



# HOW TO DO RESEARCH

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# HOW NOT TO PISS OFF YOUR ADVISOR

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Research? What is that?

# STAGES OF RESEARCH

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- Idea
- Preparation
- Implementation
- Analysis
- Publication

# IDEA

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- Literature review
- Attending talks/conferences
- Conversation with people
- Open questions from previous research

# PREPARATION

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- Eventual Goal
- Define question
- Build up basic knowledge (What to read)
- Know your constraints
- Estimate required resources, level of technical difficulties

# IMPLEMENTATION

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- Coding, building instrument, solve equations
- Trial and error
- Debugging ,debugging ,debugging
- Collecting data, perform initial analysis
- Back to the drawing board

# ANALYSIS

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- Plotting, fitting, etc (please stop using Excel)
- Notice anomaly
- How to discuss with your collaborators

# PUBLICATION

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- Writing paper
- Referee process
- Presenting poster
- Giving talks
- Feedback from others

# HOW TO FIND AN ADVISOR

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- Rabbit's thesis
- It takes two to tango
- Talk to people, especially people working with him/her

It's a fine sunny day in the forest, and a rabbit is sitting outside his burrow, tippy-tapping on his typewriter.  
Along comes a fox, out for a walk.

Fox :"What are you working on?"

Rabbit: "My thesis."

Fox; "Hmmm. What's it about?"

Rabbit :"Oh, I'm writing about how rabbits eat foxes."

(incredulous pause)

Fox:"That's ridiculous! Any fool knows that rabbits don't eat foxes."

Rabbit: "Sure they do, and I can prove it. Come with me."

They both disappear into the rabbit's burrow. After a few minutes, the rabbit returns, alone, to his typewriter and resumes typing.

Soon, a wolf comes along and stops to watch the hardworking rabbit.

Wolf : "What's that you're writing?"

Rabbit "I'm doing a thesis on how rabbits eat wolves."(loud guffaws)

Wolf :"You don't expect to get such rubbish published, do you?"

Rabbit:"No problem. Do you want to see why?"

The rabbit and the wolf go into the burrow, and again the rabbit returns by himself, after a few minutes, and goes back to typing.

Scene: inside the rabbit's burrow.

In one corner, there is a pile of fox bones. In another corner, a pile of wolf bones. On the other side of the room, a huge lion is belching and picking his teeth.

It doesn't matter what you choose for a thesis subject.

It doesn't matter what you use for data.

What does matter is who you have for a thesis advisor.

# HOW TO DISCUSS WITH YOUR ADVISOR

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- Prepare your materials
- Your interpretation
- Your reason
- Supporting materials
- What else have you tried
- Report failure
- Forward thinking
- Be creative; bring new ideas to the collaboration

# HOW TO READ A PAPER

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- Multi-pass process
  - Title/Abstract/Figures
  - Introduction/Conclusion/Figure captions
  - Technical details (if necessary)

# INGREDIENTS FOR SUCCESS

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- Passion
- Persistence
- Perspiration
- Luck

# WELL-BEING

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- Physical and mental health
- Find your own support network

# 憂鬱症的常見症狀

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如果你持續**兩個星期以上**表現出以下**五個或以上的**症狀，你就需要就醫或拜訪其他心理健康專家：

- 持續的悲傷、焦慮、或頭腦空白
- 睡眠過少或過多
- 體重減輕，食慾減退
- 失去活動的快樂和興趣
- 心神不寧或急躁不安
- 持續的對治療無反應的軀體症狀
- 注意力難以集中，記憶力下降，決策困難
- 疲勞或精神不振
- 感到內疚、無望或者自身毫無價值
- 出現自殺或死亡的想法

# HOW GRAD SCHOOL IS JUST LIKE KINDERGARTEN

ALL DAY NAPPING IS ACCEPTABLE



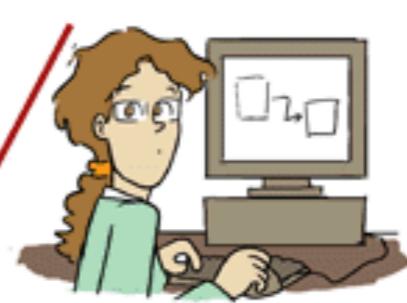
THERE IS CONSTANT ADULT SUPERVISION



YOU GET COOKIES FOR LUNCH



MOST COMMON ACTIVITY:  
CUTTING AND PASTING



THERE ARE NO GRADES  
(YOU JUST HAVE TO PLAY WELL WITH OTHERS)



