



DATA AND ANALYTICS

ANDROULA ALEKOU

ANDROULA.ALEKOU@GMAIL.COM

 @androuraalekou

 [linkedin.com/in/androuraalekou](https://www.linkedin.com/in/androuraalekou)

OUTLINE

Academic career timeline

PhD transferable skills

Taking a leap!

From Cyprus



P&G Data Scientist/Analyst

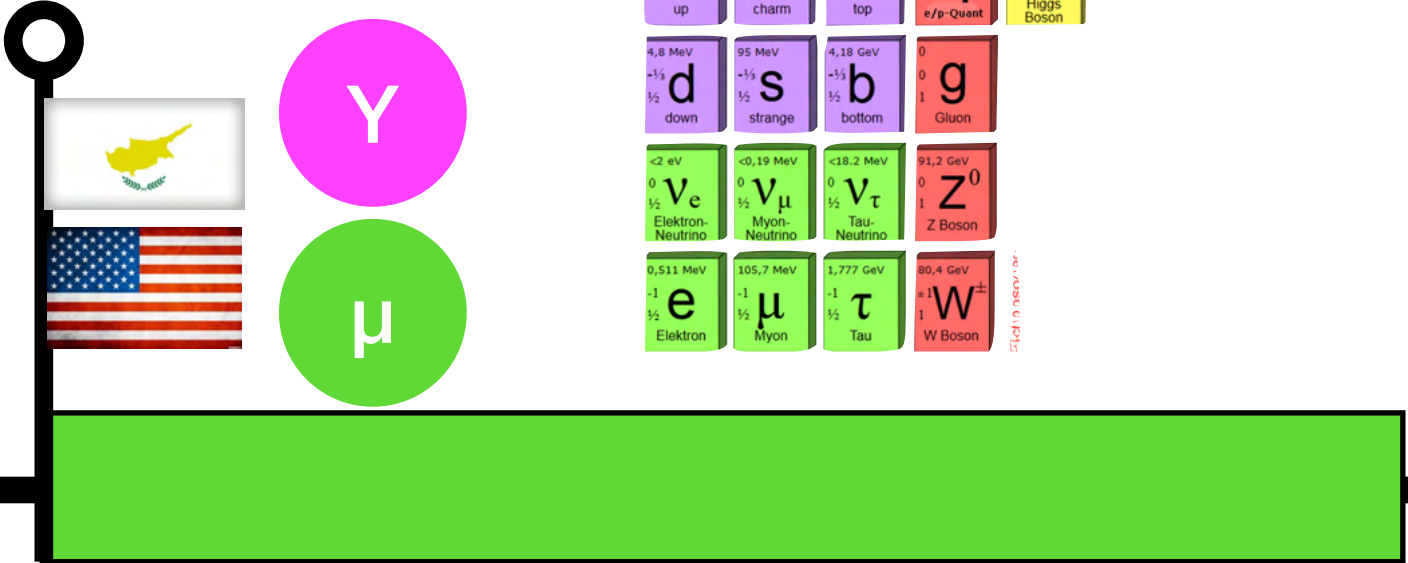
**Married, Mom
&
Martial Arts
3rd Dan
Instructor**

15 yrs in Physics



Career timeline

2004



2.3 MeV 1/2 u up	1.275 GeV 2/3 c charm	173.07 GeV 2/3 t top	173.07 GeV 2/3 q up/down	125.9 GeV 0 H Higgs Boson
4.8 MeV -1/3 d down	95 MeV -1/3 s strange	4.18 GeV -1/3 b bottom	0 0 g Gluon	
12 eV 0 ν _e Elektron-Neutrino	105.7 MeV 0 ν _μ Myon-Neutrino	168.2 MeV 0 ν _τ Tau-Neutrino	91.2 GeV 0 Z ⁰ Z Boson	
0.511 MeV -1 e Elektron	105.7 MeV -1 μ Myon	1.777 GeV -1 τ Tau	80.4 GeV -1 W ⁻ W Boson	

BSci Physics
University of Cyprus &
Fermilab

- Final year thesis, Fermilab, Particle Physics, CDF detector

Career timeline



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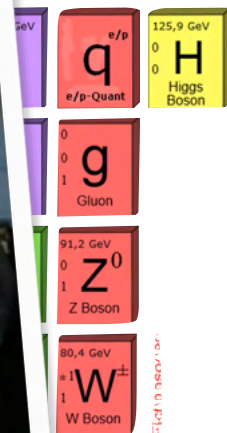


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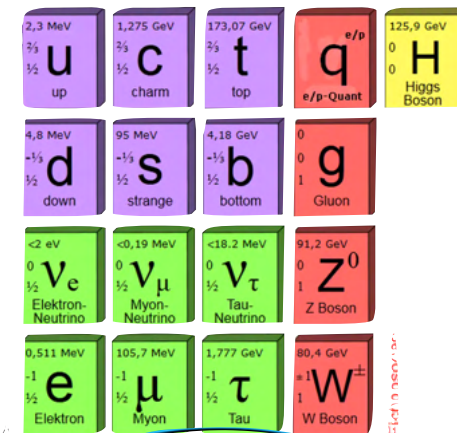
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Career timeline



2008



BSci Physics

University of Cyprus & Fermilab

PhD

Particle/Accelerator Physics
Imperial College London

- Final year thesis, Fermilab, Particle Physics, CDF detector

- Simulation, design, data analysis, hardware, commissioning and experiments
- Collaboration with international teams at RAL, CERN, Fermilab, J-PARC, PSI



Career timeline



2.3 MeV 2/3 1/2 u up	1.275 GeV 2/3 2/3 c charm	173.07 GeV 3/2 1/2 t top	125.9 GeV 0 0 q Higgs Boson
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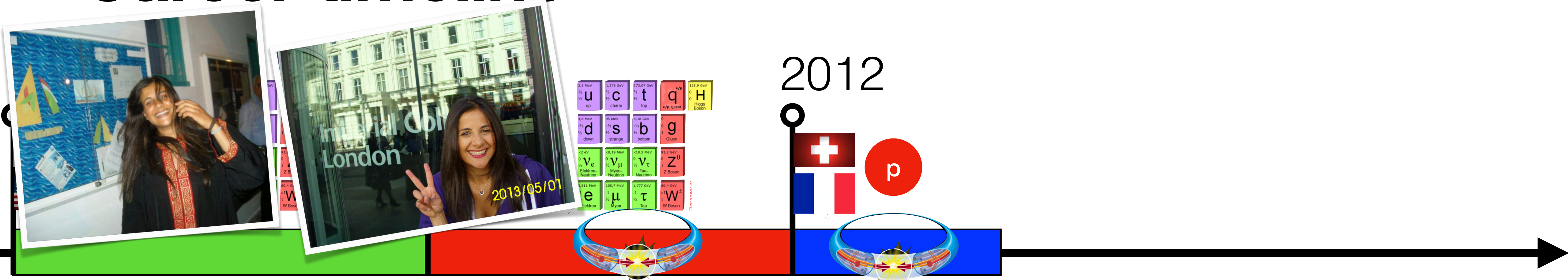


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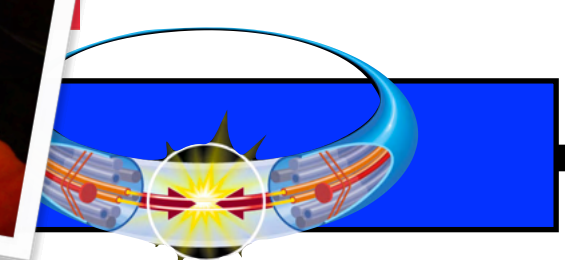
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CERN Fellowship
CERN

- Collimation studies for proton synchrotron design
- Hands on experience with large proton accelerator

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2014
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University of Oxford

- Designed Diamond-II (with ESRF, France)
- Experimental studies



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CERN/University of
Manchester

- Crab Cavity simulations, SPS tests experimental preparation, HL-LHC



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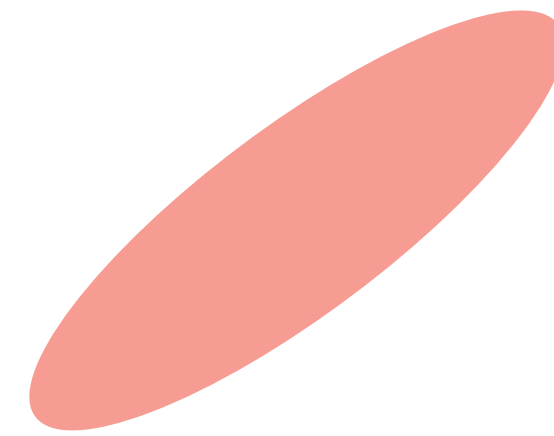
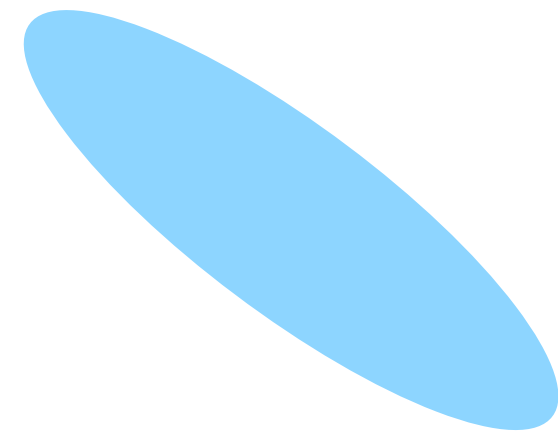


