



University of Pittsburgh

# Introduction

CS 2001: Research Topics in Computer Science  
Fall 2013

Dietrich School of Arts and Sciences  
Department of Computer Science





# Administrivia

## *Research Topics in Computer Science*

- CS 2001
- TU/TH 1:00 - 2:15PM, F ? - ? (rarely)
- 6516 Sennott Square

## *Instructor*

- Professor Adam J. Lee
- adamlee@cs.pitt.edu
- 6111 Sennott Square
- Office Hours: If my door is open

*Email me your Friday  
schedules so that we can  
pick a reserved make-up time*

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<http://www.cs.pitt.edu/~adamlee/courses/cs2001>

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# So how is this course scheduled anyway?

*Two distinct sections...*

## Part I:

- What **is** research?
- How do I **understand** research?
- How do I **evaluate** the research of others?
- How do I **do** my own research?
- How can I **communicate** my exciting new results to others?

*The goal here is to prepare you for success in our program*

## Part II:

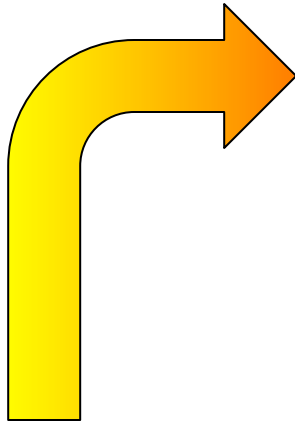


# The goal of the first part of the course is to prepare you to do research



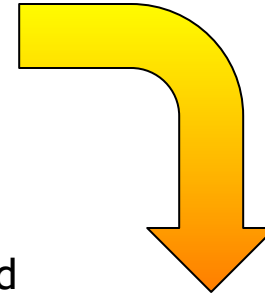
## Research papers

- How to read and understand
- How to critique
- How to write\*



## Communication

- What makes a good talk?
- What makes a bad talk?
- Advertisements vs. book reports



## Tools of the trade...

- University computing environment
- Statistical processing
- Scripting and plotting
- Paper writing





# Goals for today...



1. Quick introductions to one another
2. What is a PhD?
3. Why do a PhD?
4. Getting a PhD at Pitt



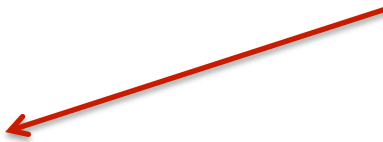
# Who are you guys?



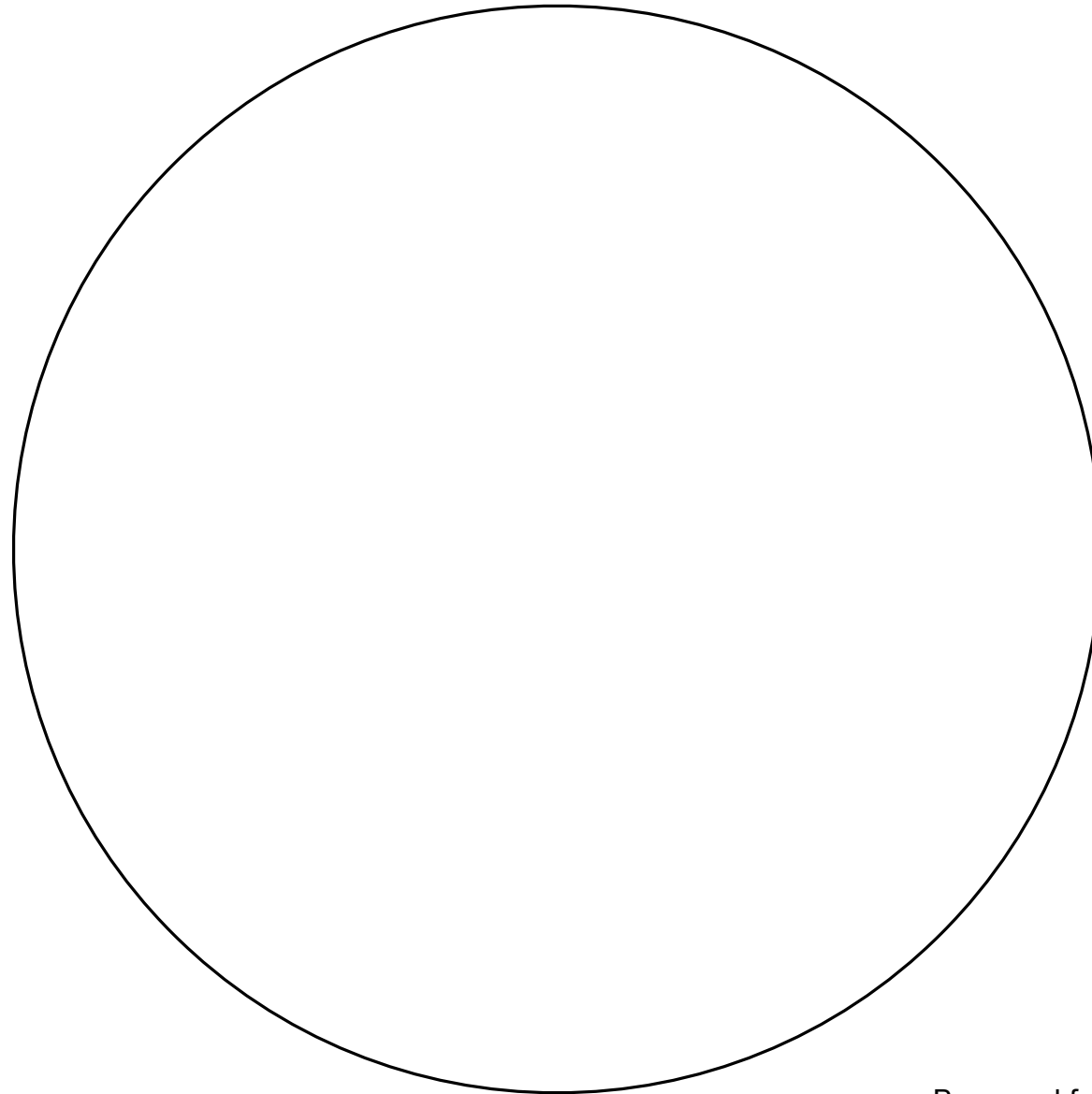
Let's get to know one another...

- Your name
- Why Pitt?
- Research interests
- Anything else?