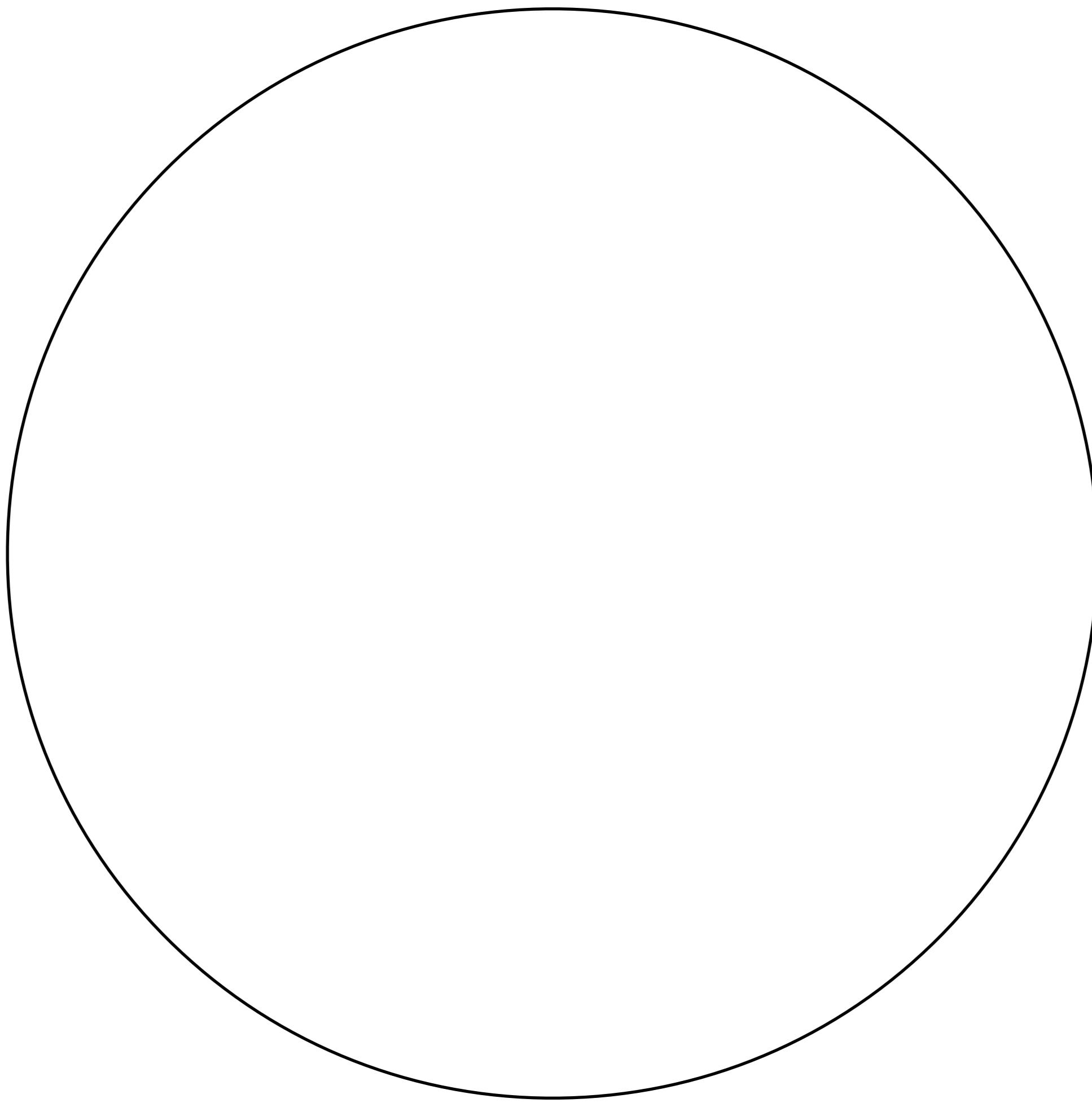
CRYING FOR YOUR MOMMY IS NORMAL

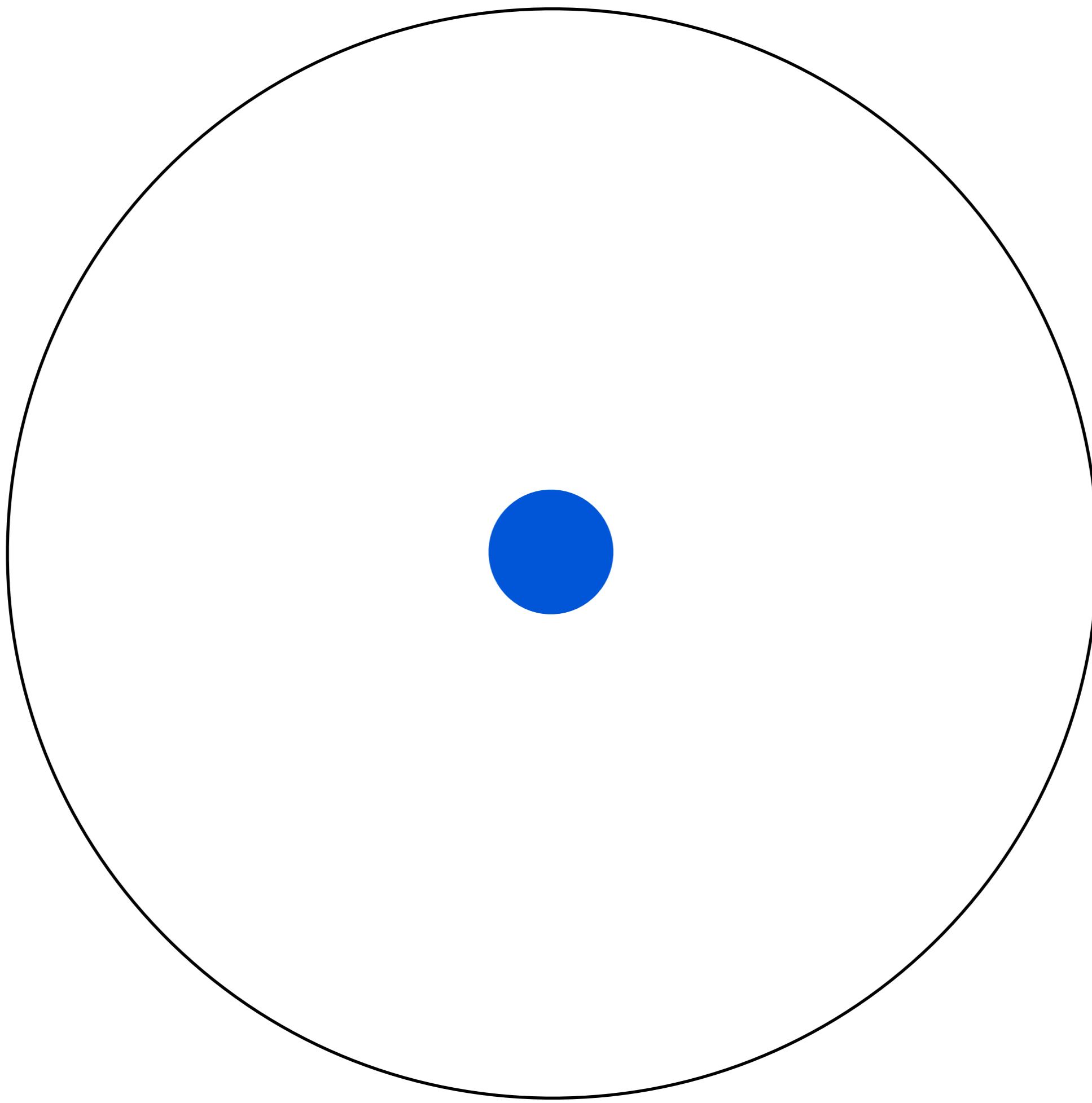