Beam1

Beam2

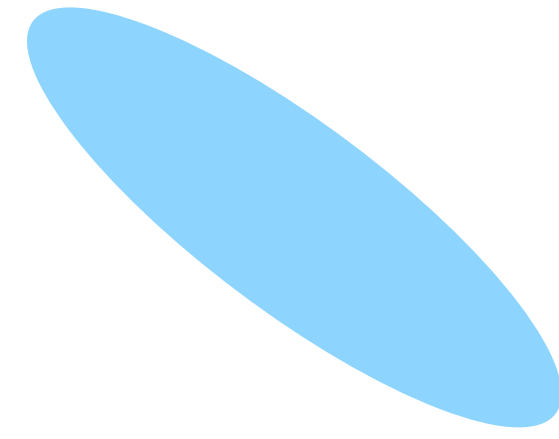
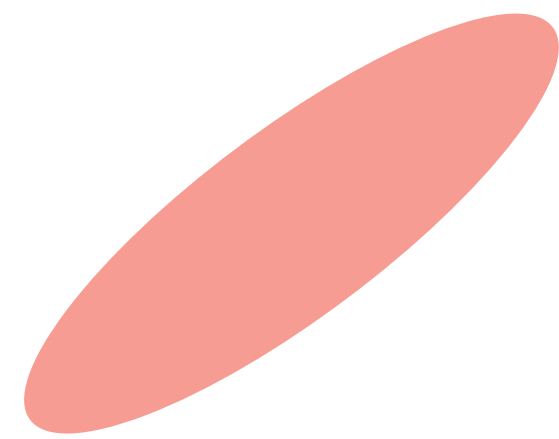
Beam1

Beam2



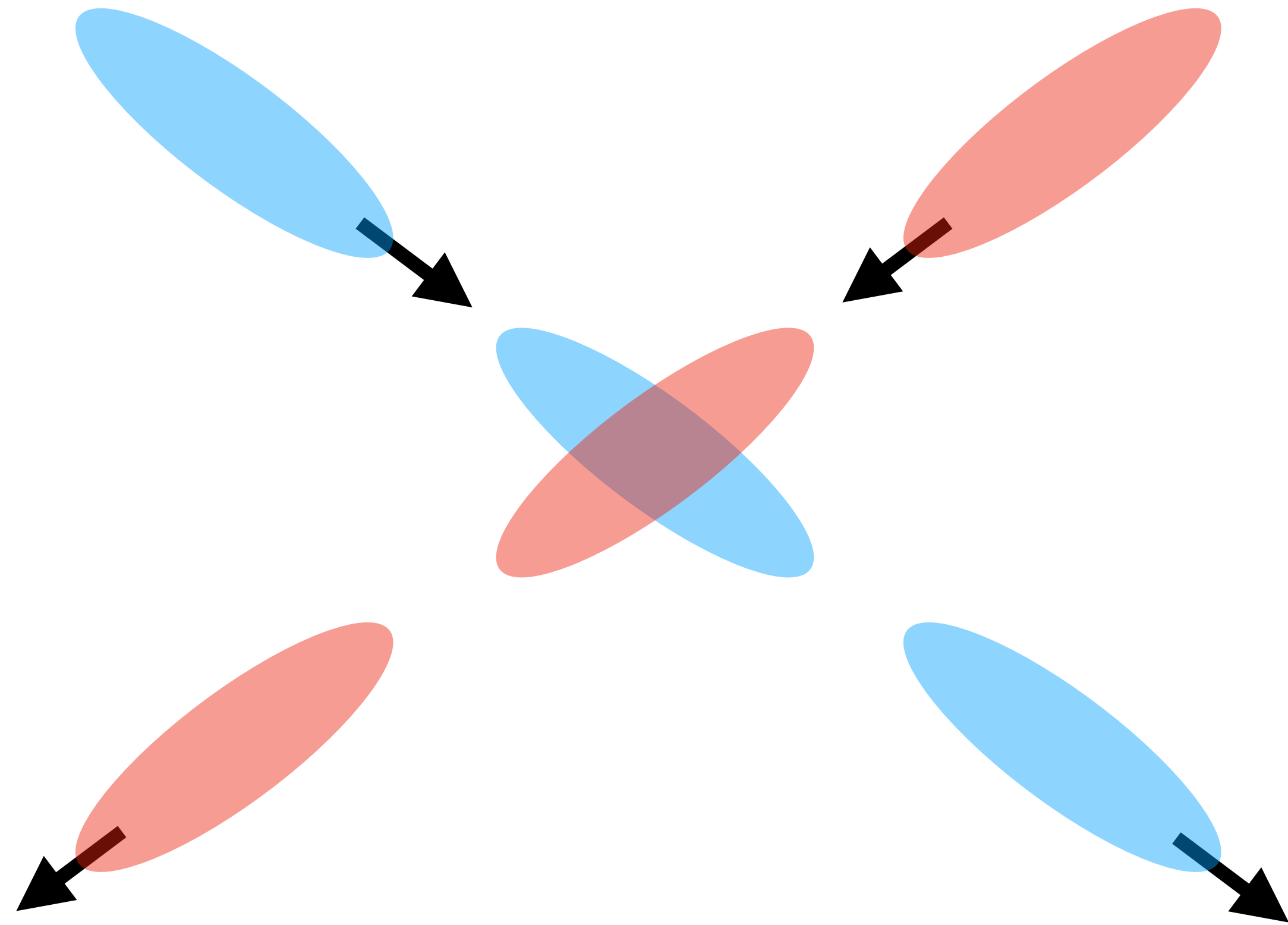
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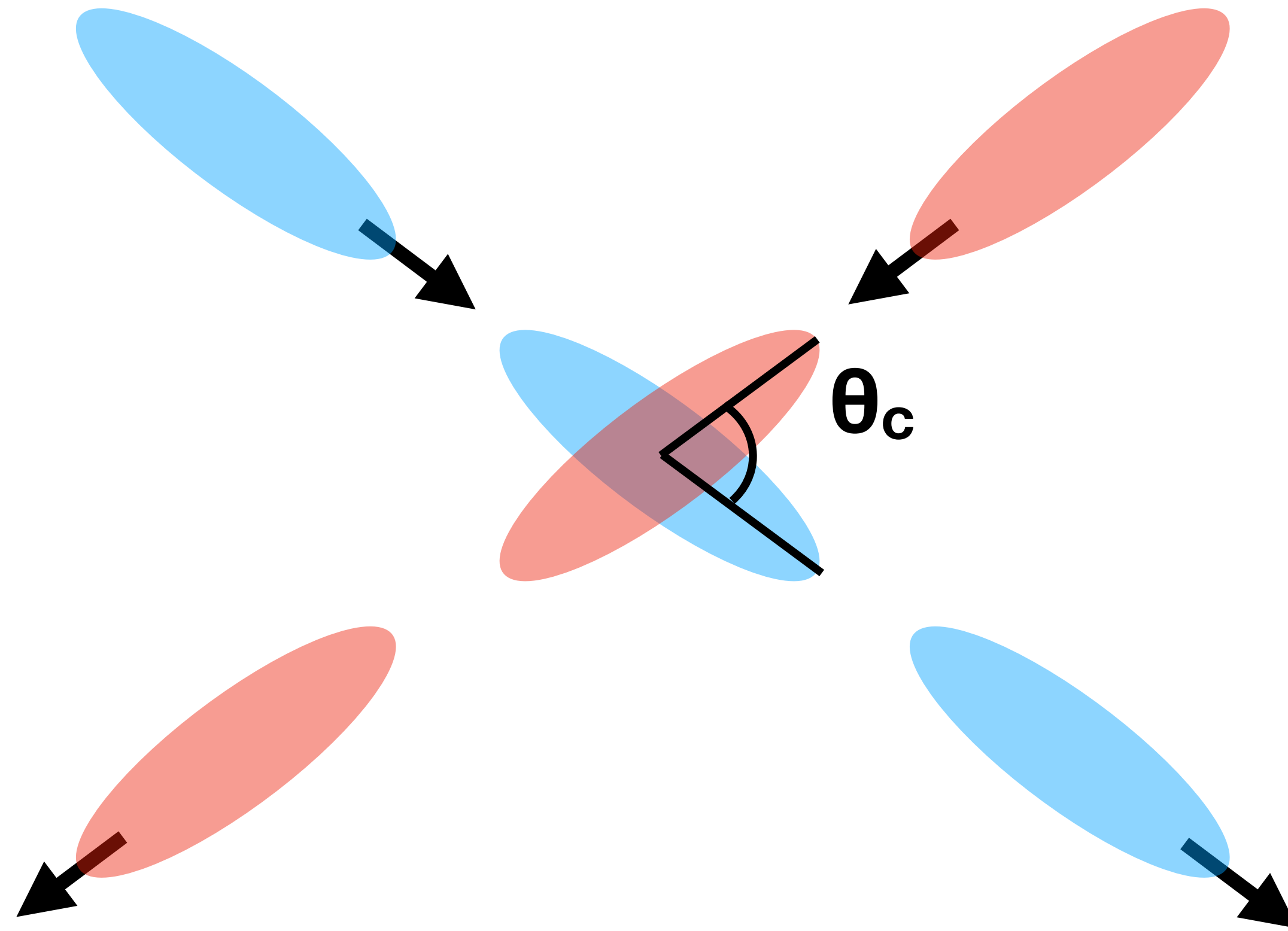
Beam2



