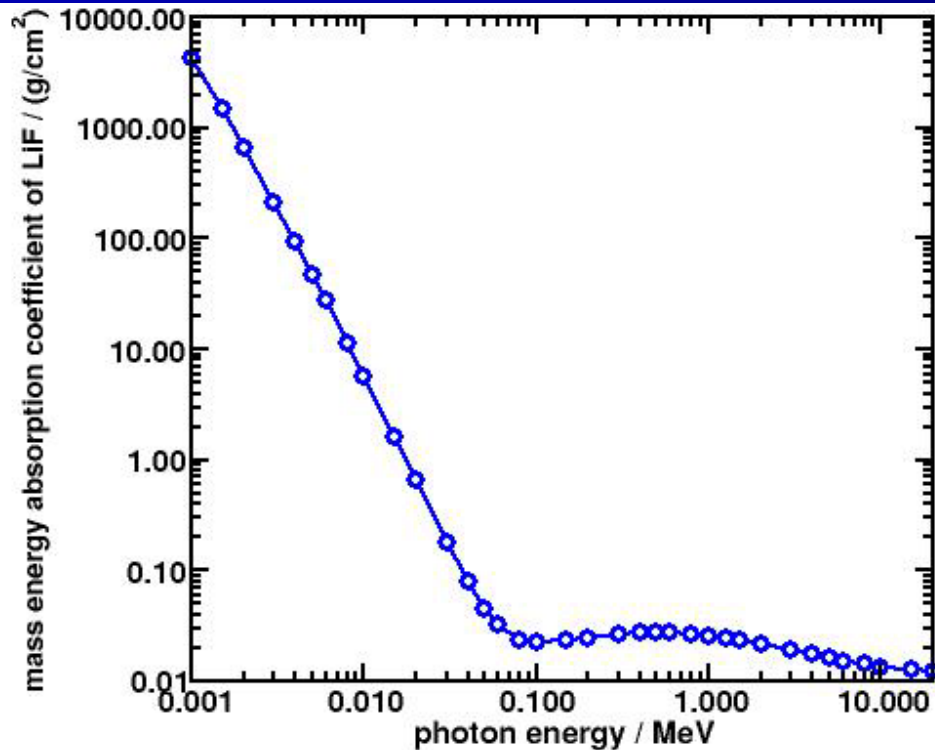
What is the ratio at 1 cm?
How close can you be to get 1% accuracy?