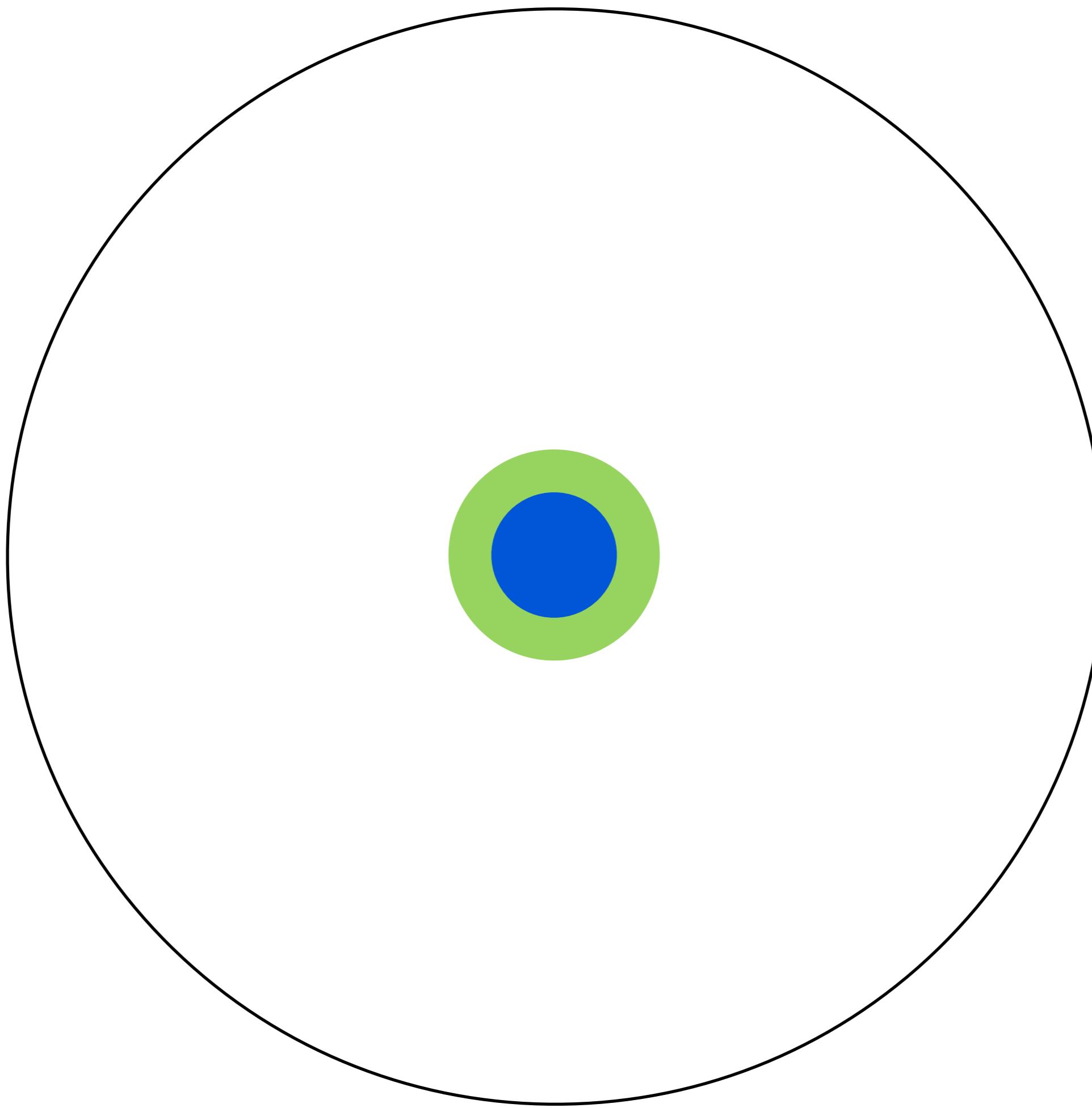
JORGE CHAM © 2010

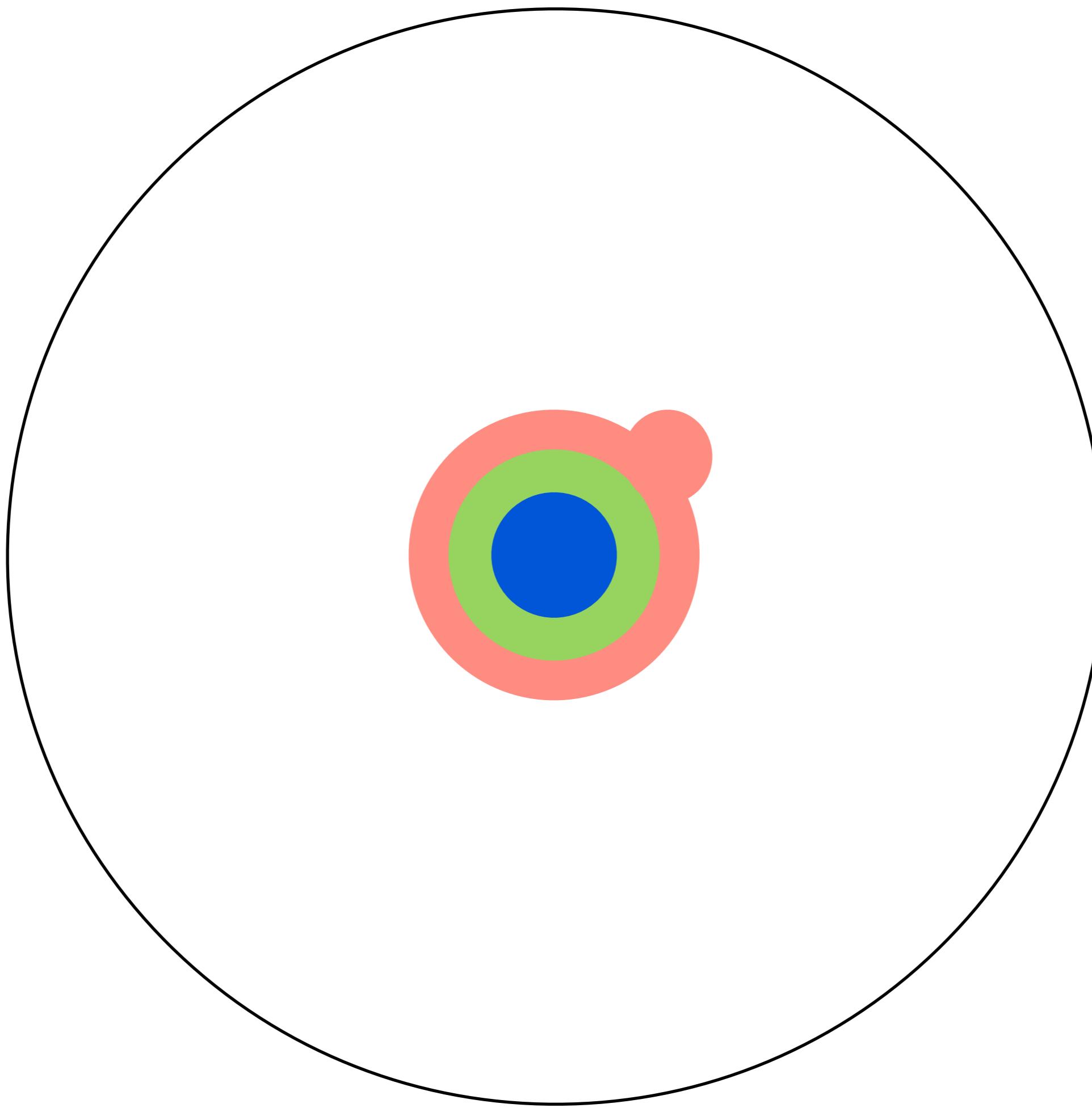