Beam1

Beam2

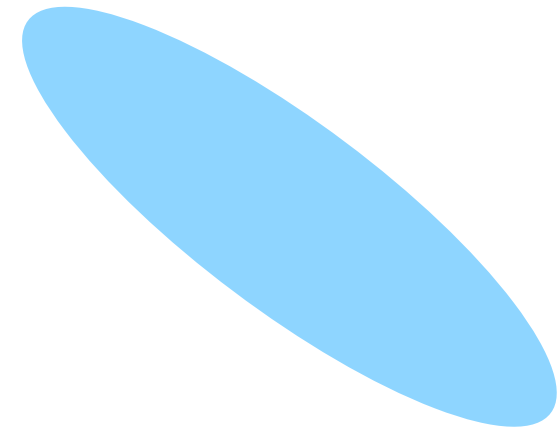




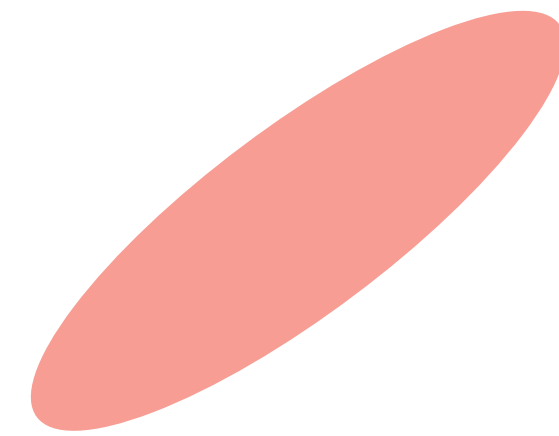
Beam1

Beam2

Beam1

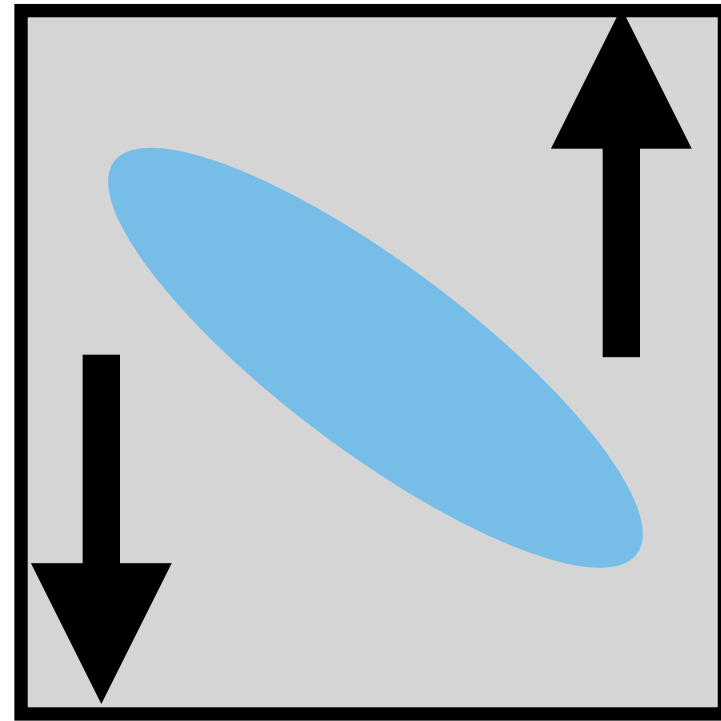


Beam2



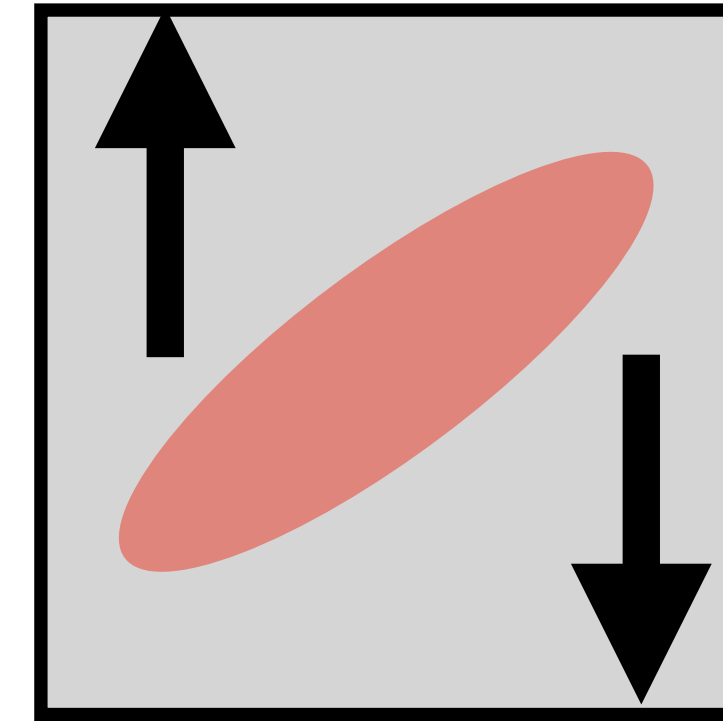
Beam1

Crab Cavity



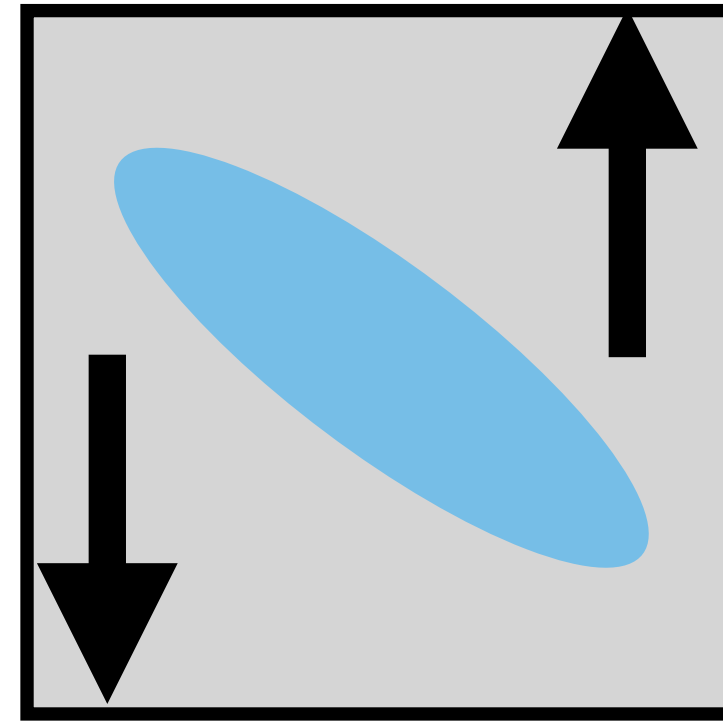
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Crab Cavity



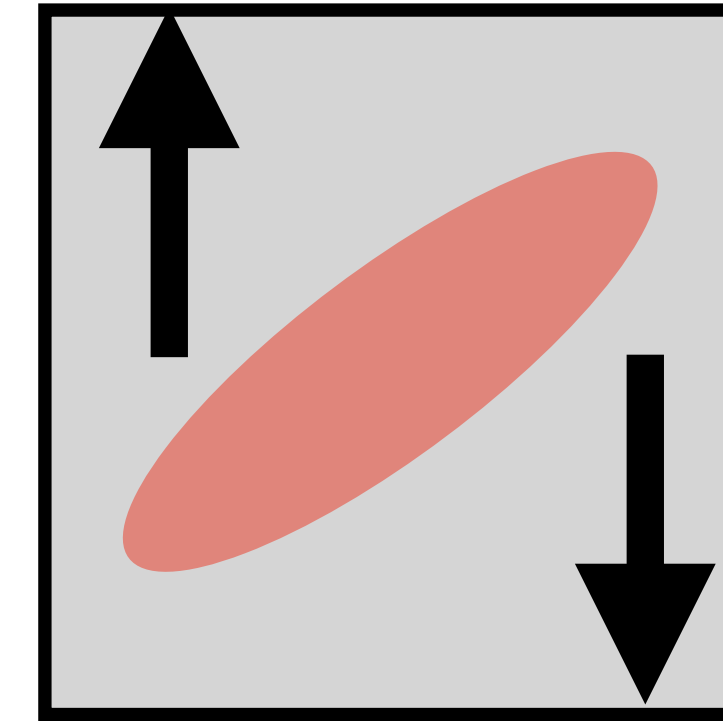
Beam1

Crab Cavity



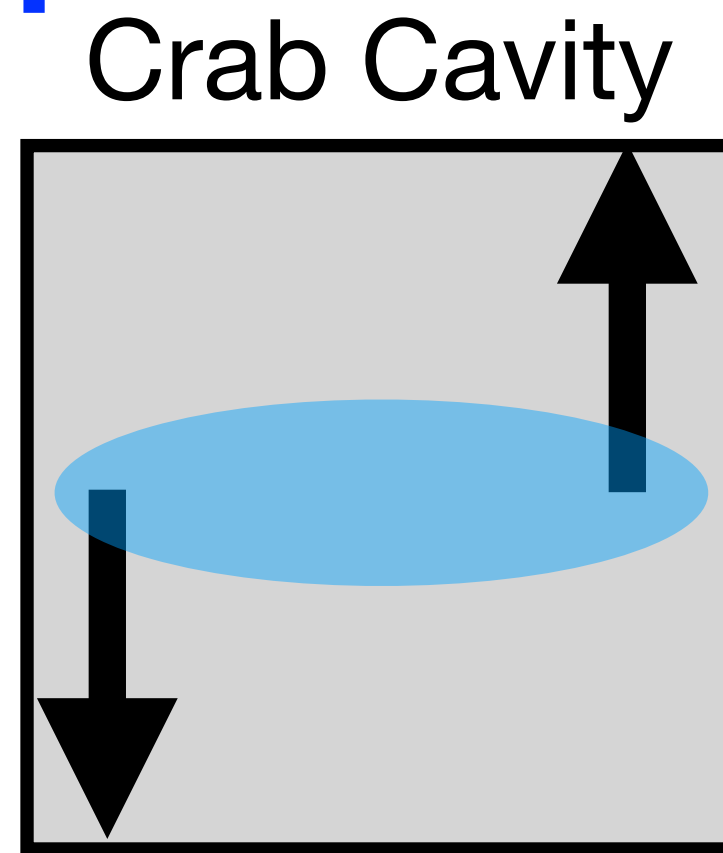
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Crab Cavity