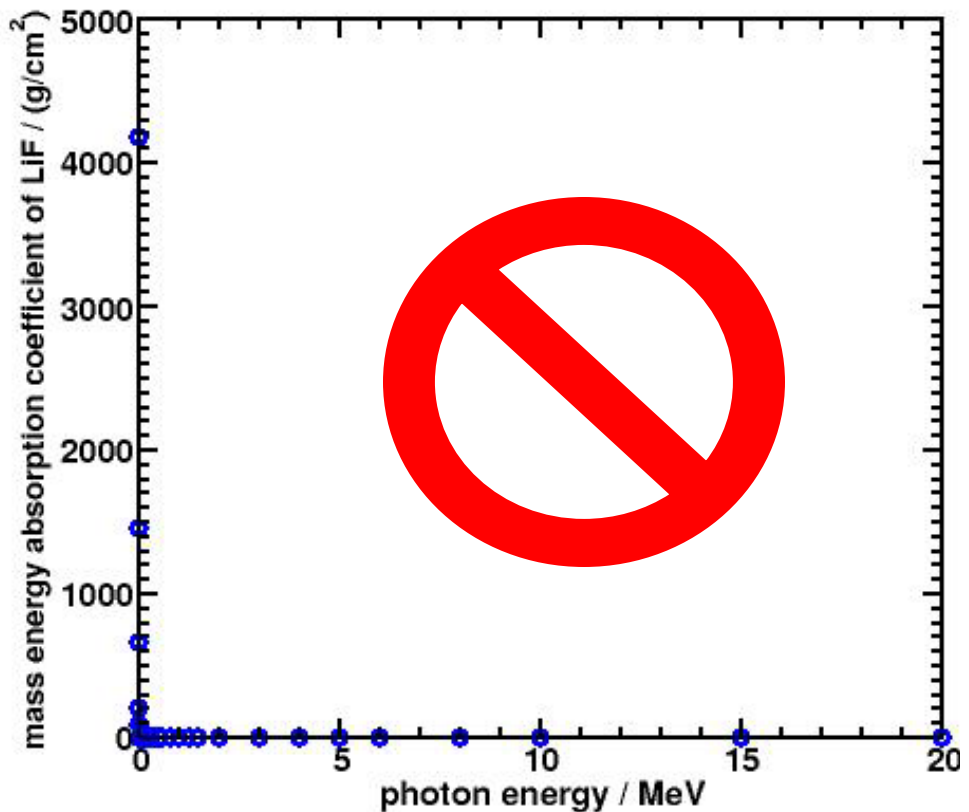
4) labels have a uniform # digits



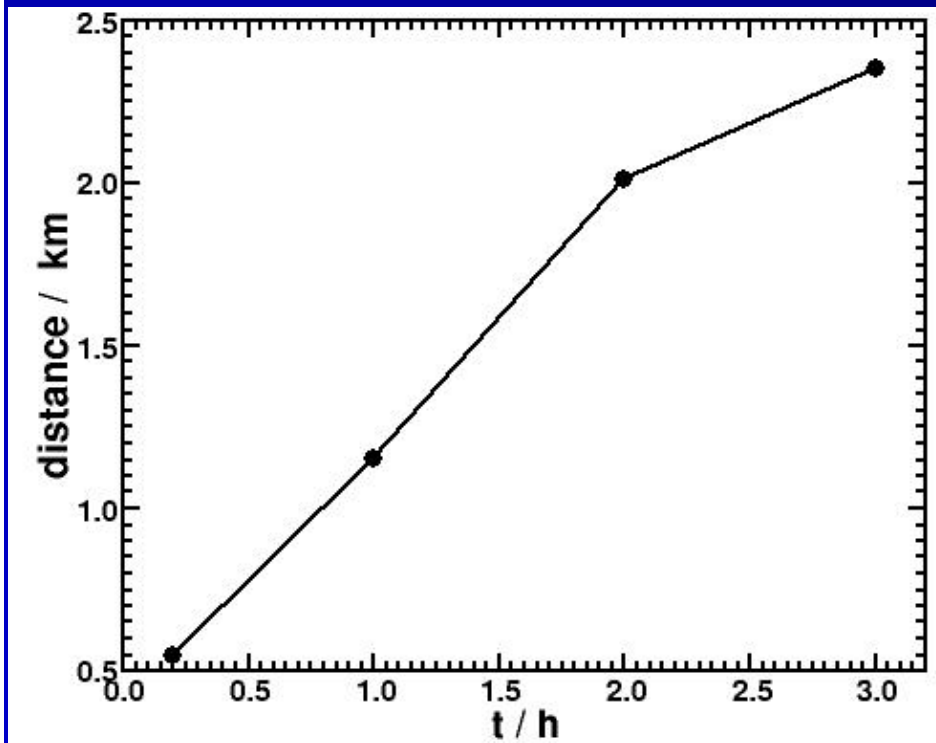
5) choose axis limits/forms to use area effectively



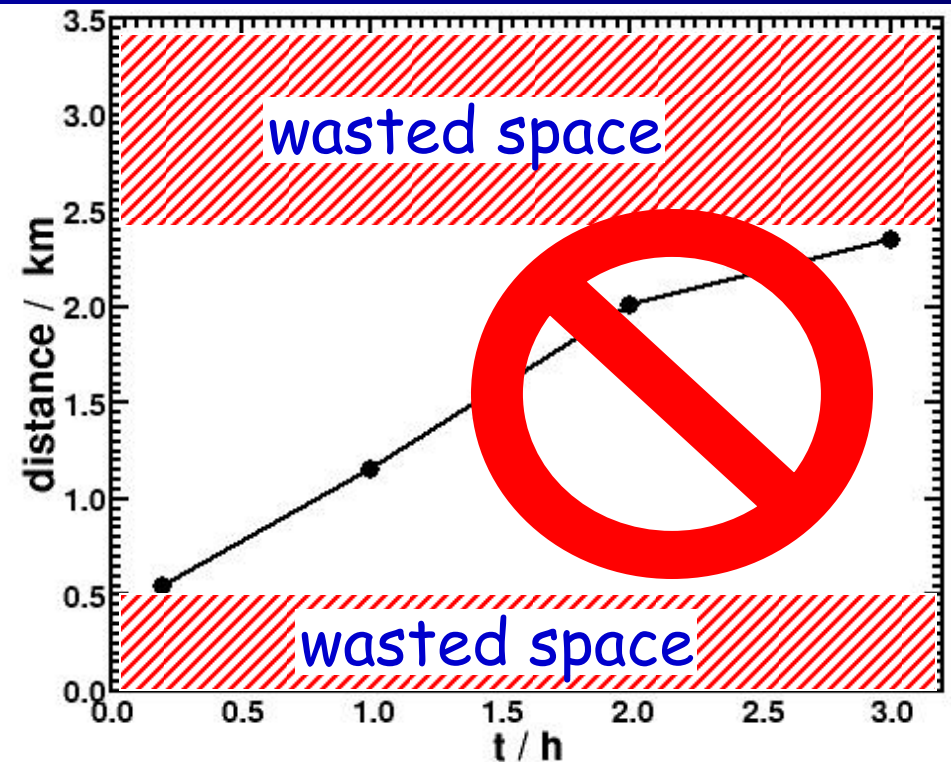
Use ratios to compare two nearly equal quantities