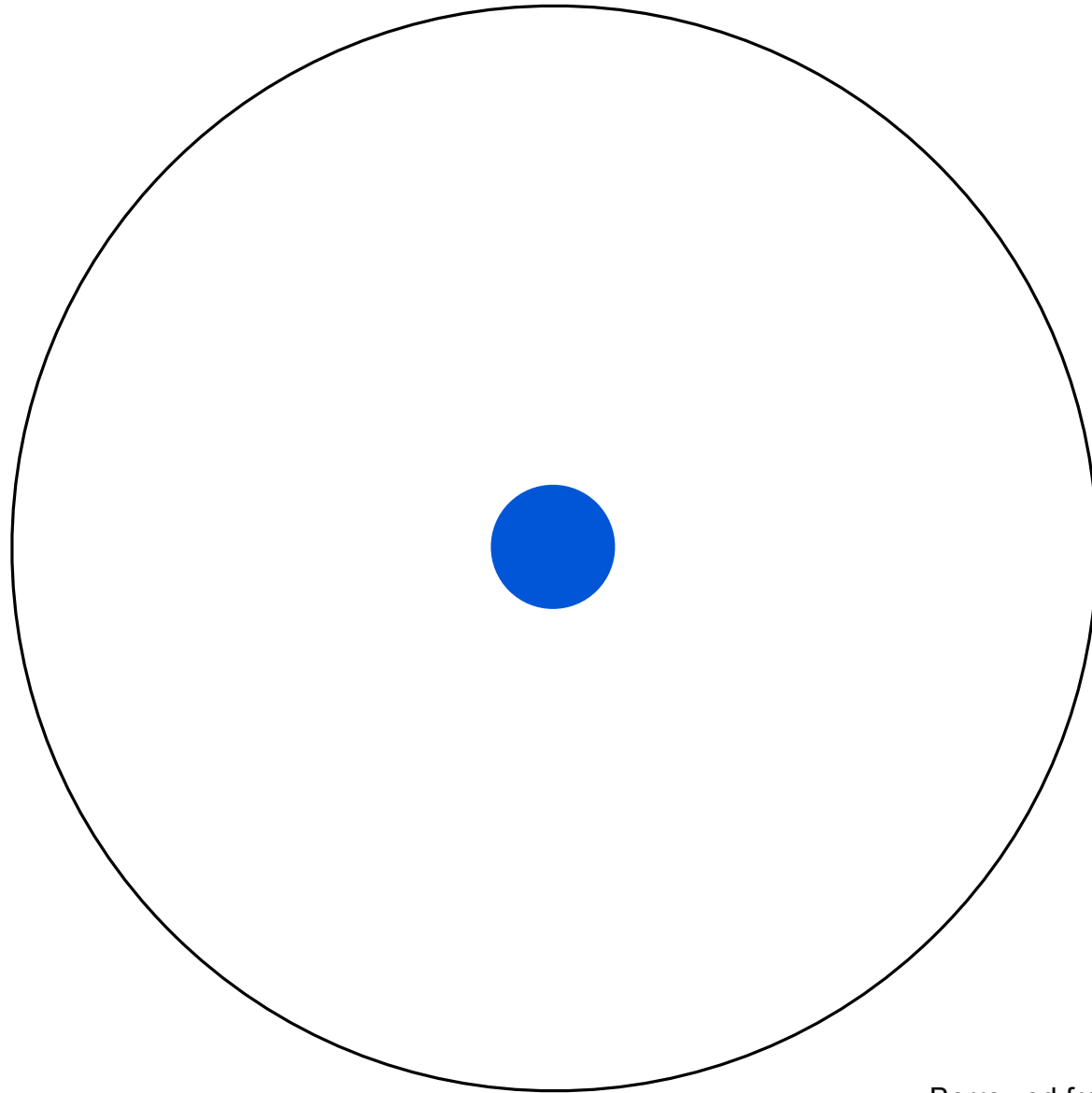
*"I have no idea..." is a perfectly fine answer!*