# The illustrated guide to a Ph.D.

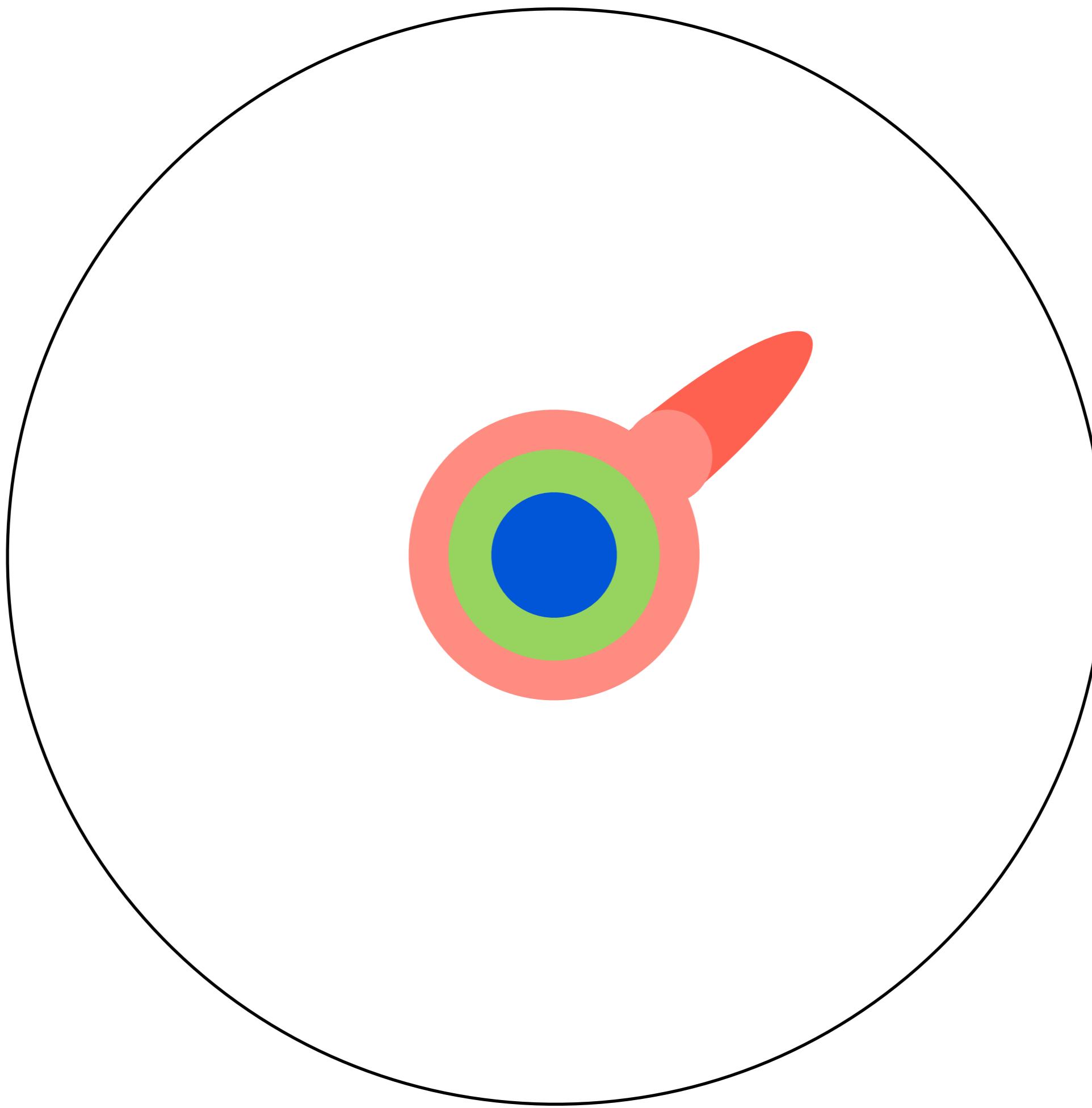
Matt Might  
[matt.might.net](http://matt.might.net)