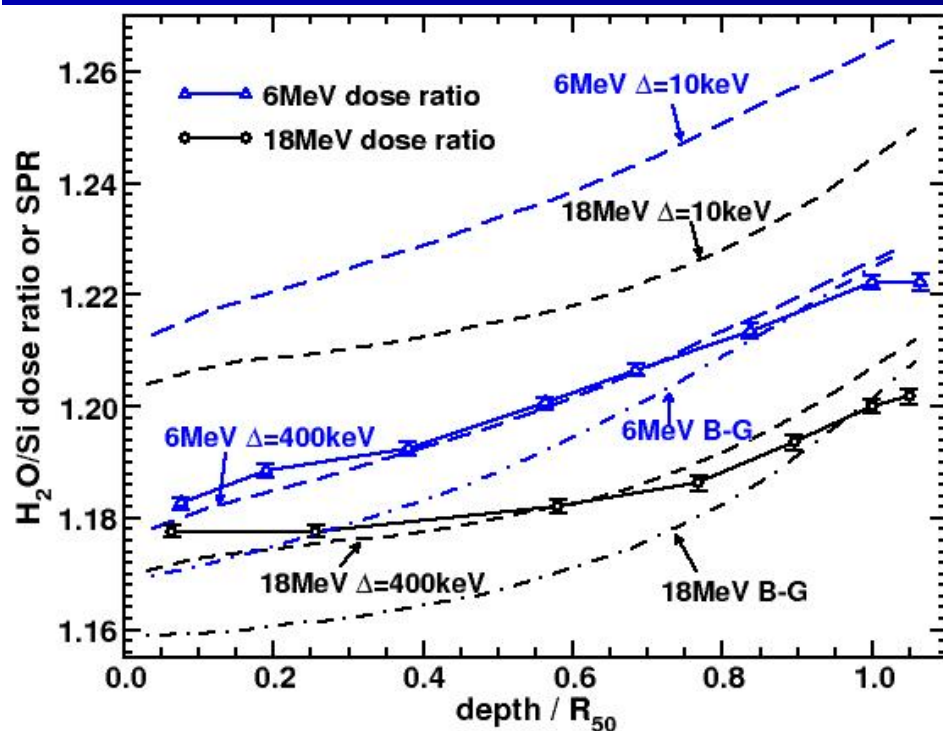
5) choose axis limits/forms to use area effectively



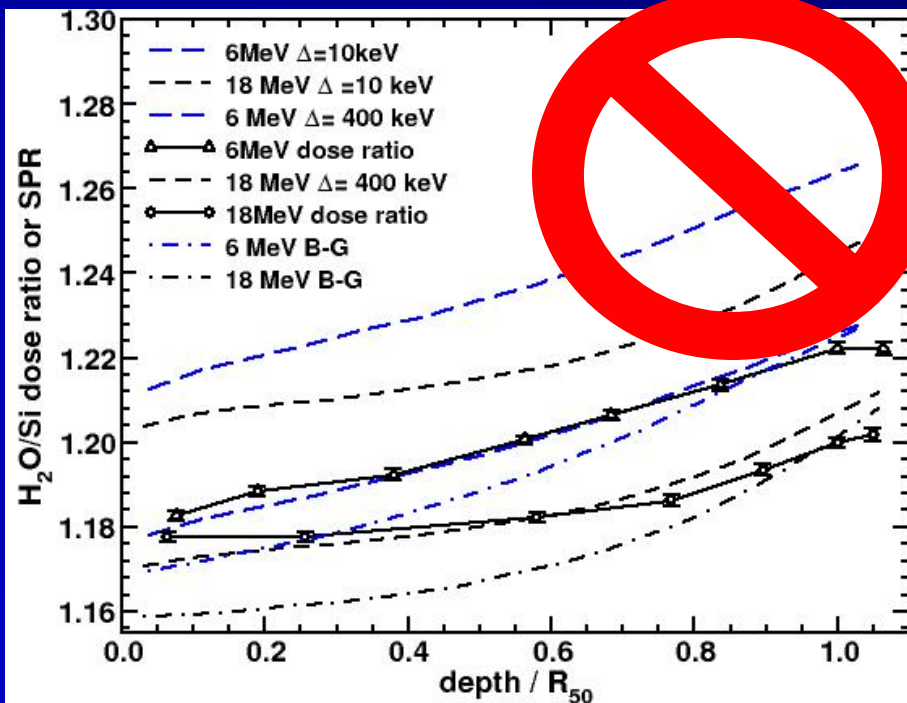
People often use ranges which are 30% too large
 \Rightarrow 50% of space is useless