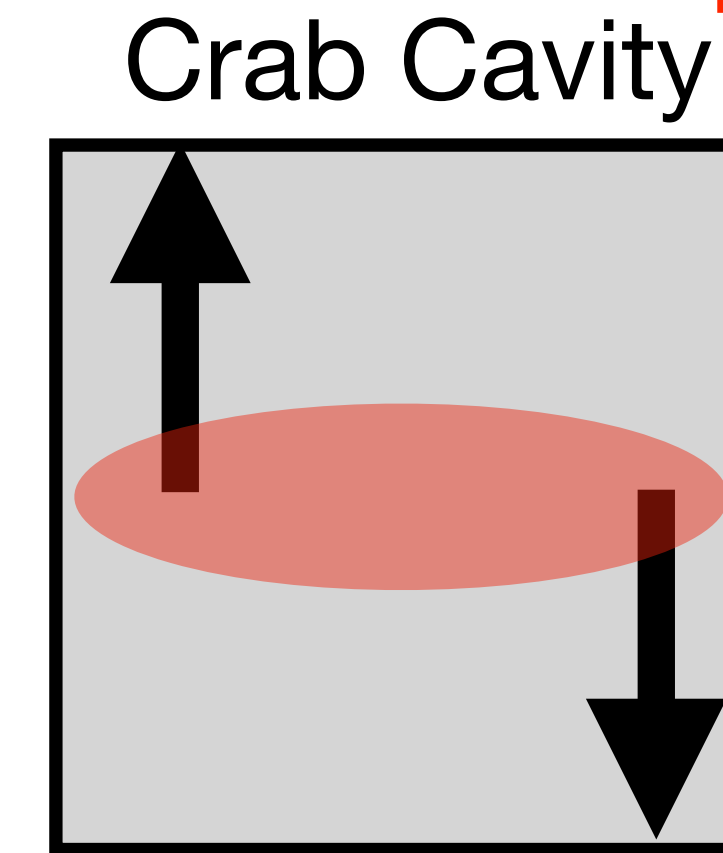


Crab Cavity: gives transverse kick that depends on longitudinal position of particles in bunch

Beam1



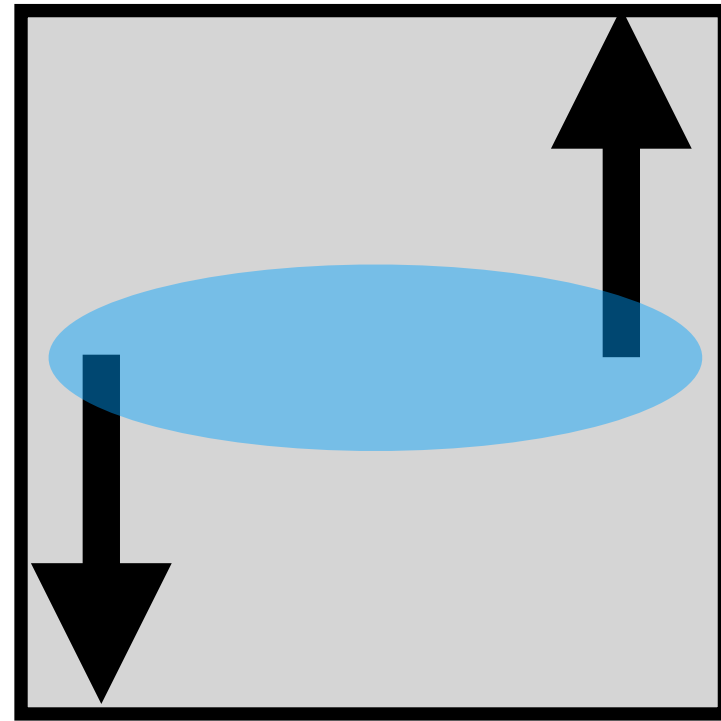
Beam2



Crab Cavity: gives transverse kick that depends on longitudinal position of particles in bunch

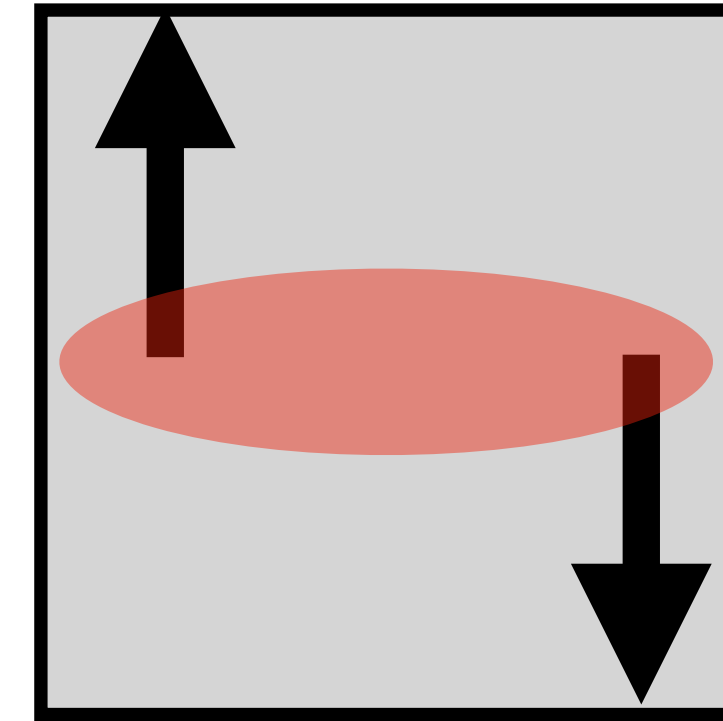
Beam1

Crab Cavity



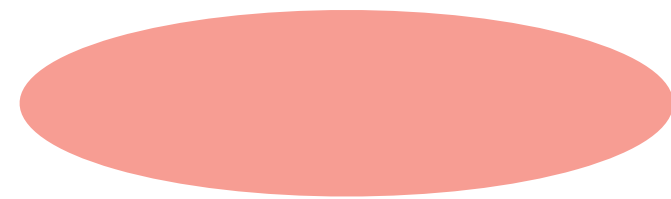
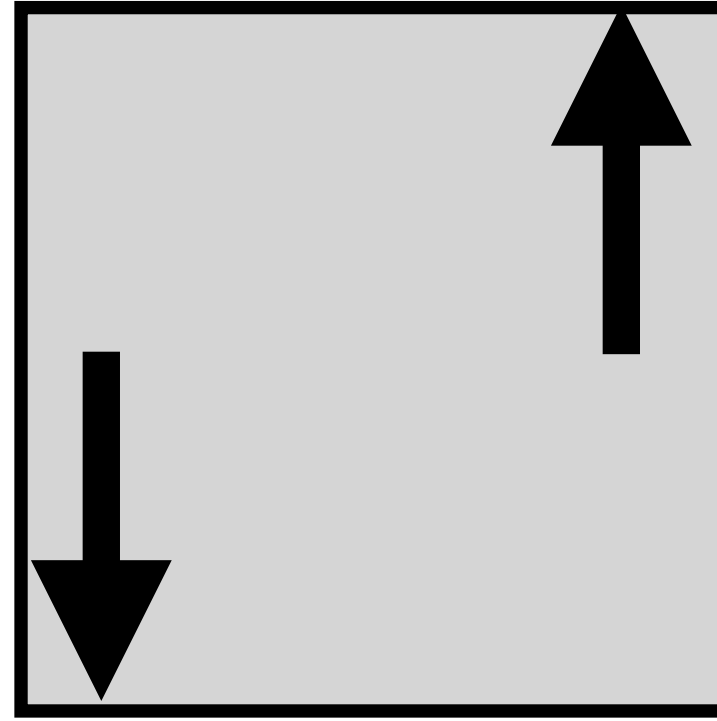
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Crab Cavity