# What is a PhD?

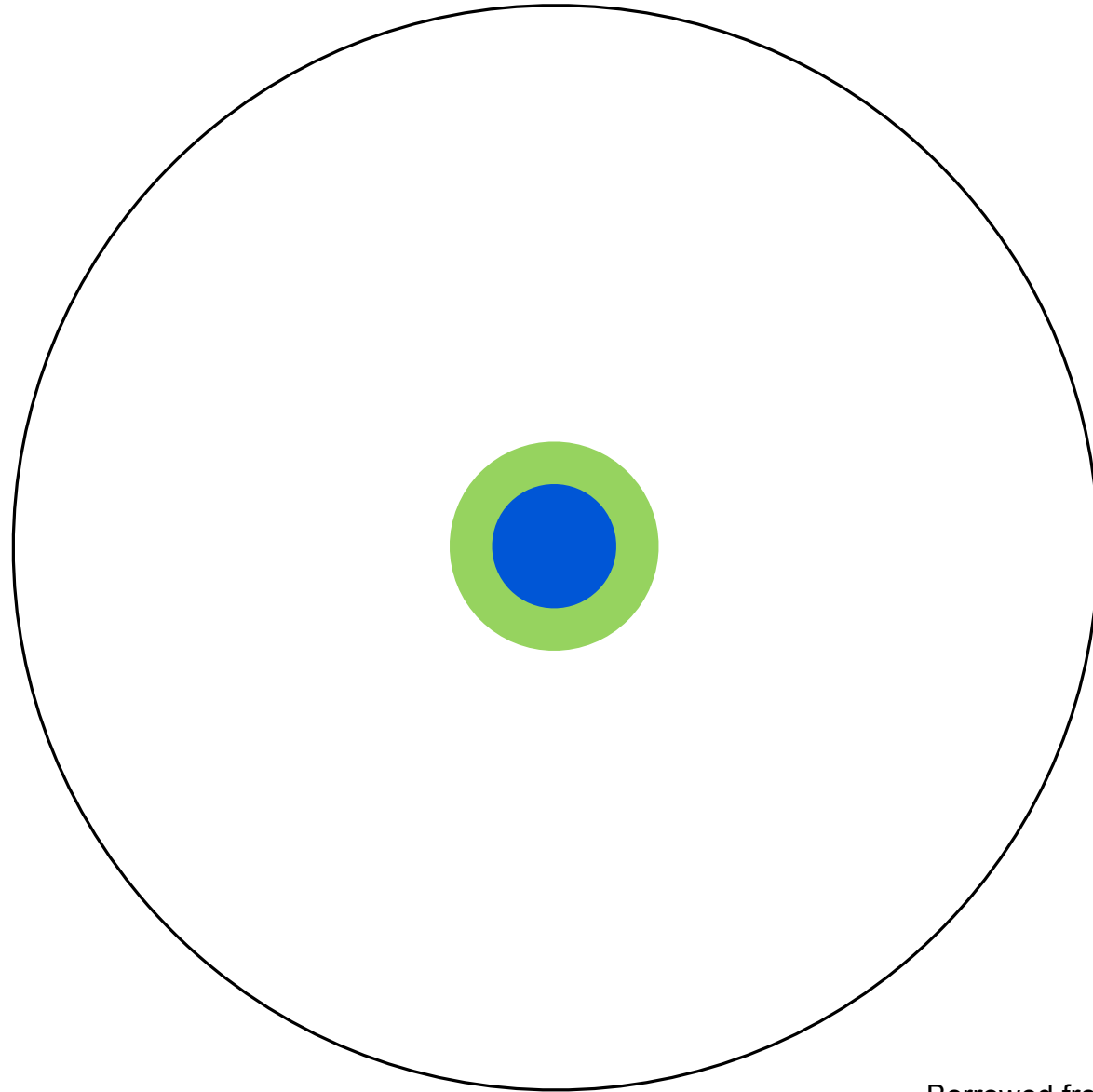


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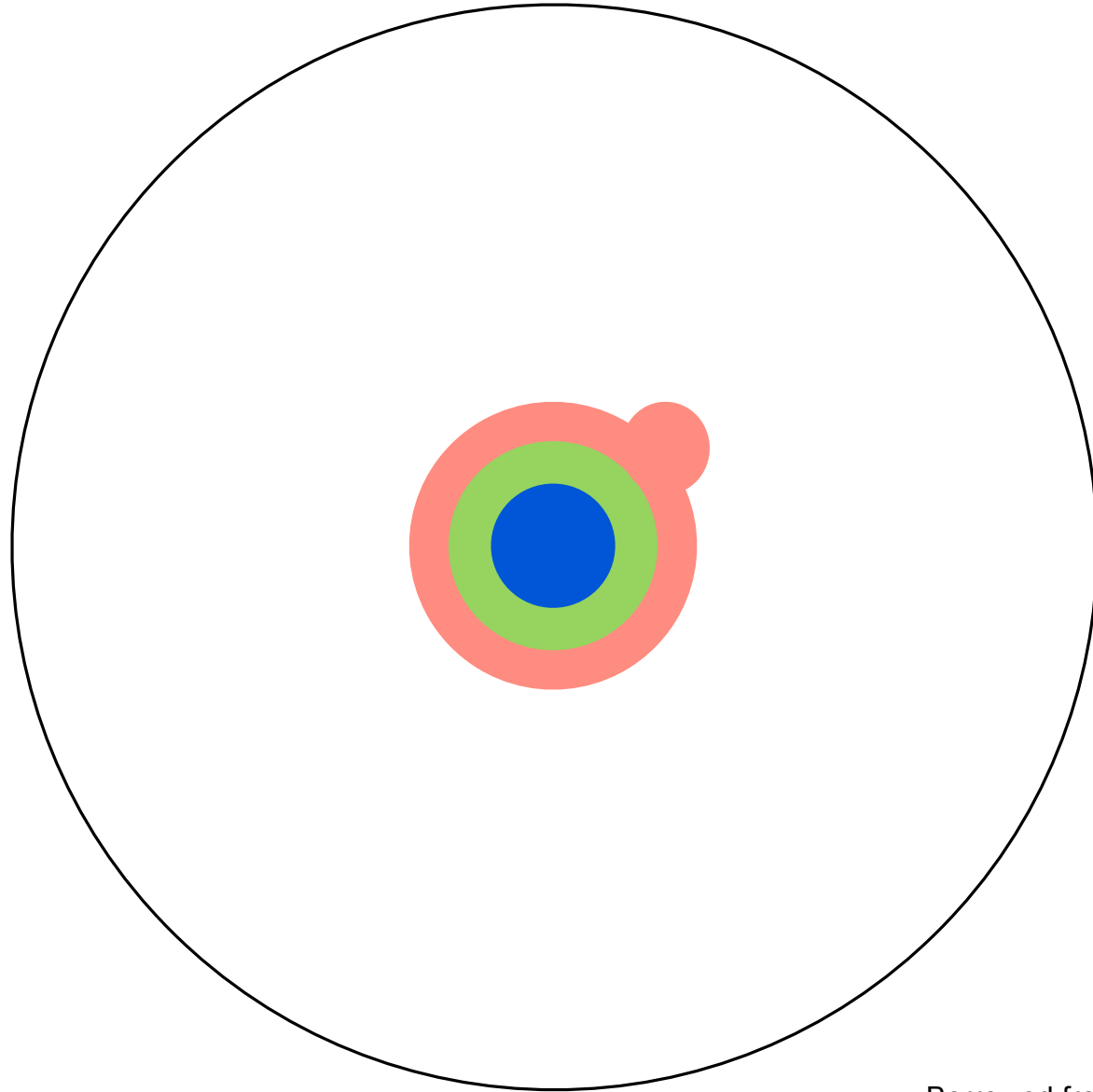