6) use arrows and labels rather than legends if possible

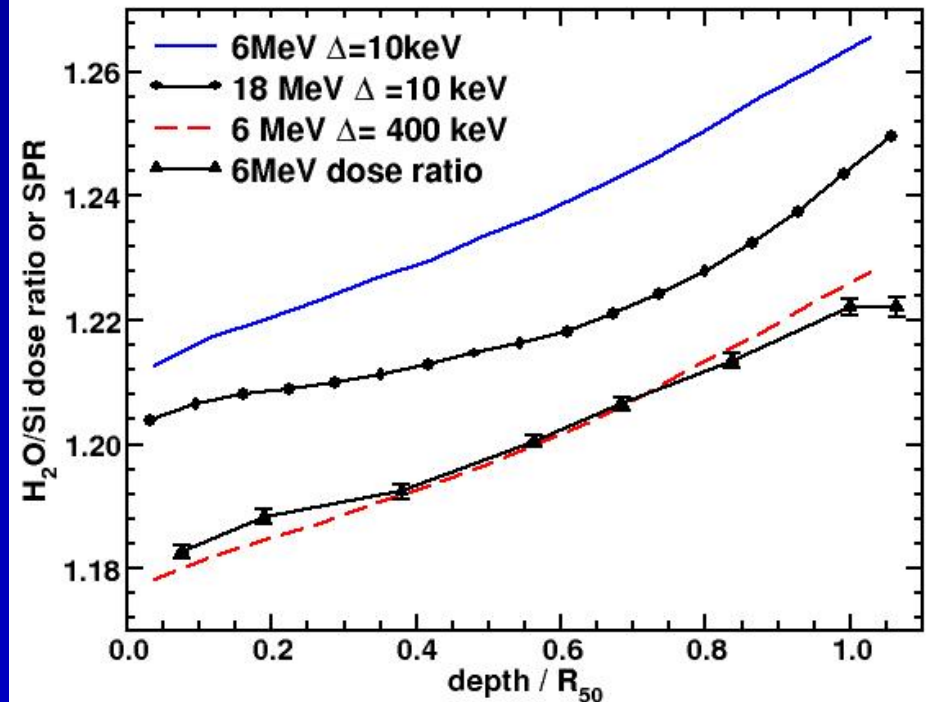
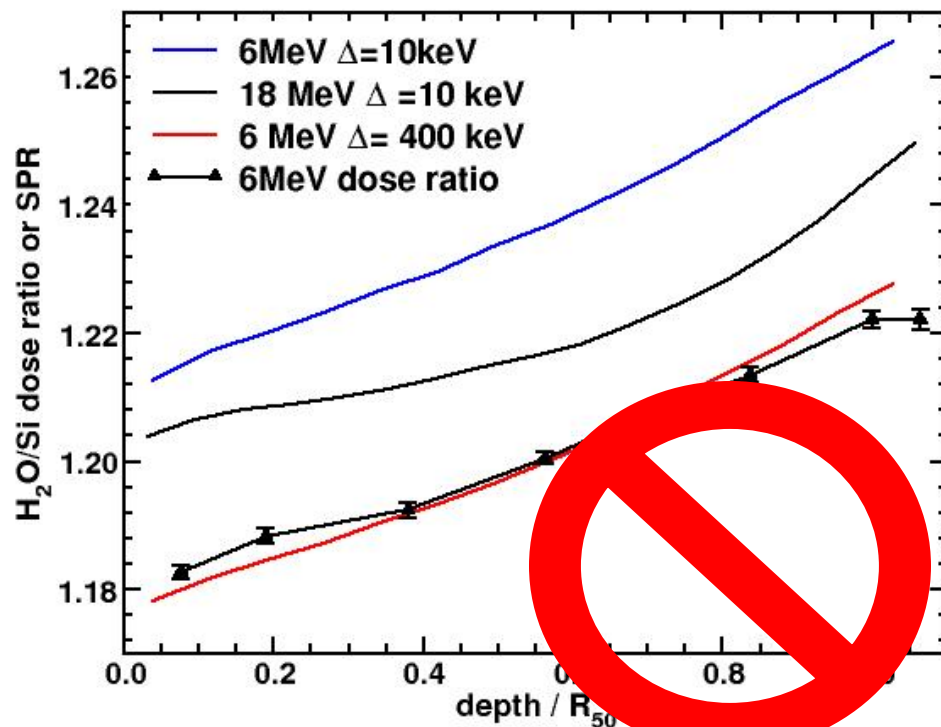


