Introduction

• Peer-reviewed papers are the primary means of communication in physics
  • Official record
  • Three broad categories
    • “letter”: the results
    • “long paper”: the methods
    • “review”: synthesis
Introduction

• Peer-reviewed papers are the primary means of communication in physics
  • Official record
• Three broad categories
  • high profile
  • “bread & butter”
  • “review”: synthesis

Philosophy

• Read to learn about developments in your area
  • Most important use of what follows in this talk
  • Not a linear process, it will take a while
• Read to learn about something new or for interest
  • Scan the arXiv each week via RSS feed!
  • Physics ideas are interconnected
What was your experience like?

A reading method

The four i’s

- Importance
- Iteration
- Interpretation
- Integration
The first *i*: importance

Does the paper contain information (methods, results, conclusions) that has implications for your research?

- Read the title and the abstract
- Look at the author list and their affiliations
- Read the conclusions
- Look at the figures and captions

Is the paper worth reading?

- Study or go on?

Second *i*: iteration

1. Skim the article and identify its structure
   - Many (not all) papers: IMRD: Introduction, Methods, Results, Discussion
2. Find main points of each section
3. Generate questions: active reading
4. Read to answer questions
5. Iterate!

Take notes as you read!
**Second i: iteration**

Take the paper apart, section by section, and identify the key ideas

Highlight anything you don’t understand

Cross-check the narrative with the figures and tables

Go back and re-read your highlighted sections; refer to the references or supplementary info

Repeat until you thoroughly understand the parts of interest to you

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**The third i: interpretation**

Put the paper aside and write down the key ideas in your own words

Check what you’ve written against the paper; have you correctly represented the information and emphasis of the original paper?

Are there parts that you still don’t understand? (go back to *iteration*)

Do you agree with what the authors have said? Have they provided sufficient detail and supporting evidence?
The final *i*: integration

Evaluate how the information presented in the paper fits with what you already know
Does it contradict something that you believe?
Does it raise new questions that you should investigate?
Does it describe a method that you could use?
Is it something that you should refer to in the future? (If so, how are you going to keep track of it?)

QUIZ

How many hours does it usually take Prof. DeMarco to read a four-page paper and really understand it?

A. 30 minutes
B. 1 hours
C. 2 hours
D. 4 hours
E. 10 hours