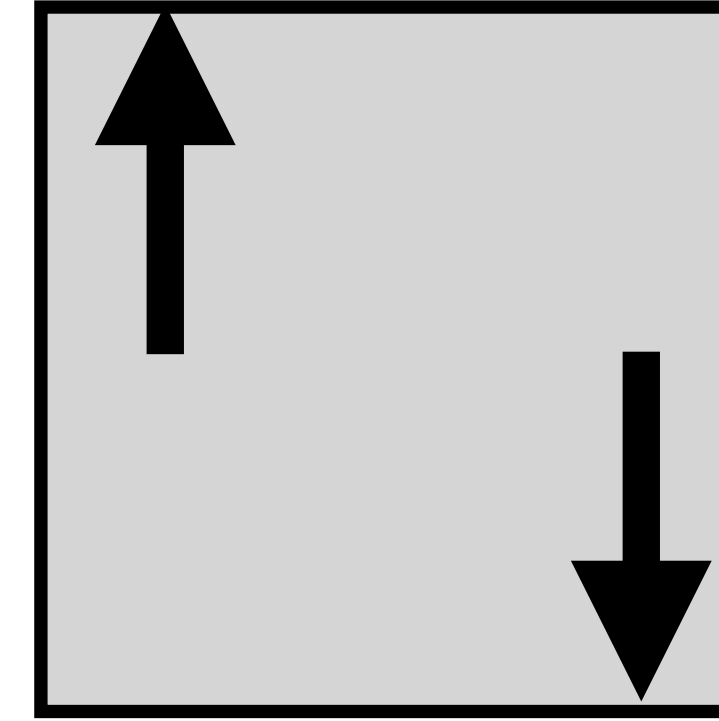
Beam1

Crab Cavity



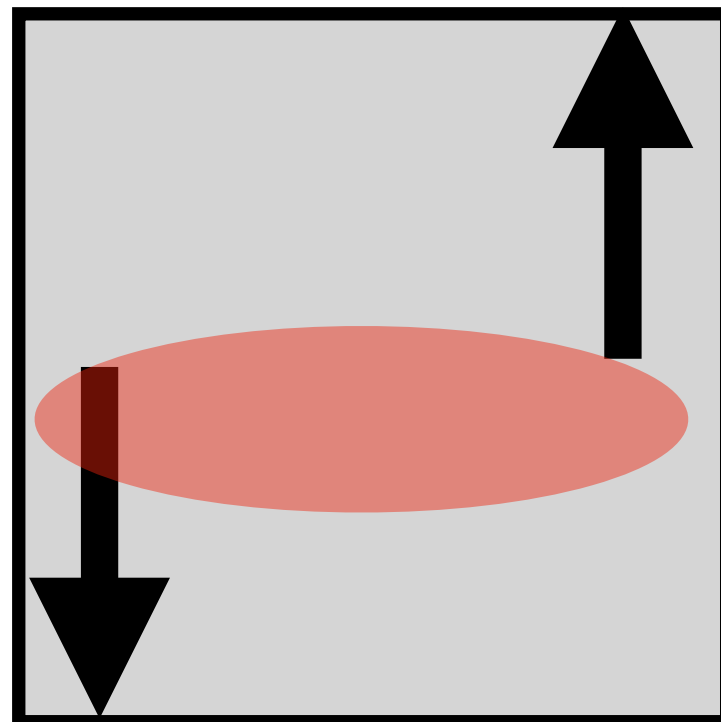
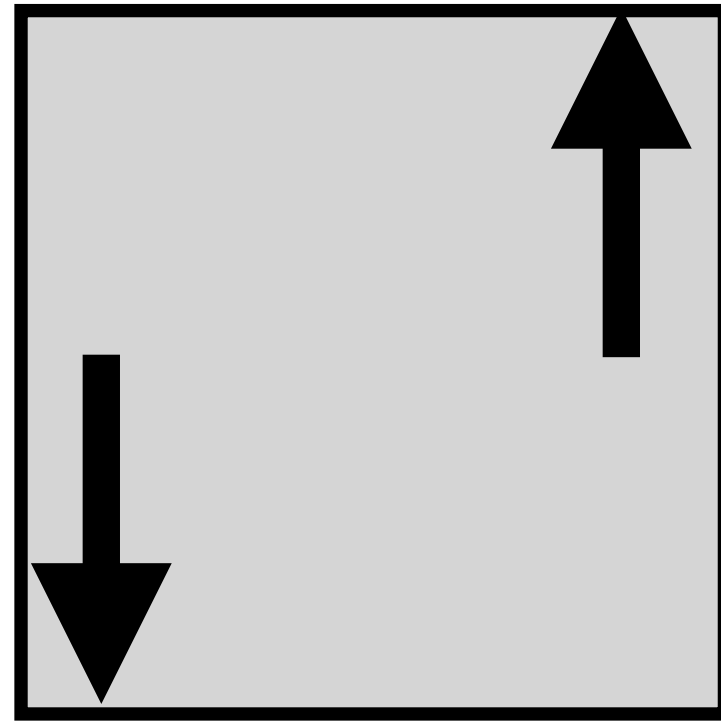
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Crab Cavity



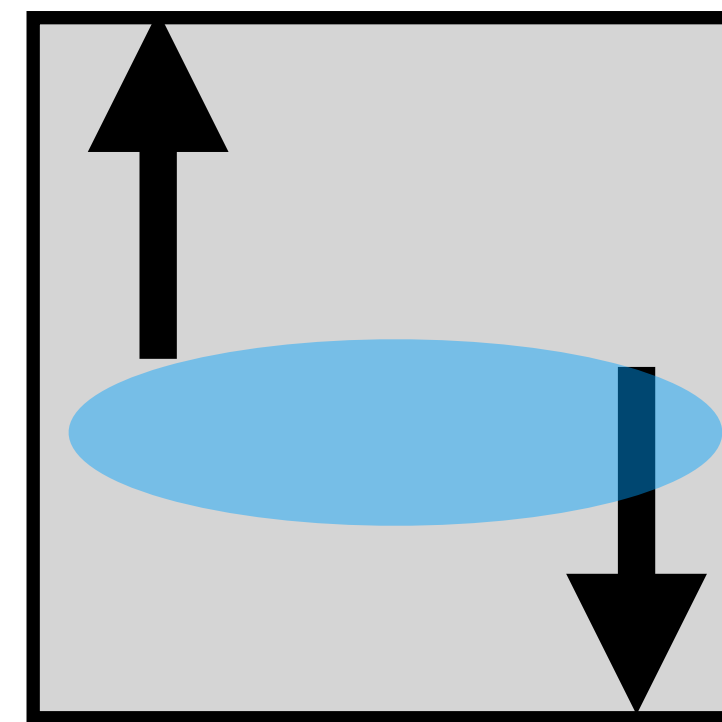
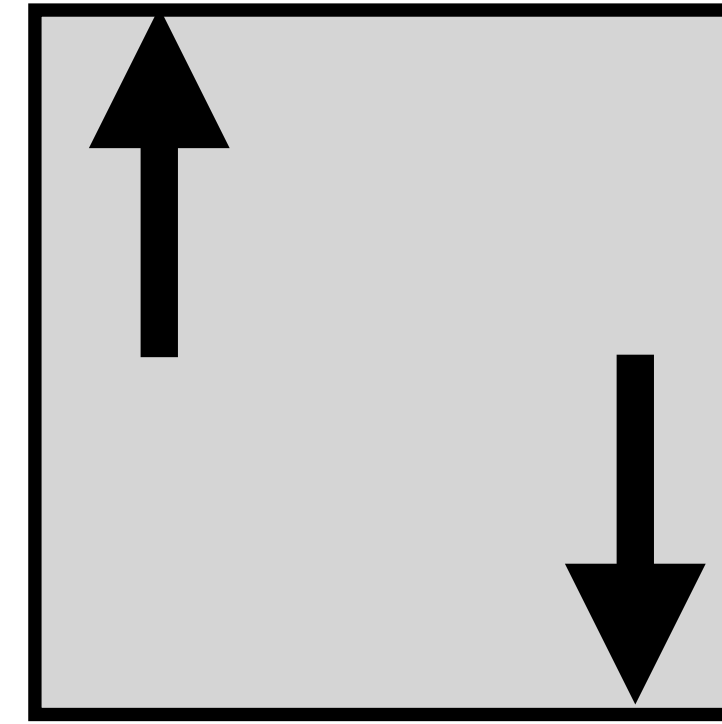
Beam1

Crab Cavity



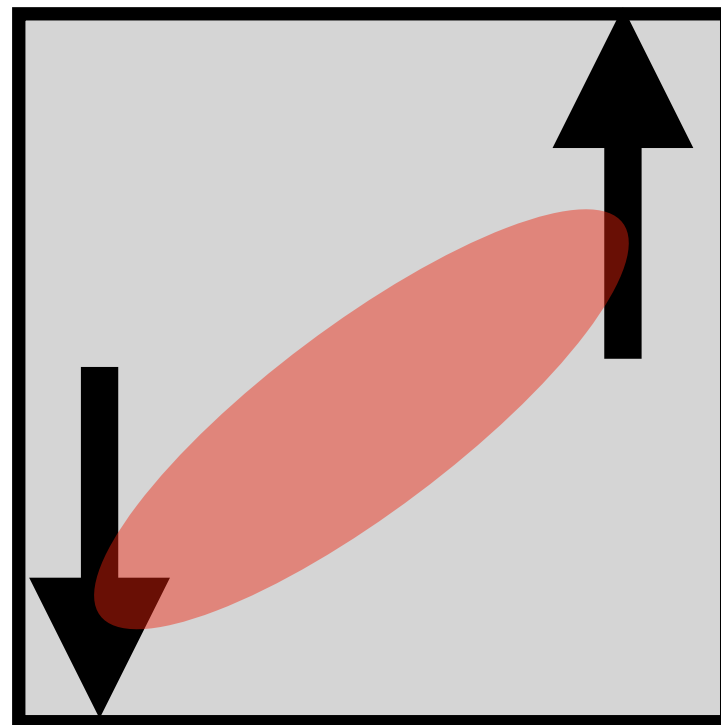
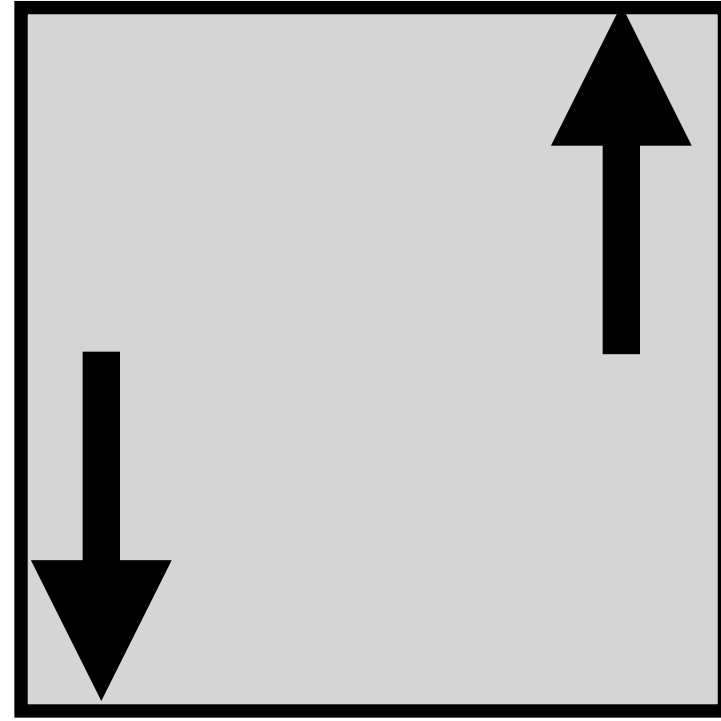
Beam2