These are far too busy for use in a talk and possibly even in a paper

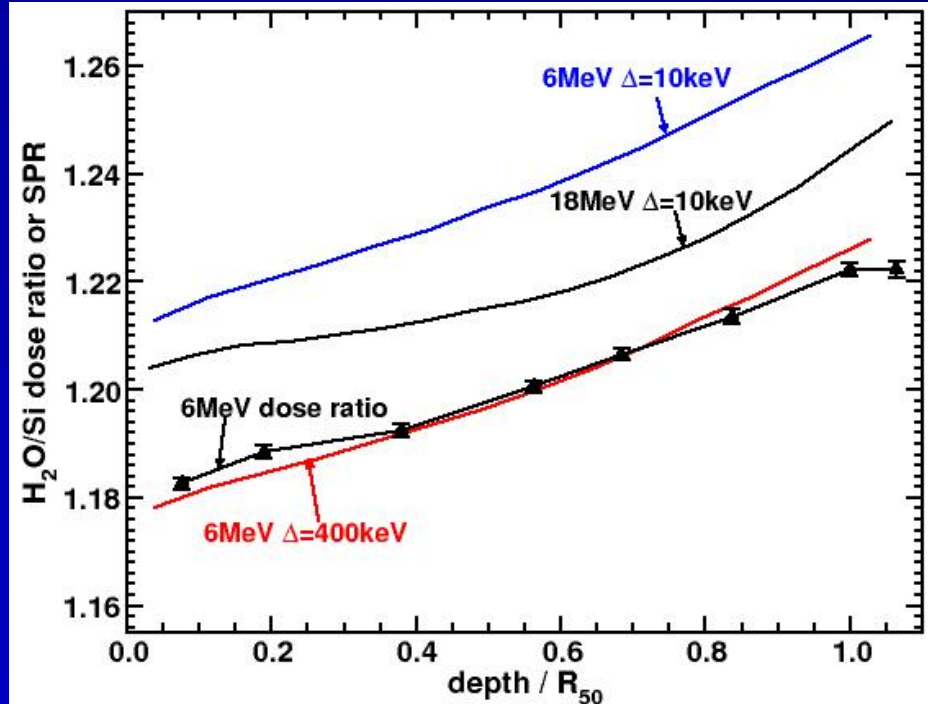
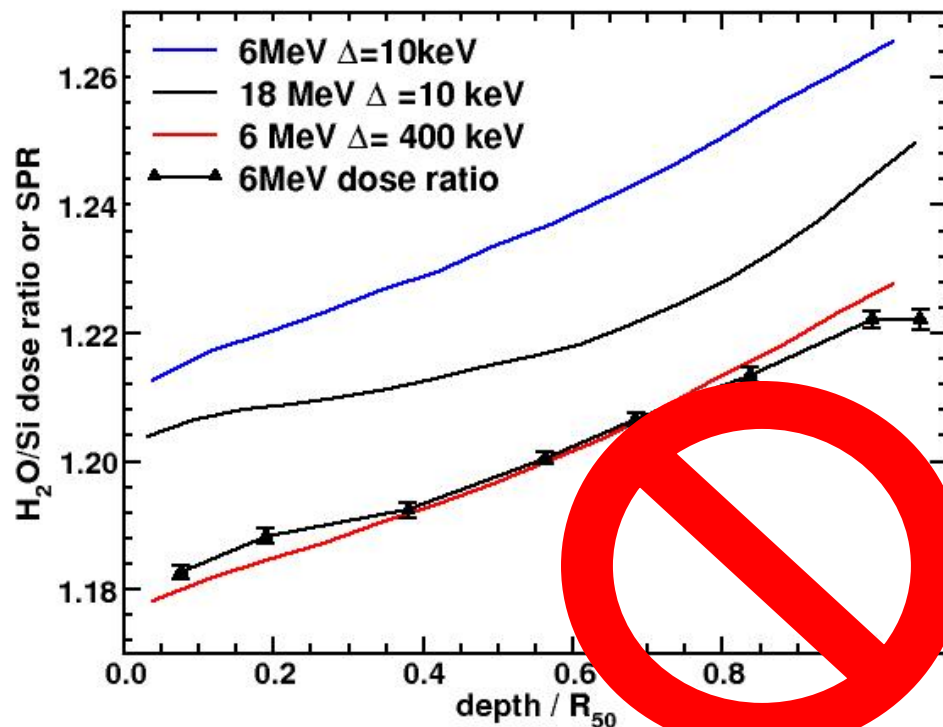


Added advantage: labels make the above work in black and white too.

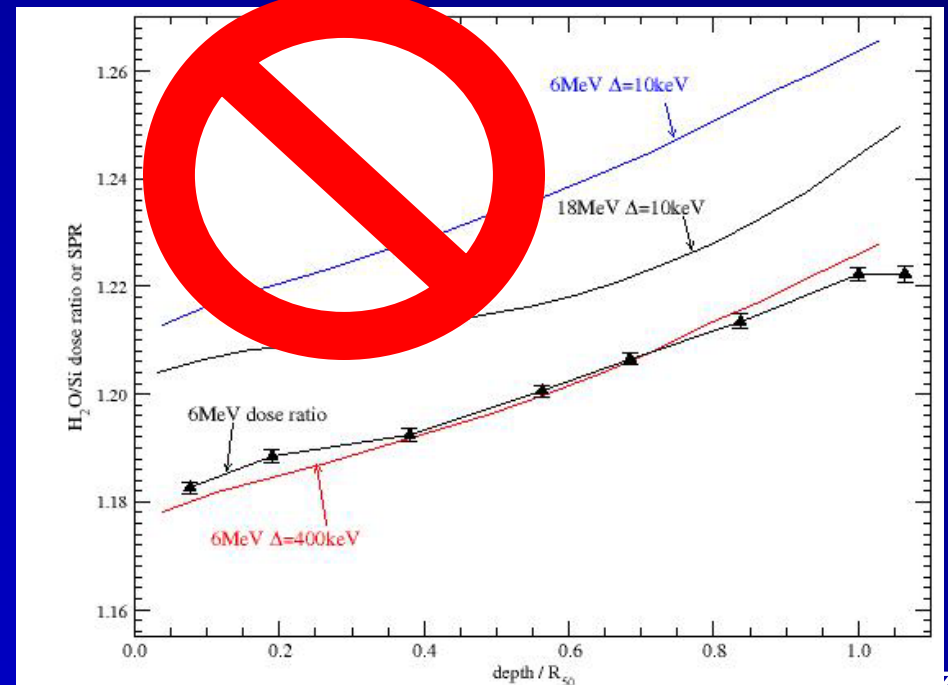
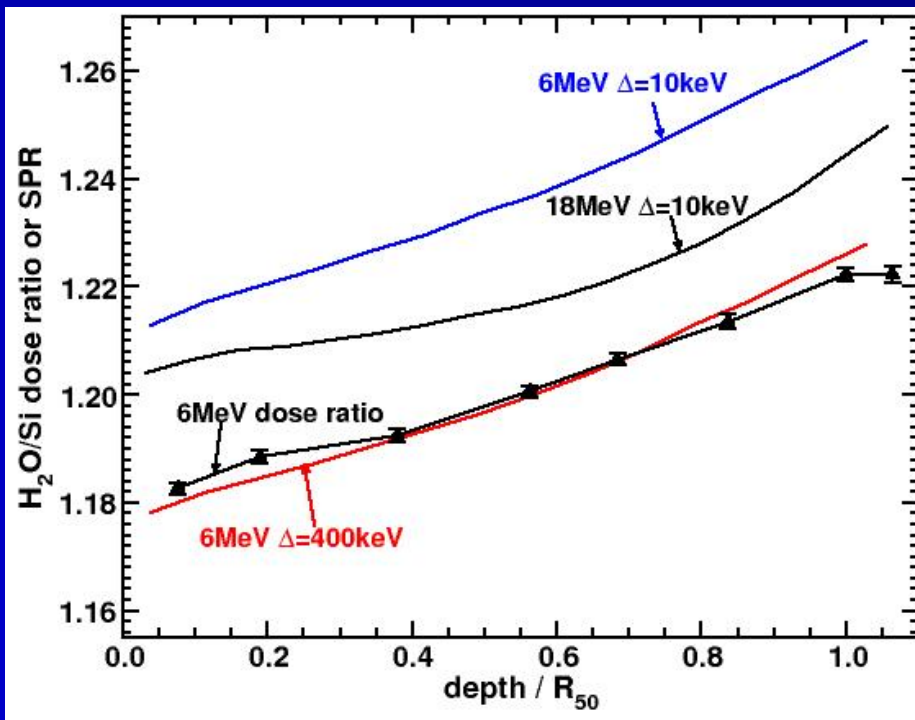
7) make symbols & lines work in B&W, even if colour used for on-line version (referees use B&W printers)