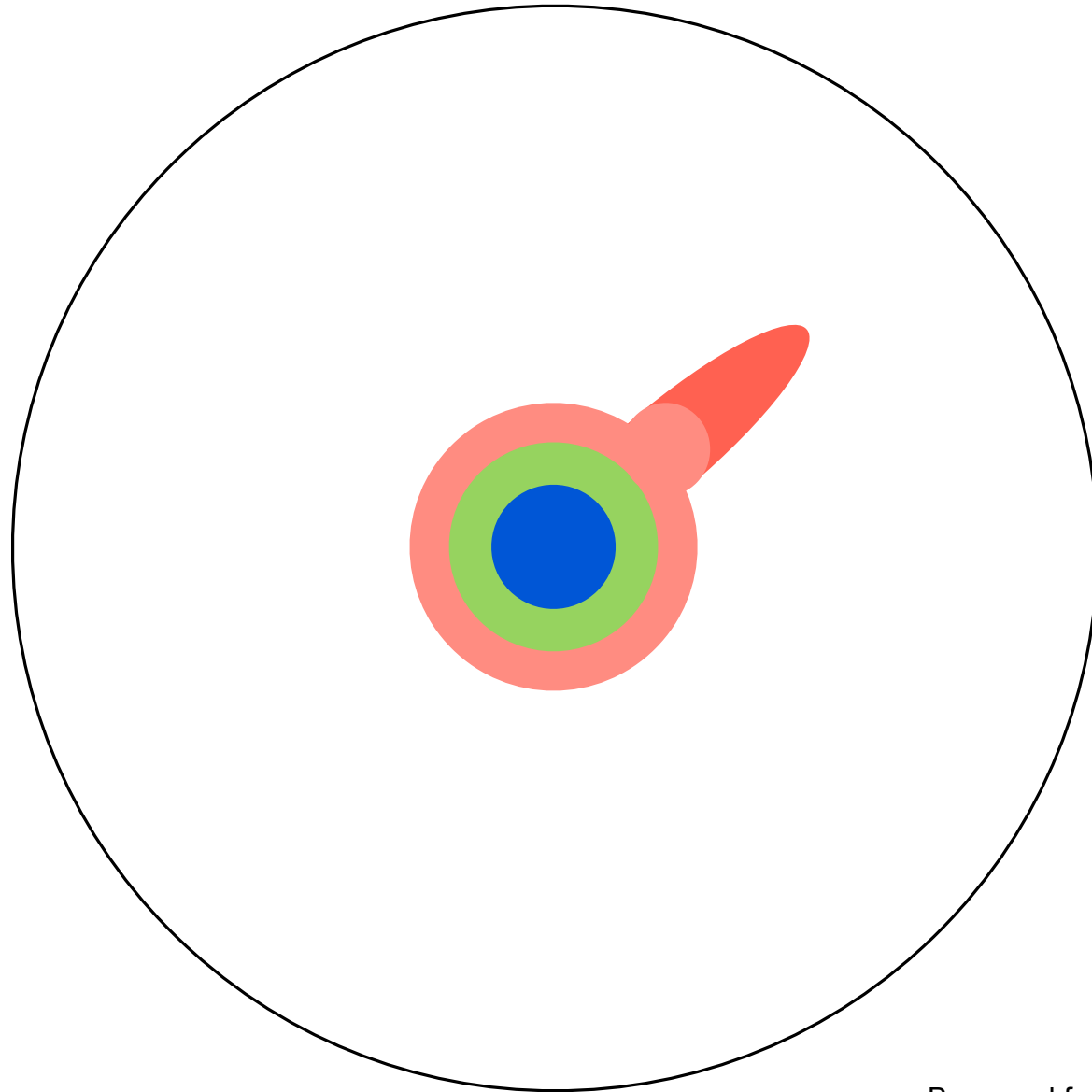
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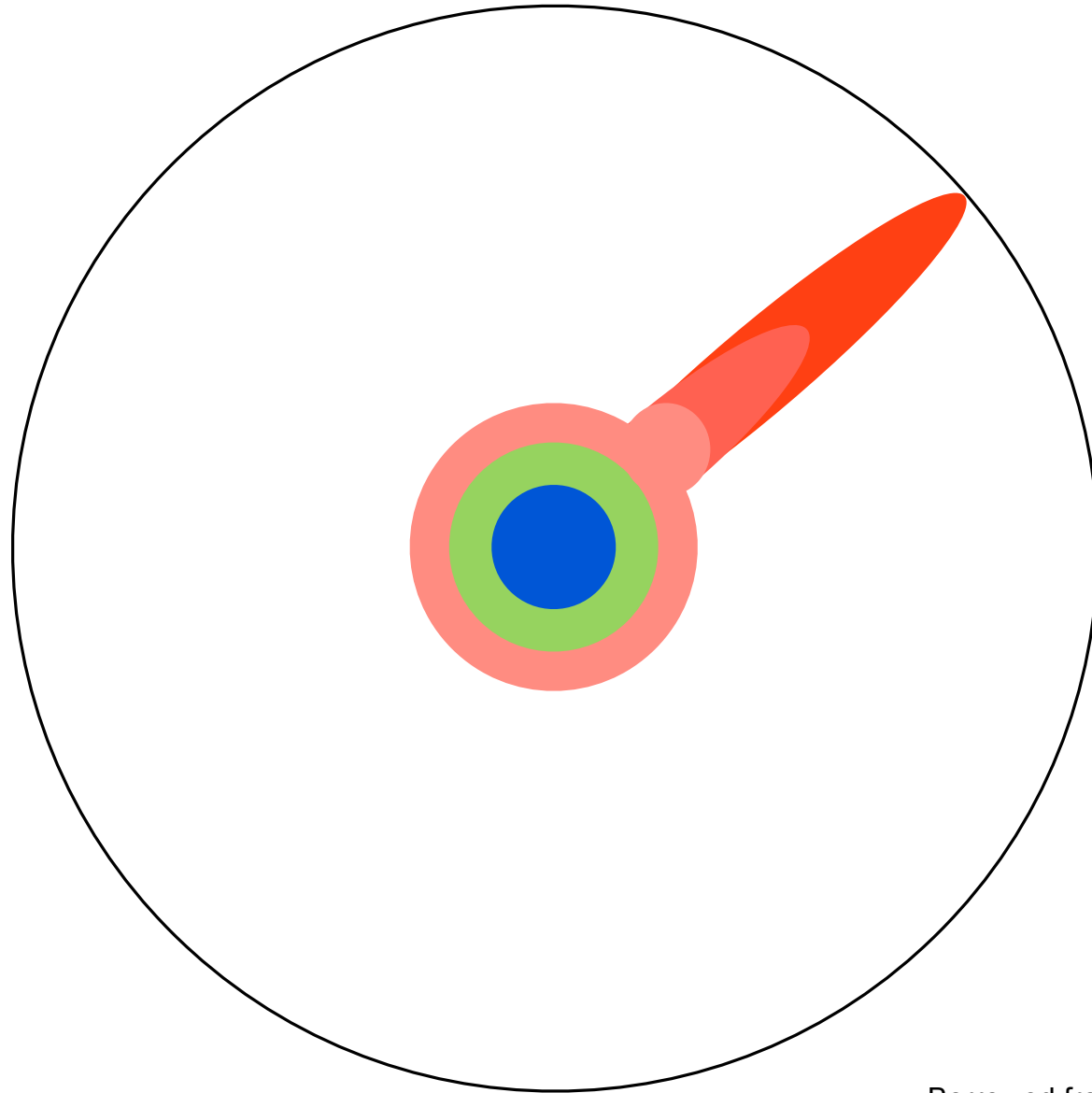
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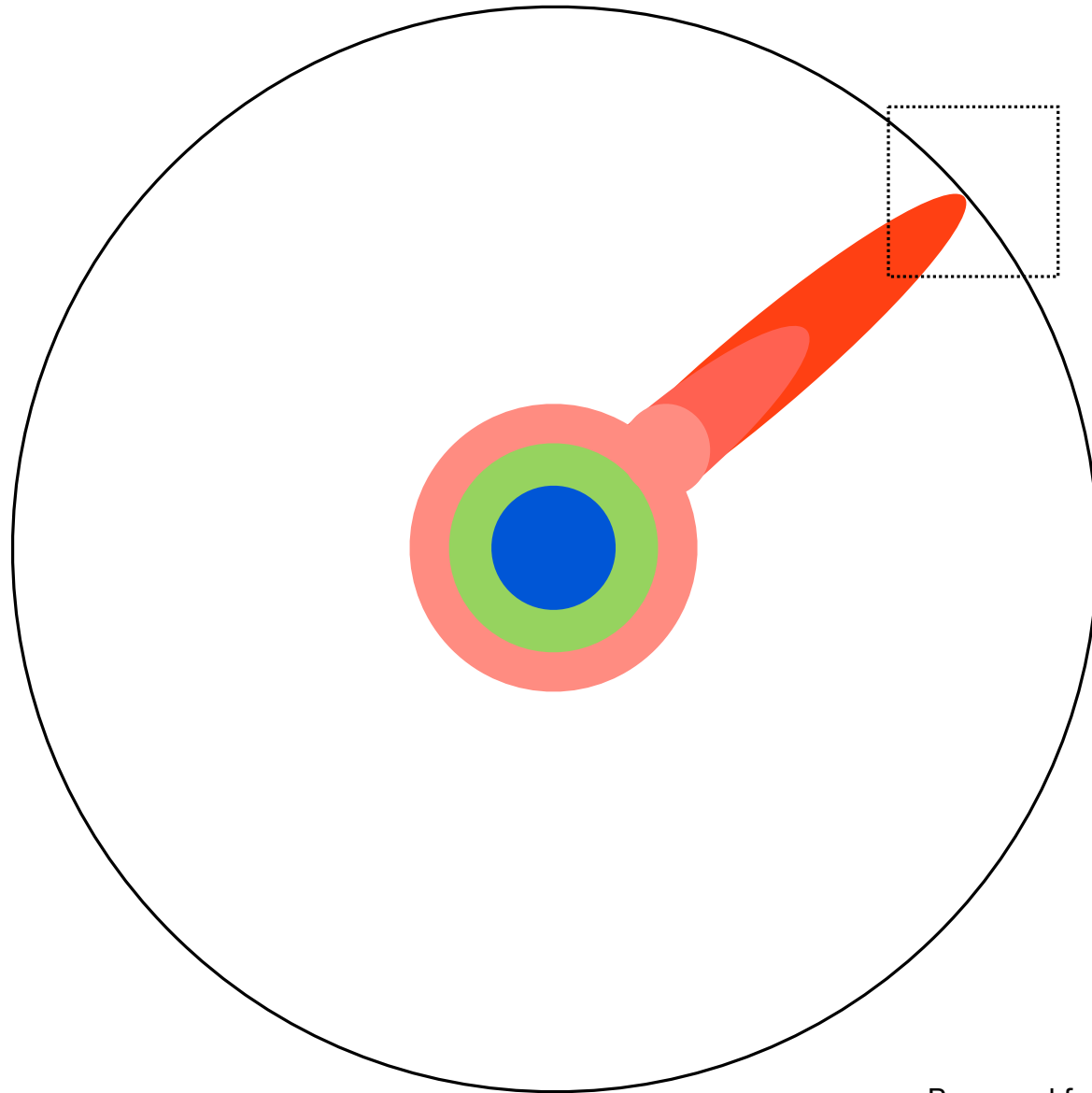