Crab Cavity



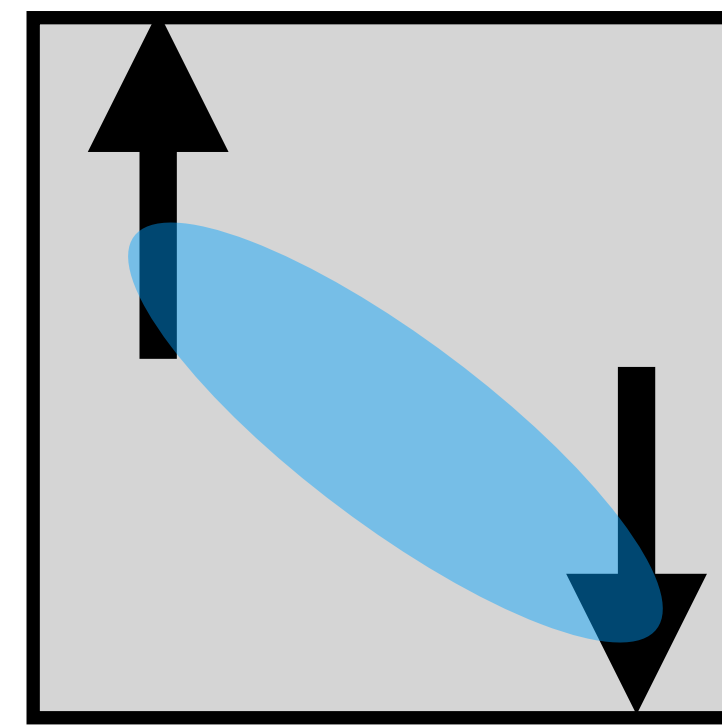
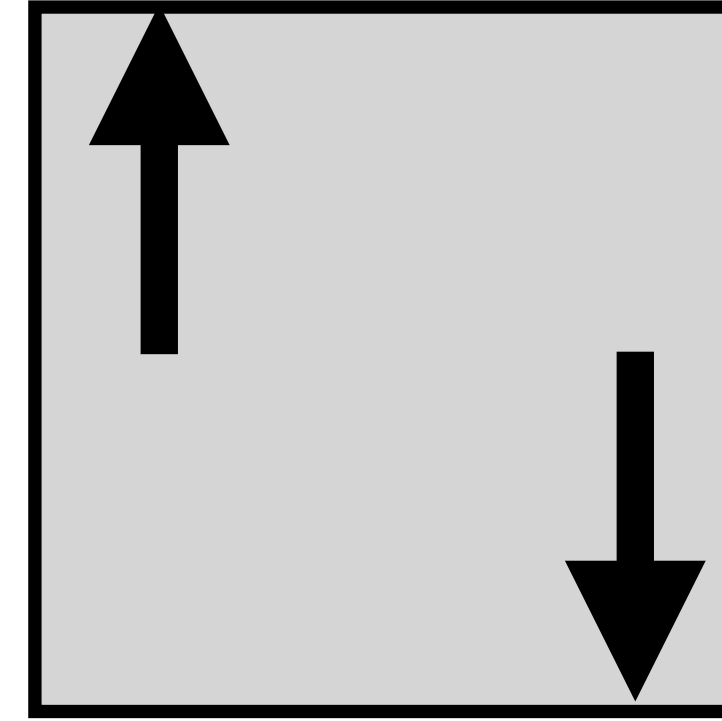
Beam1

Crab Cavity



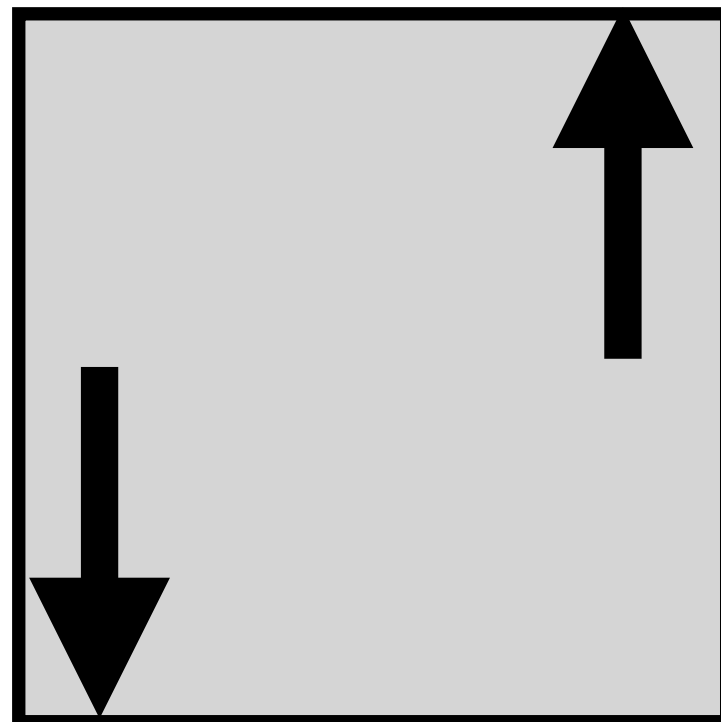
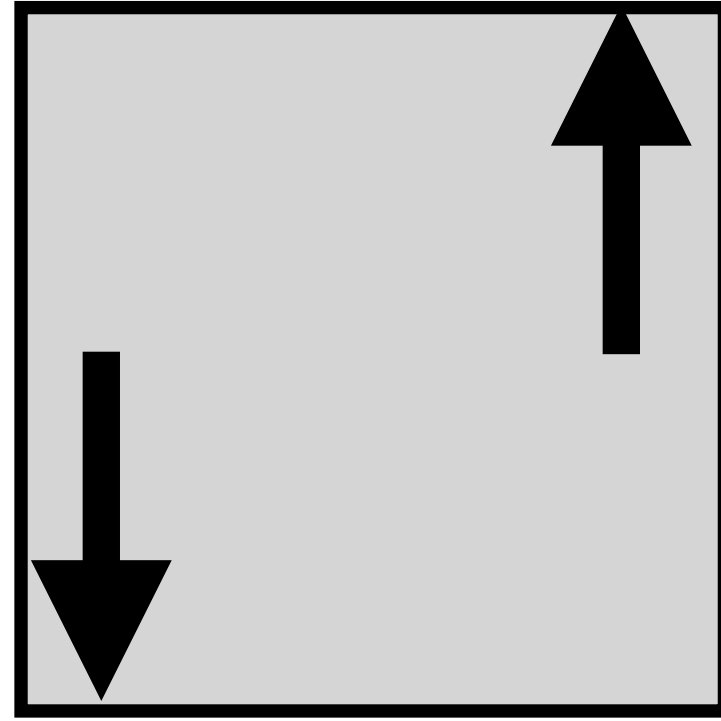
Beam2