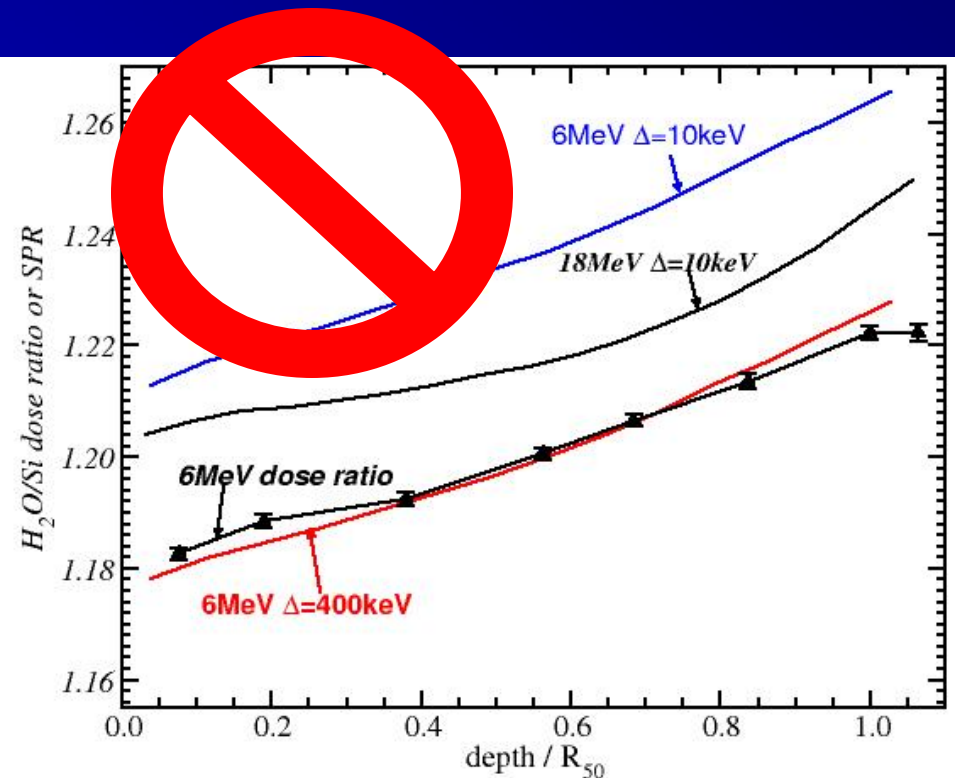
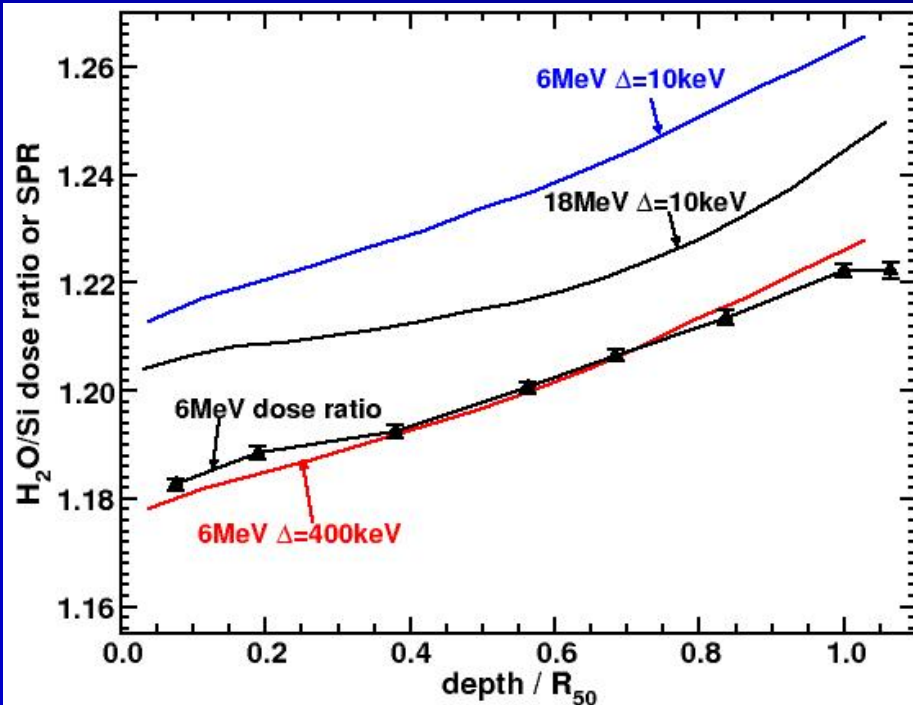
7) make symbols & lines work in B&W, even if colour used for on-line version(referees use B&W printers)