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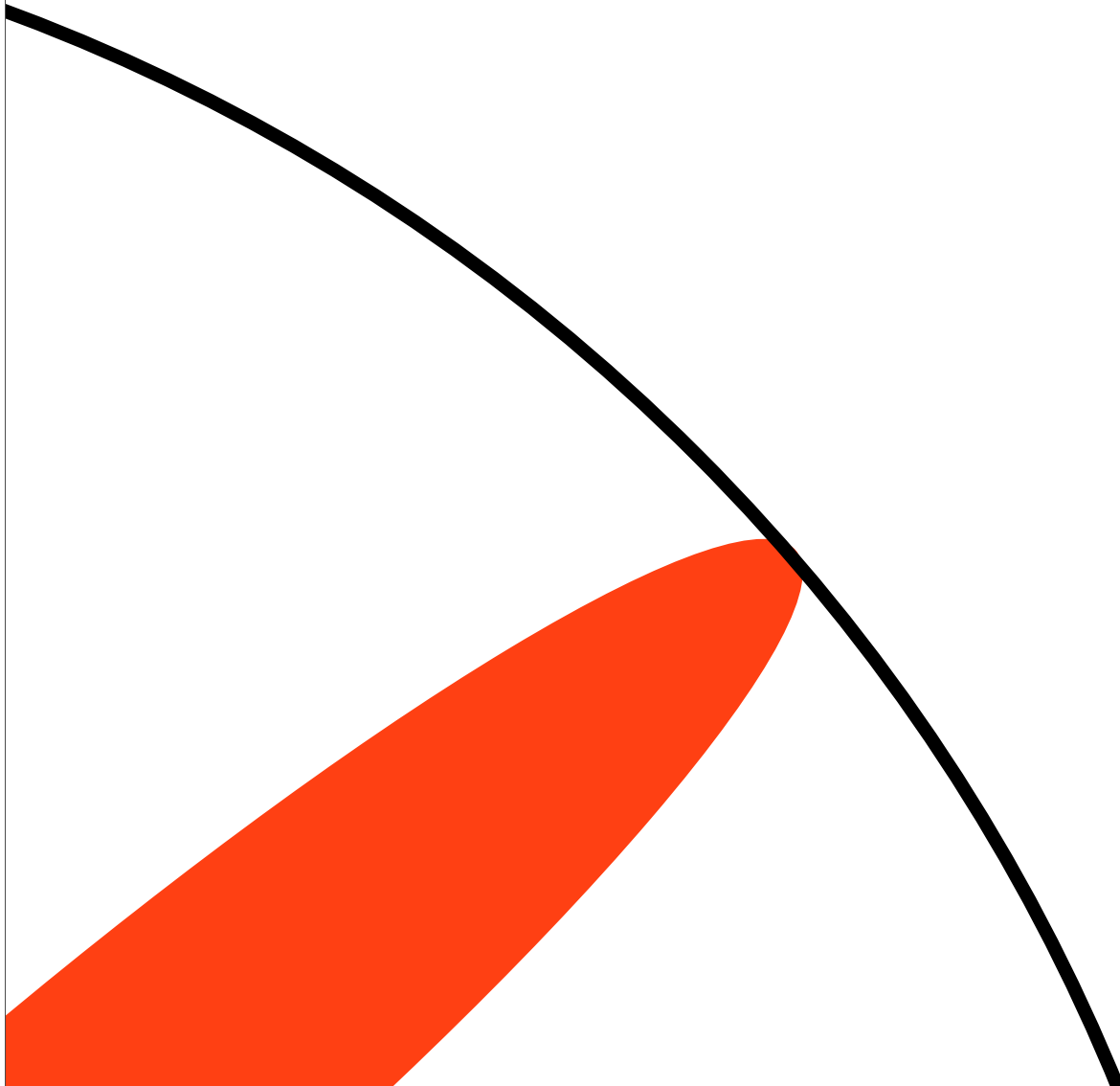