Crab Cavity



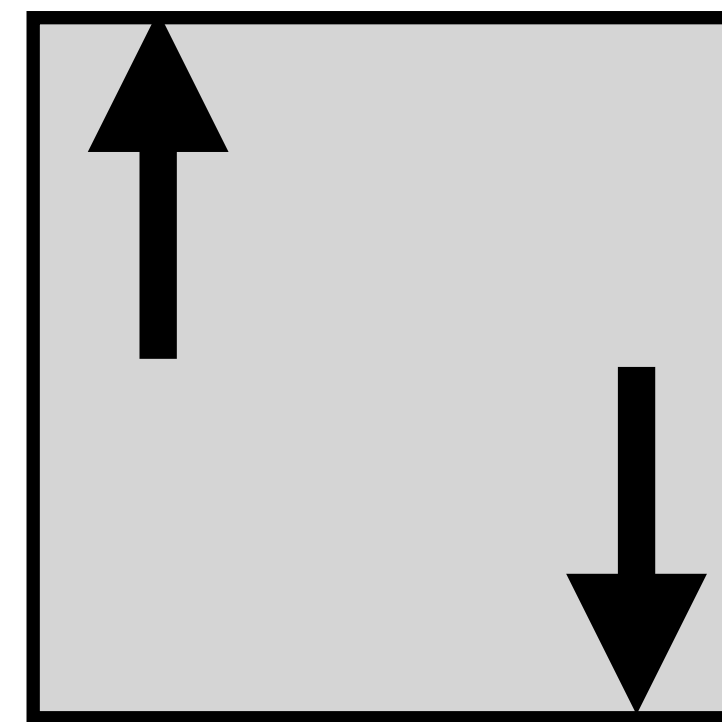
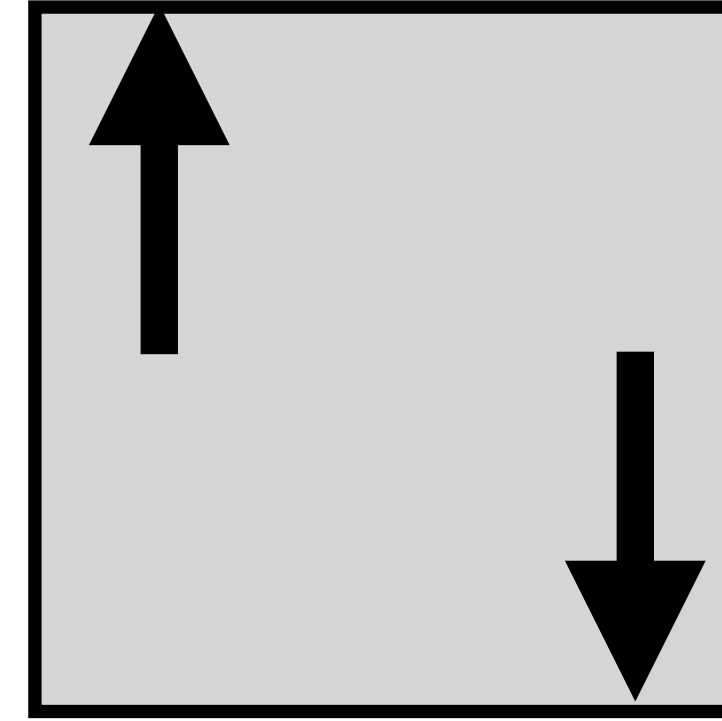
Beam1

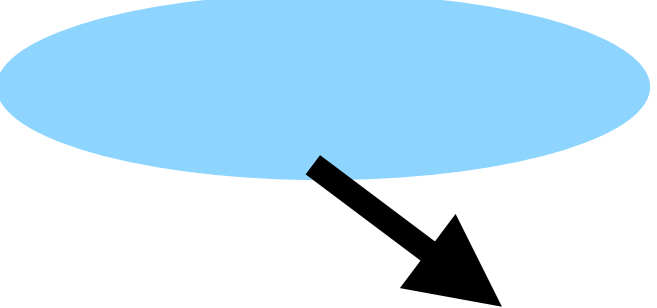
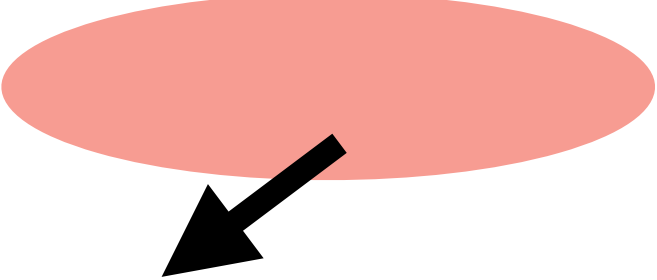
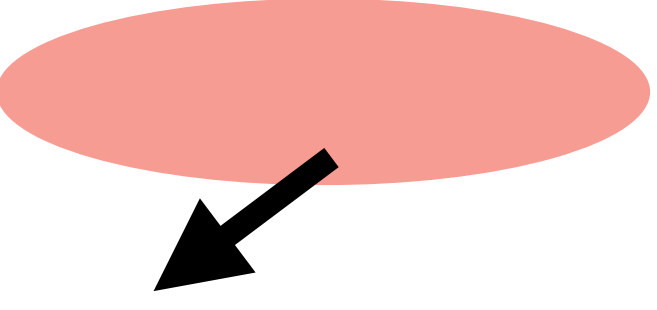
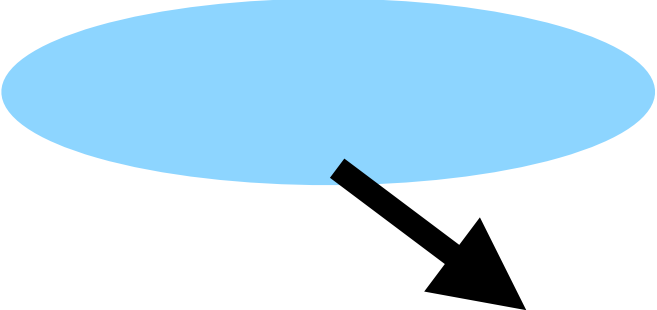
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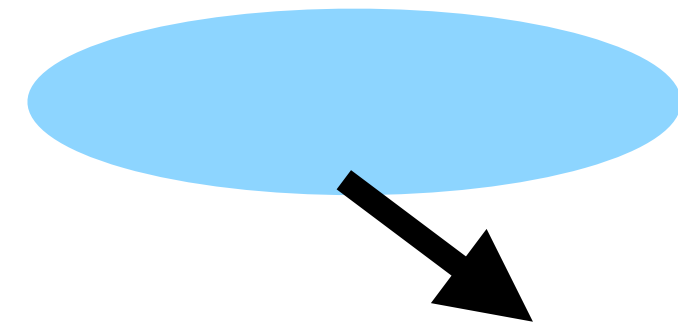
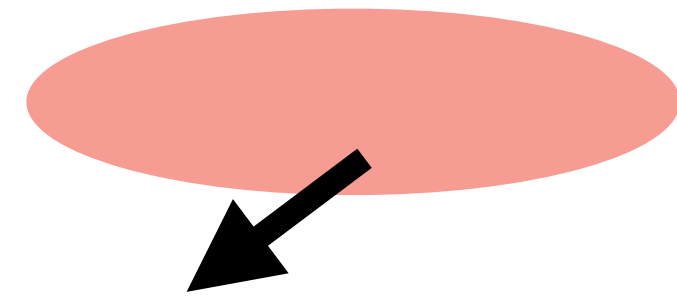
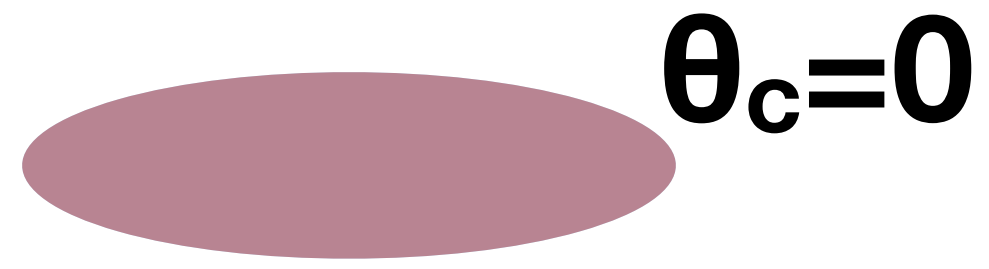
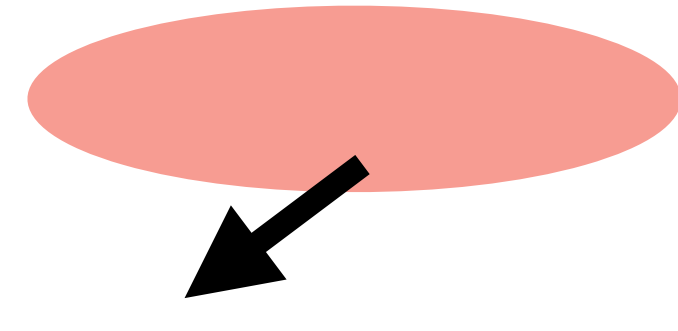
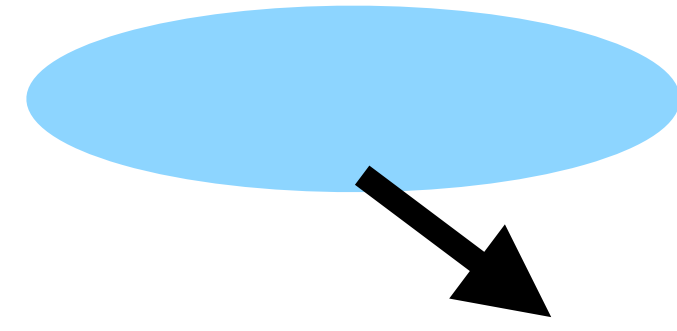