8) make sure all lines and font sizes are thick enough after reduction: figure will be 8.5 cm wide



9) use a consistent, clear font (I prefer helvetica or arial)

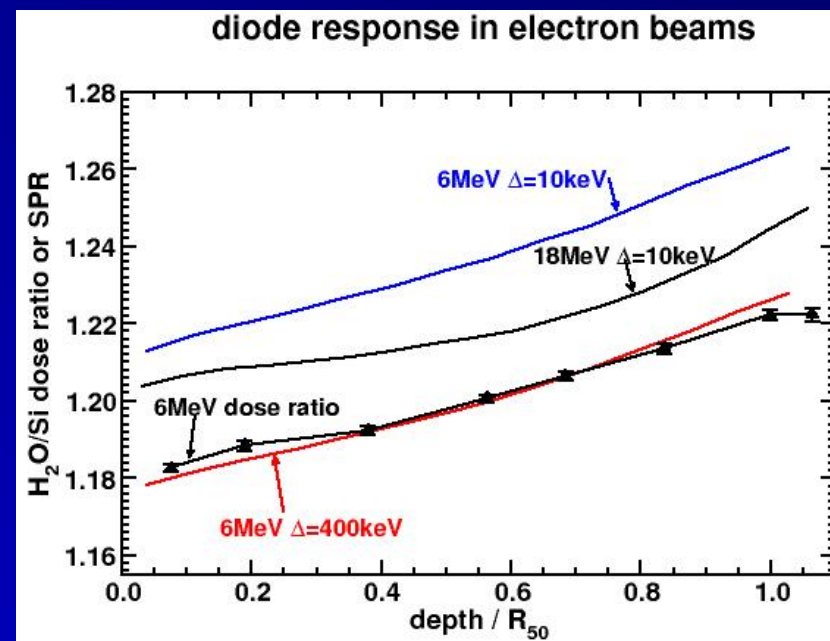
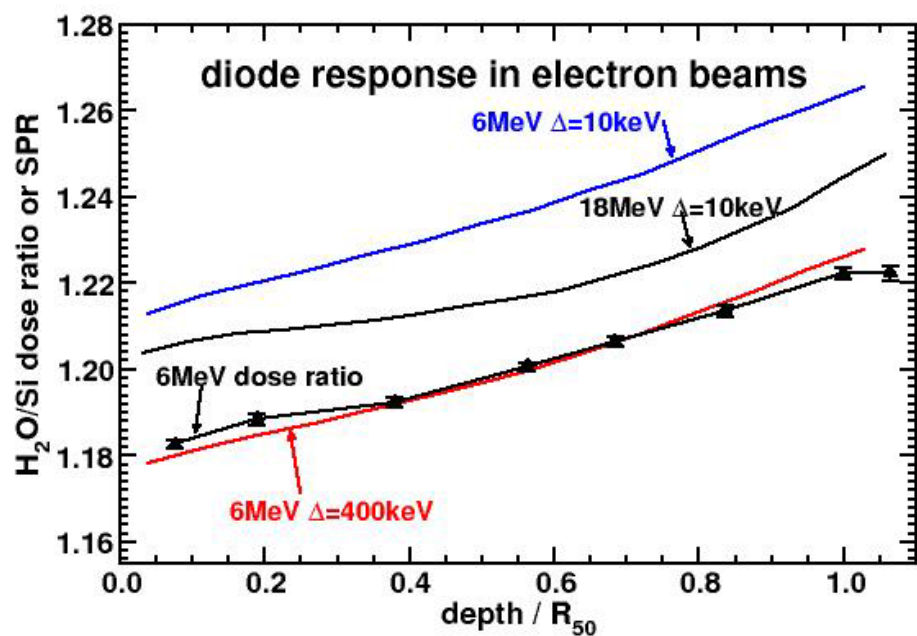


10) roughly square figures work best in the journal

Maximum width is about 8.7 cm = column width

Height is adjusted as needed, but a tall narrow figure will be shrunk laterally.