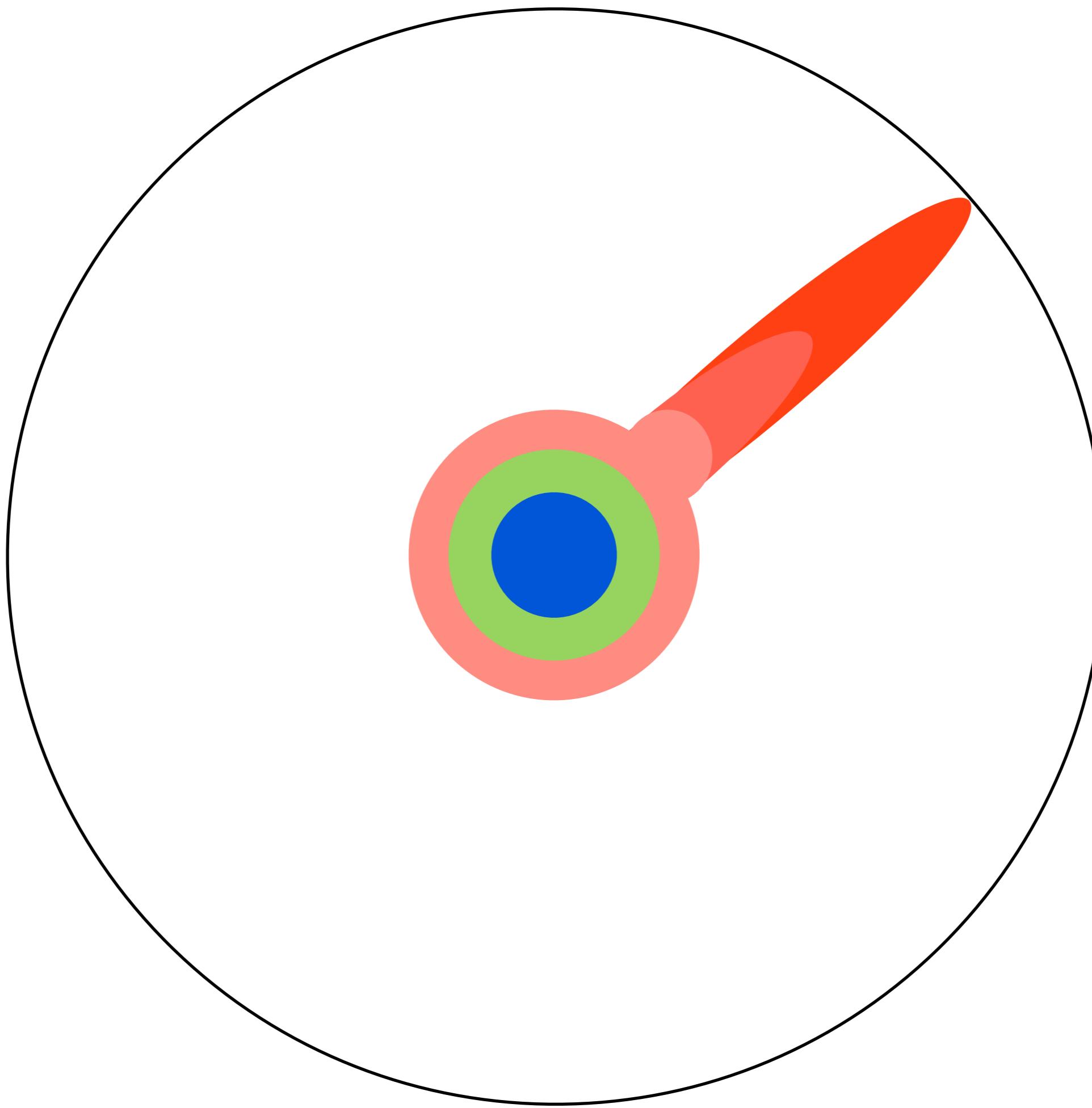


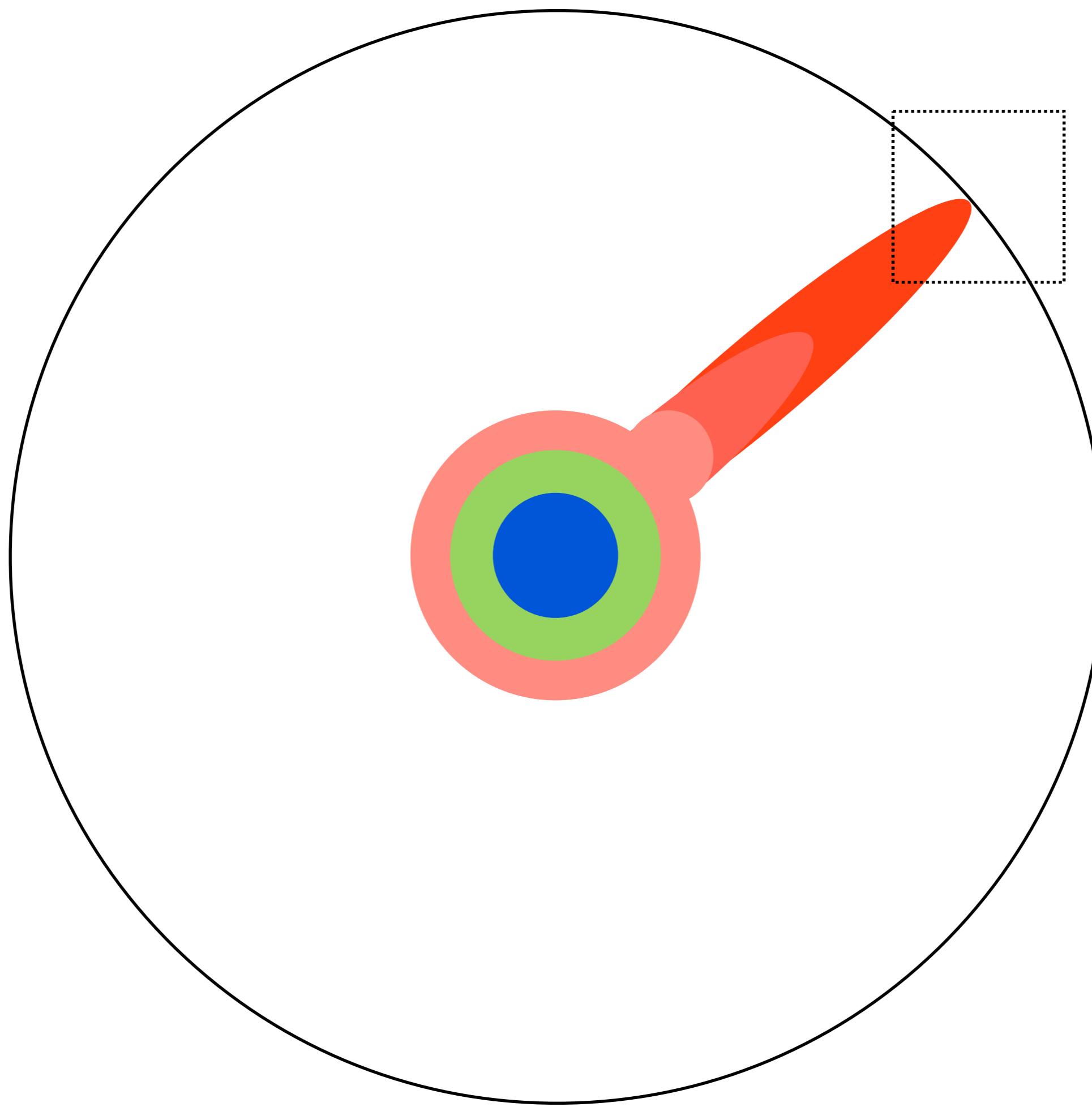