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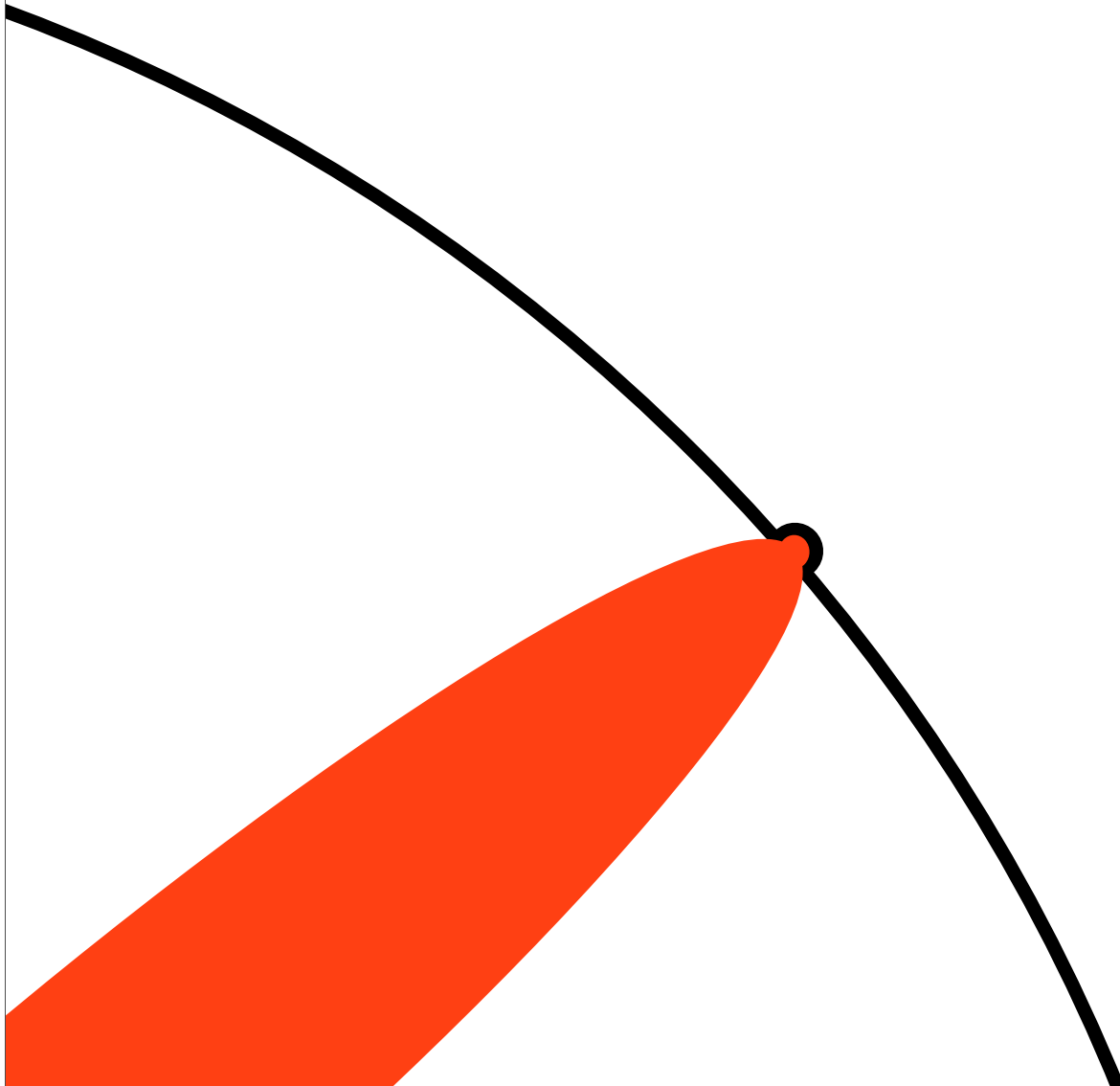