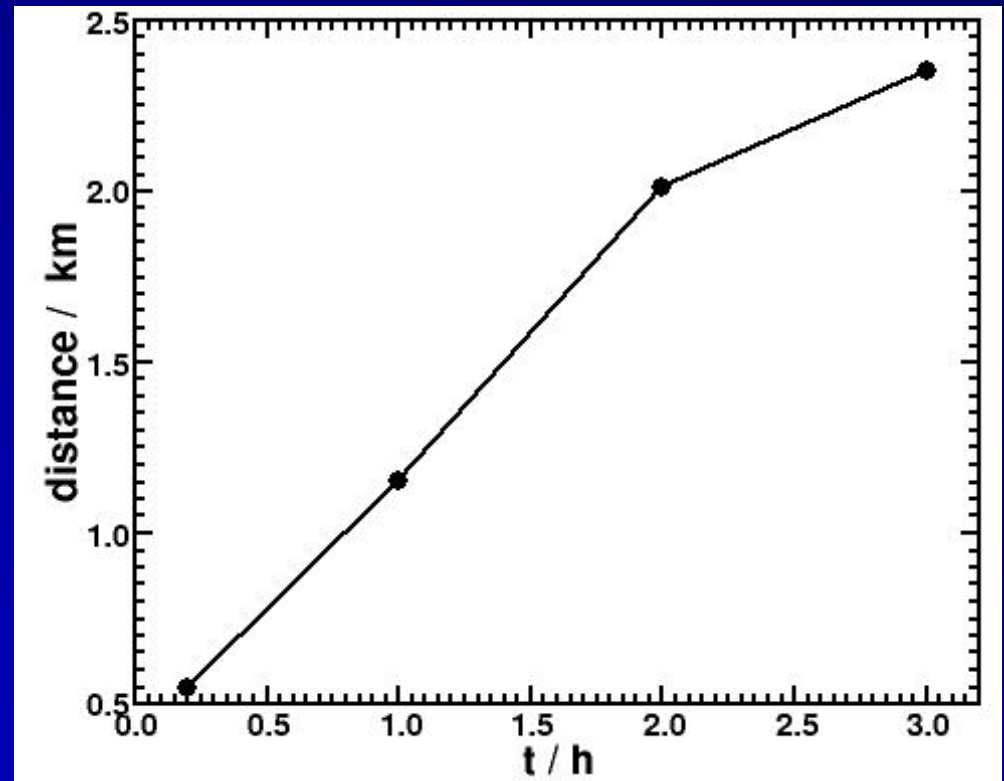
11) do not use titles/legends outside the axes



Graph on left makes far better use of the space

12) axis labels: quantity / units (SI) (personal preference)

The ICRU points out that we can only plot numbers, so what the axis should be is **the quantity divided by the unit**.



Whatever style you use, make sure the **quantity** being plotted is **clearly labelled** and the **units clearly specified**.

13) Captions should be self-contained

People skim a paper by looking at the figures.

Make the captions **as self-contained as reasonable**, but don't repeat things.

This will make your paper have **more impact**.

Authorship guidelines

- all authors must warrant being authors
- all those who warrant being authors, must be authors
- all authors carry responsibility for the content of the paper (so they must have at least read it!)

Authorship guidelines (NRCC)

At least two of the following must be fulfilled to warrant authorship.

- substantial involvement in the **concept, design and planning** of the project
- substantial involvement in the **performance** of the research
- substantial involvement in the **interpretation** of the data
- substantial involvement in the **writing or review** of the manuscript

Implications: -people only helping do the experiments are not authors (named in acknowledgements);
- not all authors are involved in data collection

Authorship guidelines

- from Intl Committee of Medical Journal Editors:
“Acquisition of funding, collection of data or general supervision of the research group, alone, **does not justify authorship**”
- from Ann. Surgery consensus statement on authorship:
“Acquisition of funding, collection of data, contributing cases or general supervision of the research group, of itself, or just being Chair of the department, **does not justify authorship** if the criteria are not fulfilled”
- from NRC: Being the manager responsible for a research group or research project **does not, of itself, justify authorship.**

Some random thoughts on refereeing

- refereeing is a critical part of our responsibility as scientists
- please **turn down a request** to referee a paper
 - if you **do not have time** to do it in the requested 3 weeks
 - if you have a **conflict of interest**
 - eg working on a similar paper and it would be to your benefit if this paper was slowed down
 - personal animosity with one of the authors (after all, doing a good refereeing job will help the author, so why do it for an enemy?)

Some random thoughts on refereeing (cont)

- one role of a referee is to determine if the work is scientifically sound
- it is not your role to force the author rewrite their paper the way you would write it
 - but it is fair game to make non-mandatory suggestions on how to improve it
- it is not your job as referee to correct English. Send it back to the authors if it is really bad, and ask them to get a native English speaker who can write well, to rework the paper (correcting occasional errors/style mistakes is fine, of course)

Some random thoughts on refereeing (cont)

- make your referee's comments **clear and precise**
 - distinguish clearly between **suggestions** and **mandatory changes**
 - avoid vague statements like "It is well known that..."
Give explicit references.
- if the authors make a statement about **what paper X does or does not say**, it is your responsibility as a referee to ensure this is what paper X actually said
 - **especially** if the author goes on to disprove paper X
 - or if the accuracy of the present paper relies on what paper X is reported to have said.

Some random thoughts on refereeing (cont)

- remember to make your comments as impersonal as possible
 - authors have a great deal tied up in their paper and it is your job to help them **make the paper better**, not to show off how sharp your criticisms can be.
- Make it absolutely clear to the AE and to the author, what constitutes a "**show stopper**" issue vs less critical ones.

Thank you for your attention

Good luck with your next paper