

## Writing scientific reports

- Should be a self-contained document.  
Independent piece of work.
- Assume the reader has not seen the project description  
(Assume this is not a course assignment, but rather  
some small research project / technical investigation)
- Don't write about e.g. "Problem 2 in project 3"
  - The reader doesn't know you're doing a course  
and they're not interested — they want to  
know what investigations you've done and  
what you've found.
- Report format:
  - Title (+ author list)
  - Abstract
  - Introduction
  - Method / Theory / Algorithms
  - Results
  - Discussion
  - Conclusions
  - [Appendices ?]
  - References

o Other important aspects:

- Tidy layout
- Figures + fig. captions
- Tables + captions
- Algorithms

o We have provided a LaTeX template

- o Read it! It contains a lot of useful info and functions as an example
- o Use it as a template, or use an equally nice layout!

o Code still on GitHub, give link in report  
(Include full url, not just hyperlink)

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[ Go through elements of a report,  
using our two example reports  
and arxiv.org examples. ]

## Abstract (show example on arxiv)

- Short summary
- Mention main results (with key numbers),  
not just list what you have done

⚡

## Introduction

- Set the stage — make the reader a bit interested
- Mention why your work is important<sup>"</sup>  
(“I want a good grade” is not relevant motivation)

- Example: — If we have solved a part. type of eqn., mention why this is important (where does this eq. show up)
  - If we've studied optimization of some algo, explain why that is important.

[Why should I read this rather than something else  
(or Netflix) — but don't overdo it!]

- Present problem here?

- Common to end intro. by outlining the rest of the report:

X End of lecture

Method / Algorithms / Theory

or here?

- Discuss physics problem in more detail (?)

- Explain formalism

- Explain, derive algorithms

- Define the notation you're using (be consistent!)

- Any special strategy? Mention it here

- Typically don't present any results here

# Results or Results (and discussion)

- o One approach: Present all results (figures, ~~the~~ tables, ...) but don't do much discussion. Just point out how you obt. and what they show. Then, in the Discussion section, discuss the various results.
- o Other approach: ~~Present~~ Joint results + discussion. Present and discuss each result as you get to it.
- o Pay attention to figures, fig. captions, ~~tables~~ sizes, axis labels, colours, notation, tables, ...
- o Note: Always refer to all tables / figures from the main text. If you don't refer to it, it shouldn't be there!

## Discussion

- o ~~Are the results~~
  - o What do the results mean?
  - o Are they as expected? (~~given~~ <sup>connect to</sup> the theory / method section)
- o Key numbers, trends,
- o You choose what to highlight (but make sure you cover everything we req.)
  - o Future directions / improvements?

## Conclusion

- o Summarize again!
- o State key results w/ numbers
- o (Don't copy sentences)

## References

- o Go back to general points (grammar etc.)