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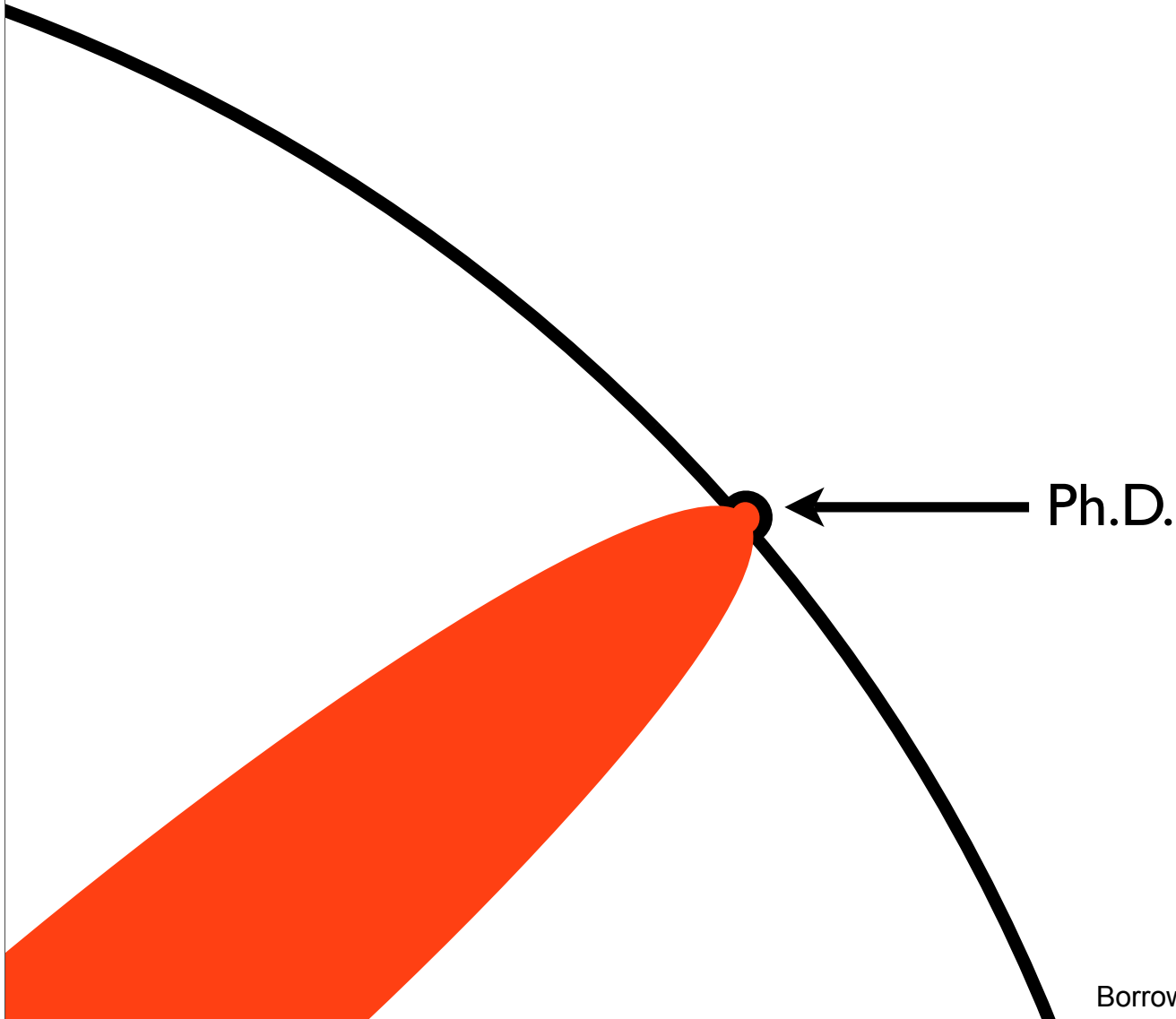
Borrowed from <http://matt.might.net>

# What is a PhD?



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# What is a PhD?

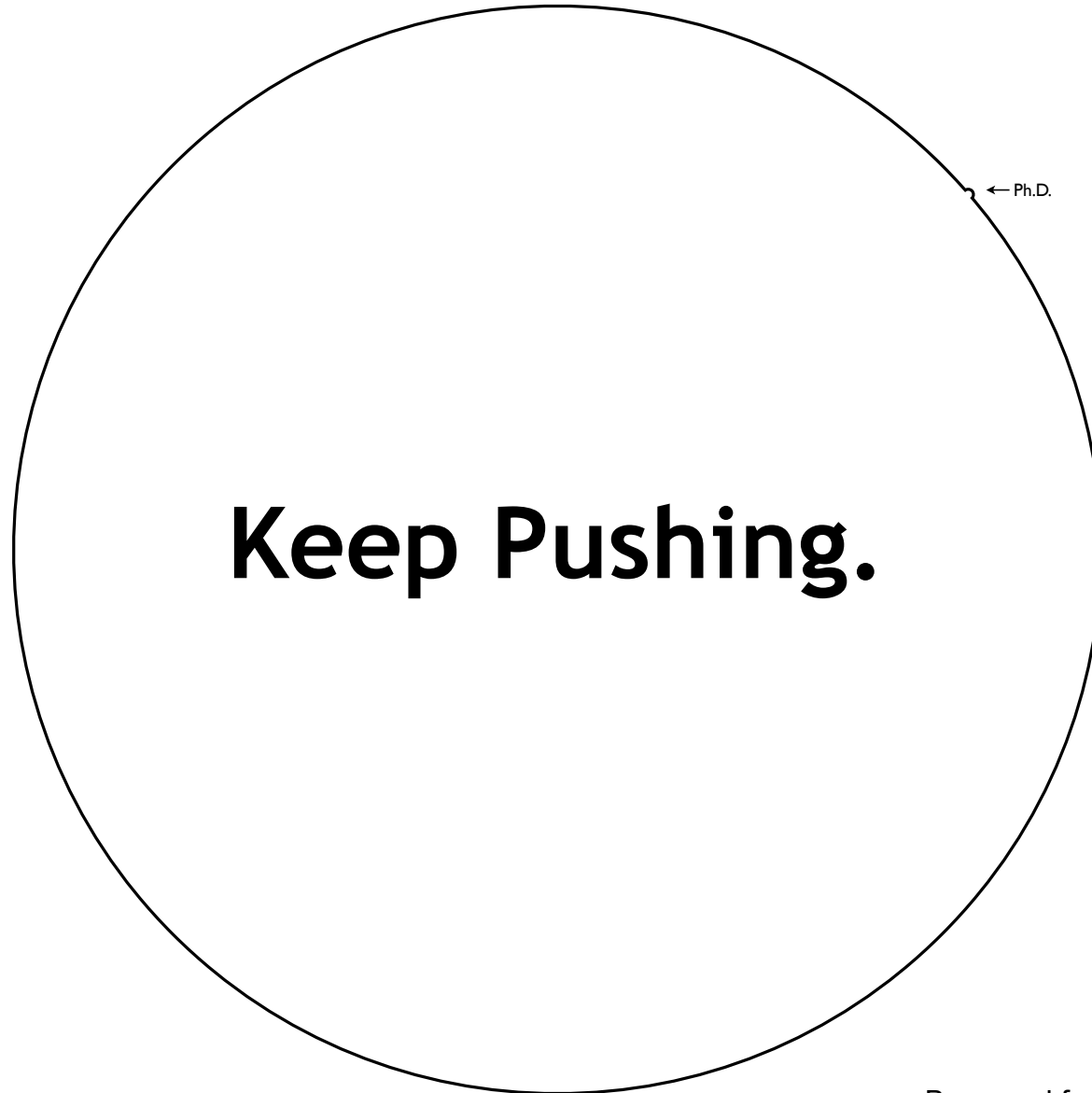




# What is a PhD?



# What is a PhD?





# So... What *is* a PhD?

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## A PhD is a process!