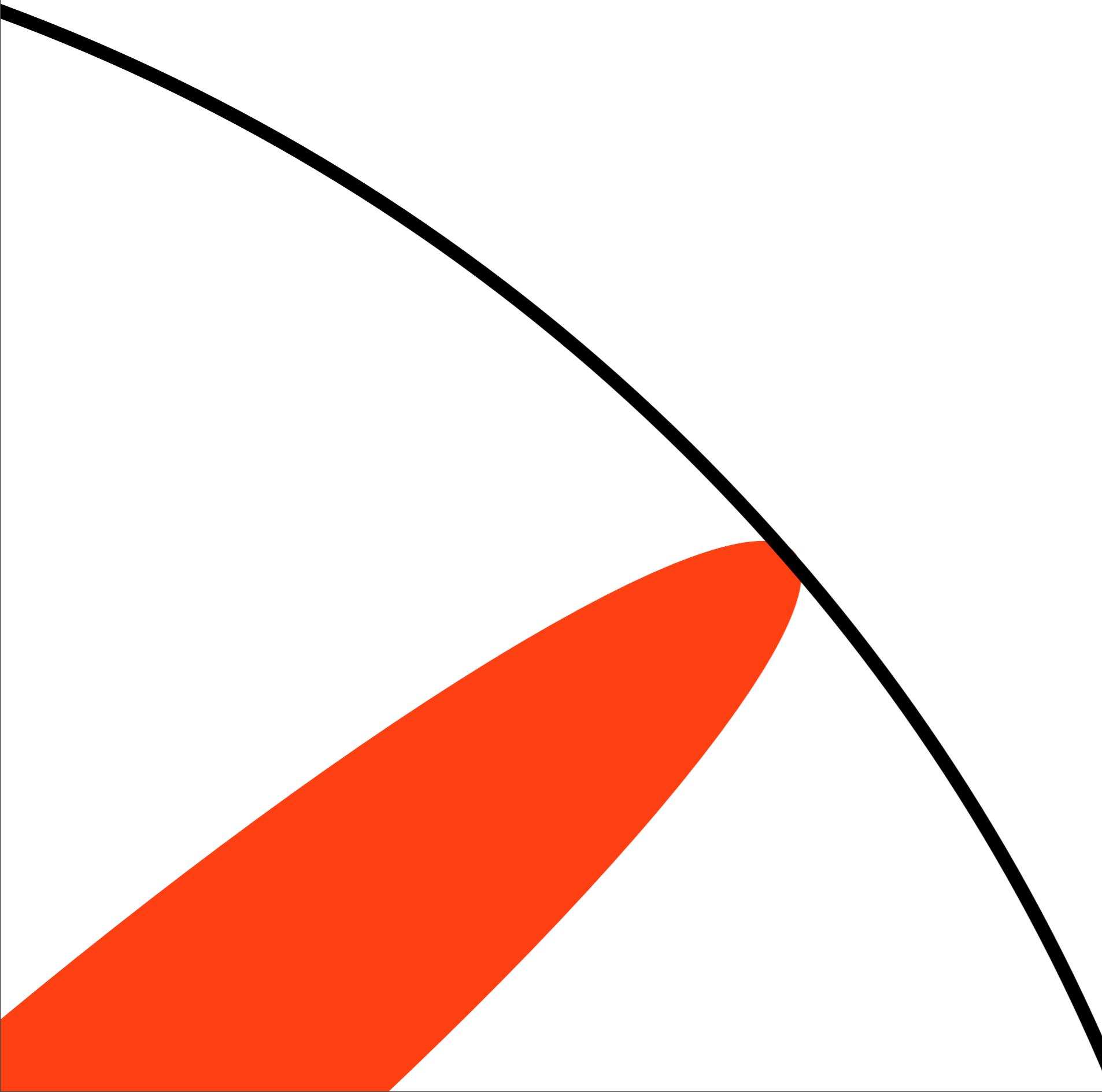