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A demoralizing process at times...

- So much has been done already, how do I keep up?
- What **new** problem should I be solving?
- Solving this problem is **way harder** than I thought it would be...
- Why doesn't my code (or code that I've borrowed) work?!
- Why do my papers keep getting rejected?

But a process that will educate you greatly

- Problem identification and solving
- Persistence and hard work
- Clear (written and spoken) communication skills
- Team work, management, and mentoring

# So why would anyone do a PhD?



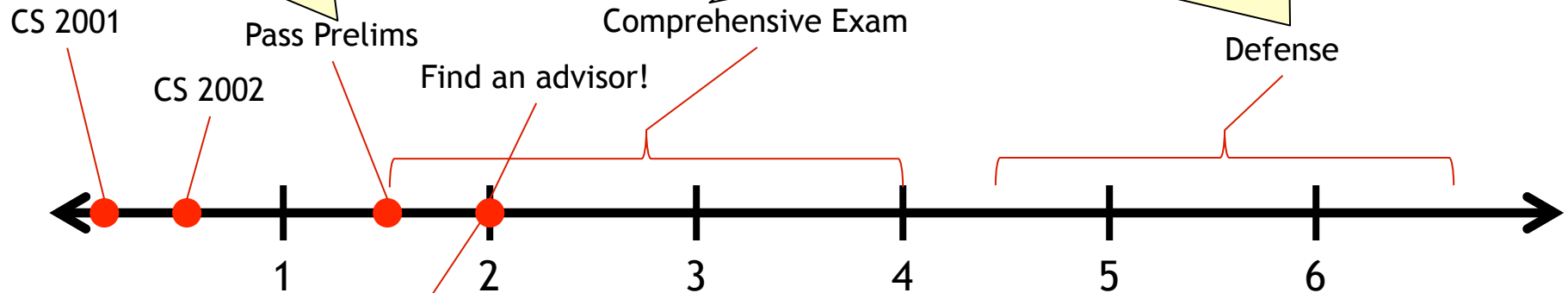


# The (Abridged) PhD Timeline at Pitt

- Coursework only
- 4 Classes, A- or better
- CS 2100 - 2899 only
- Can count towards core reqs

- Demonstrate depth of knowledge
- Very basic gist of PhD topic area
- Committee: 3 CS faculty
- Ideally done by end of

- The big show...
- At least 8 months after proposal



Pass core requirements

- One course from each of
  - AI / Database
  - OS / Networks
  - Architecture / Compilers
  - Theory / Algorithms
- At least a B in each

Dissertation Proposal

- "Contract" for PhD
- Committee: 3 CS + 1 external

# Tips for Success



- Work hard to finish course requirements
- Identify research areas/professors of interest
- Begin reading papers & discussing area



# Tips for making the most of meetings...



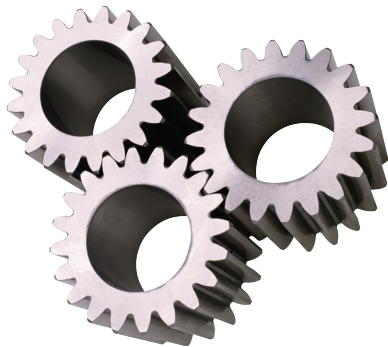
## When reading/experimenting:

- Take notes on the papers
- Write down questions and interesting problems
- Write up preliminary results



## During the meeting:

- Take notes!
- Ask questions: It's OK to be confused
- Agree on next steps, desirable outcomes



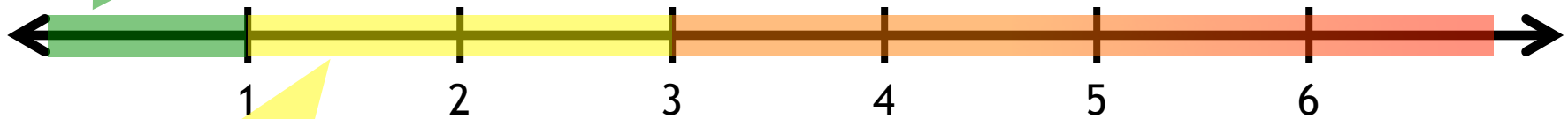
## After a meeting:

- Reflect on meeting “minutes”
- Develop a plan for meeting expectations
- Pop-in or exchange email to address small problems between meetings

# Tips for Success



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- Attend group meetings
- Read several papers per week
- Research! Develop your niche.
- Work on time management skills





# How do I choose an advisor?!

Key points: **research interest** and **fit**

You are unlikely to finish a PhD that you aren't interested in...

- Use CS2001 to get to know faculty whose work seems interesting
- Take courses and seminars in these areas
- Read papers, make sure you're interested in recent developments

You will be working **very closely** with your advisor

- Do you prefer “hands on” or “hands off” advising?
- Can you take direction/criticism from this person?
- Use CS2002 and course projects to test fit!

Choosing an advisor is a **big** decision...



# Tips for Success

- Work hard to finish course requirements
- Identify research areas/professors of interest
- Begin reading papers & discussing area

- More than smarts: Persistence!
- Time management should become an art...
- Identify larger open problem, not just many small “neat” problems
- writing, Writing, WRITING



- Attend group meetings
- Read several papers per week
- Research! Develop your niche.
- Work on time management skills

- Good thesis or great thesis?
- To defend, you must be an expert. Are you?
- Resist the temptation to take a job before you defend. This is a recipe for disaster.



*Welcome to the program!*