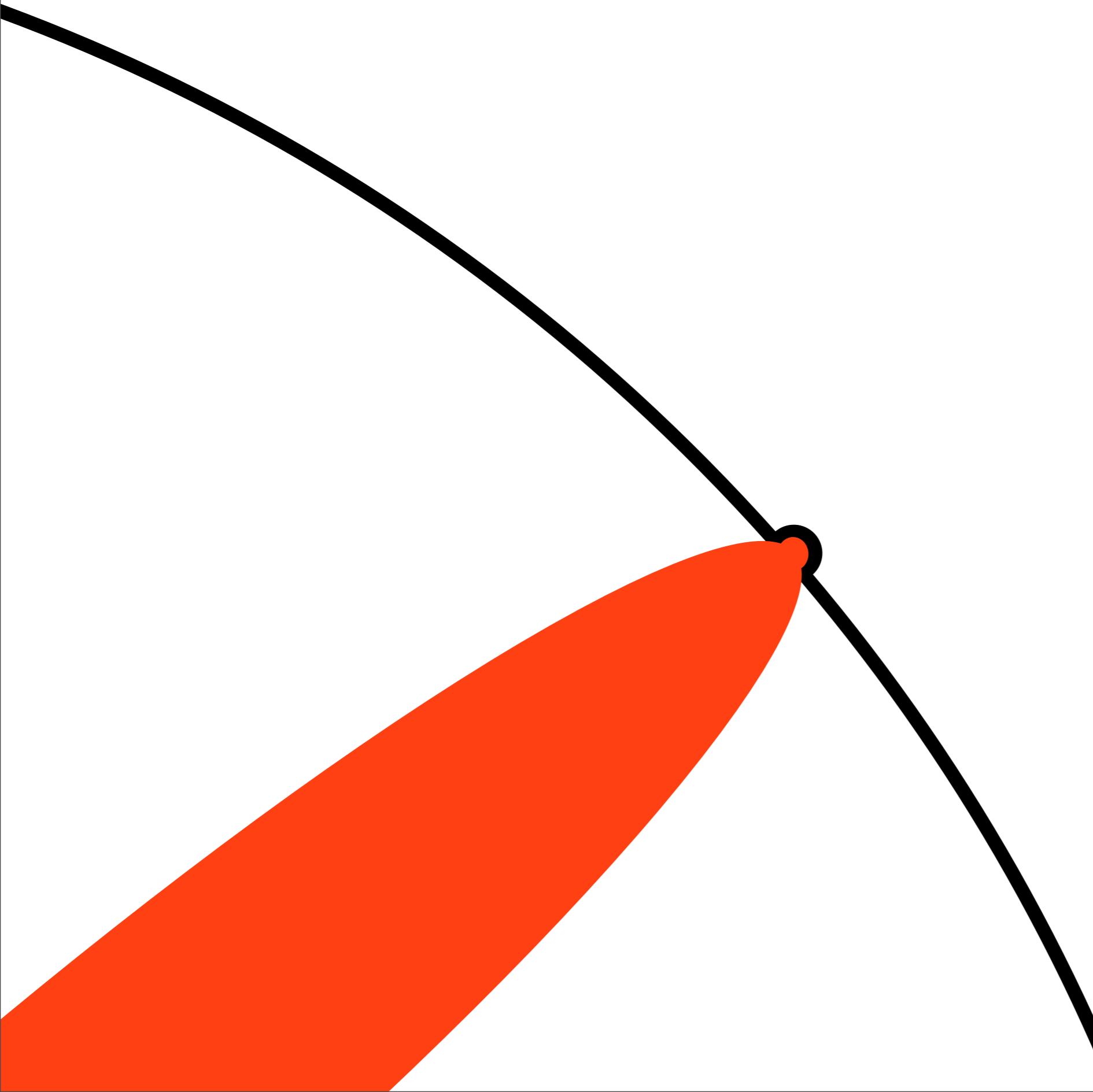


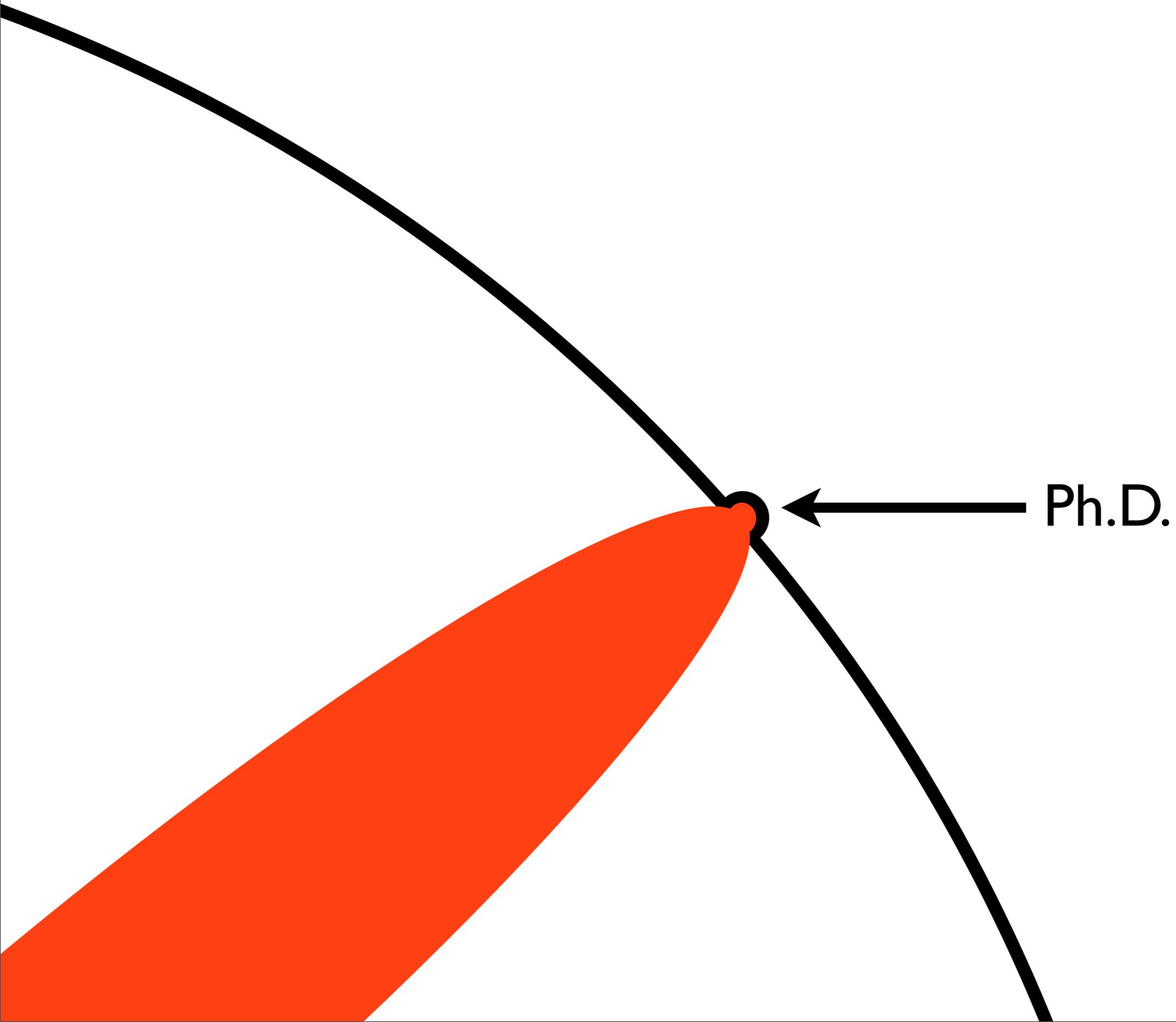




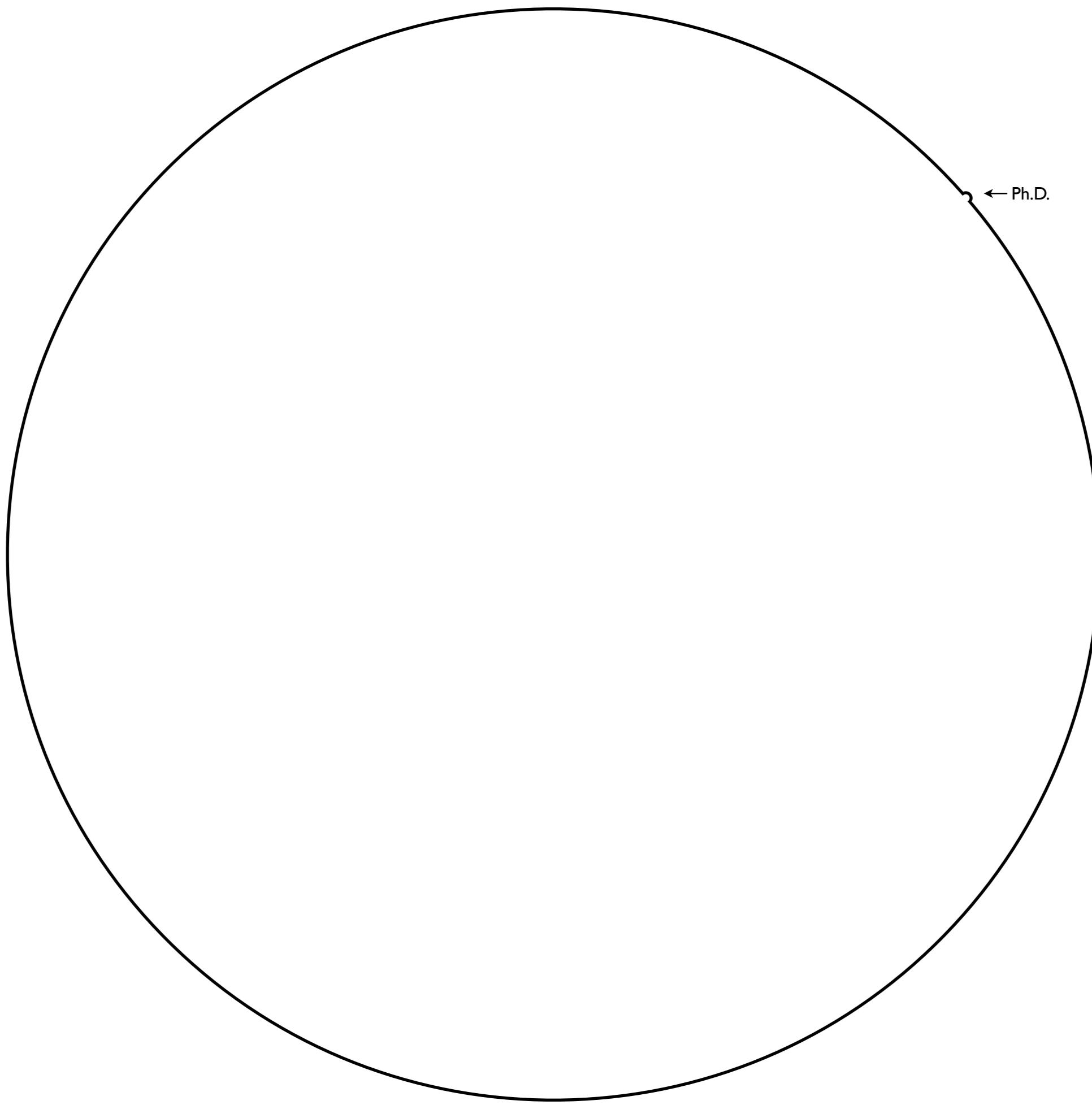












← Ph.D.

**Keep pushing.**