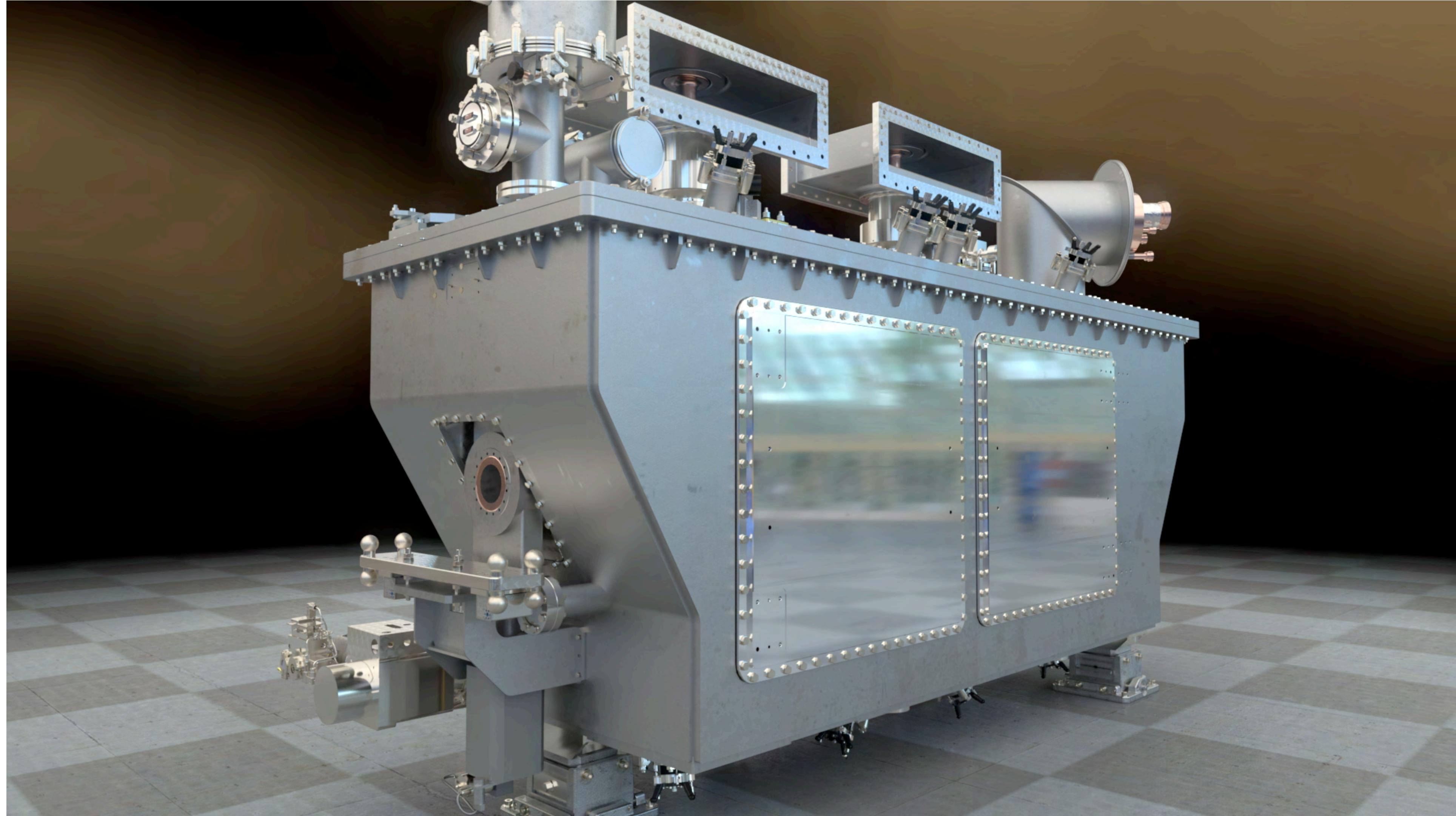
Beam2

Crab Cavity









World's first crabbing of a proton beam

World's first crabbing of a proton beam

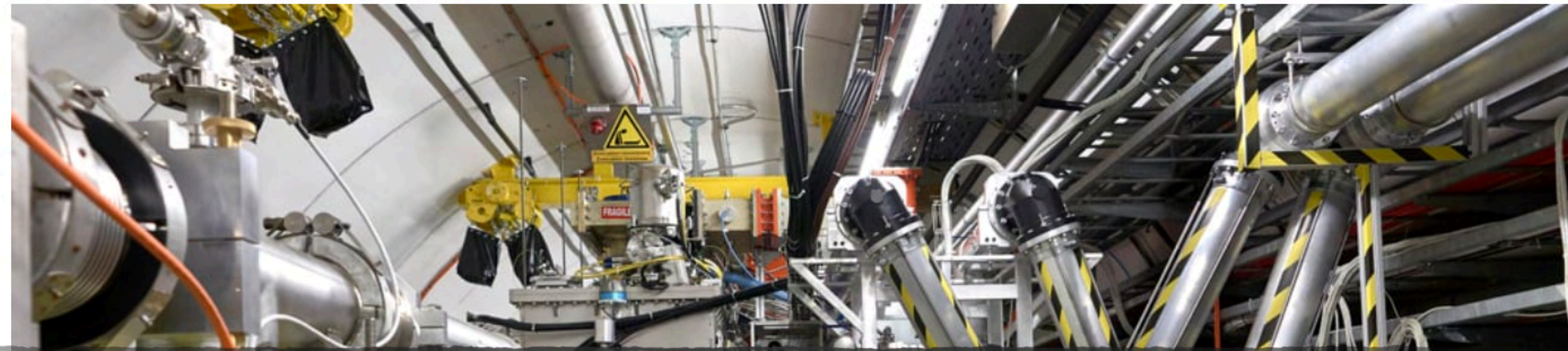
Crabbing of proton beam successful!

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CERN: World's first crabbing of a proton beam

29th May 2018



Published:
May 30, 2018

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Crab cavities used at CERN to rotate beam of protons for first time



Crab

Published:
May 30, 2018
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Study with Liverpool

Crab cavity

World's first crabbing of a proton beam

CERN HL-LHC HL-LHC-UK STFC

26
MAY
2018

Experts from across the Cockcroft Institute, working closely with colleagues at CERN, have contributed to a technology breakthrough that promises to revolutionise the world of high energy particle physics and is a crucial step along the path to the future development of the Large Hadron Collider and the further unlocking of the secrets of the universe.

Crab



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Study with Liverpool

Published:

May

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26
MAY
2018

World's first

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Cl

3 YEARS OF SIMULATIONS AND MEASUREMENTS: A TON OF DATA TO ANALYSE AND TRY TO UNDERSTAND!

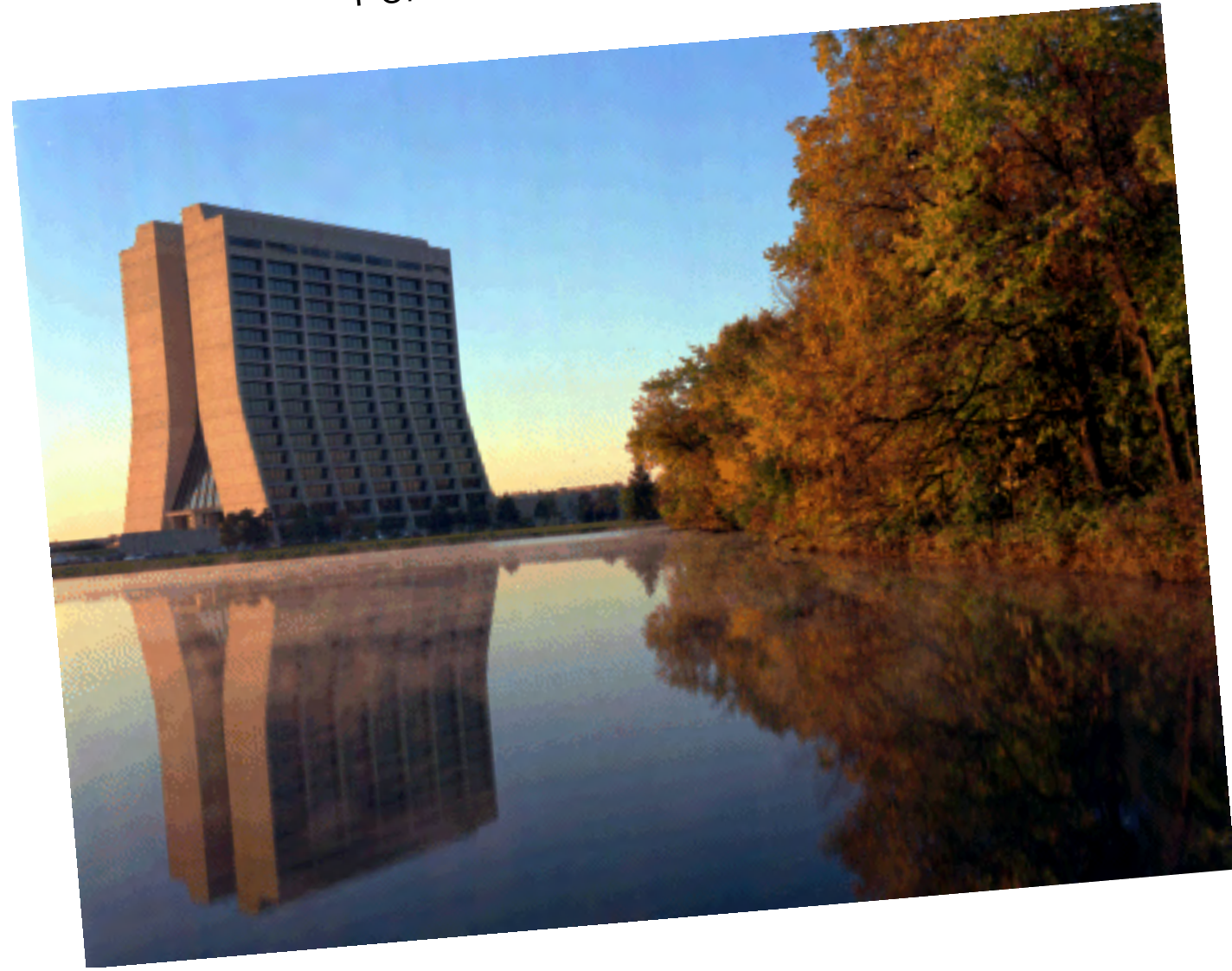
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the Large Hadron Collider and the

t us



Seeing the world!

Fermilab, Chicago

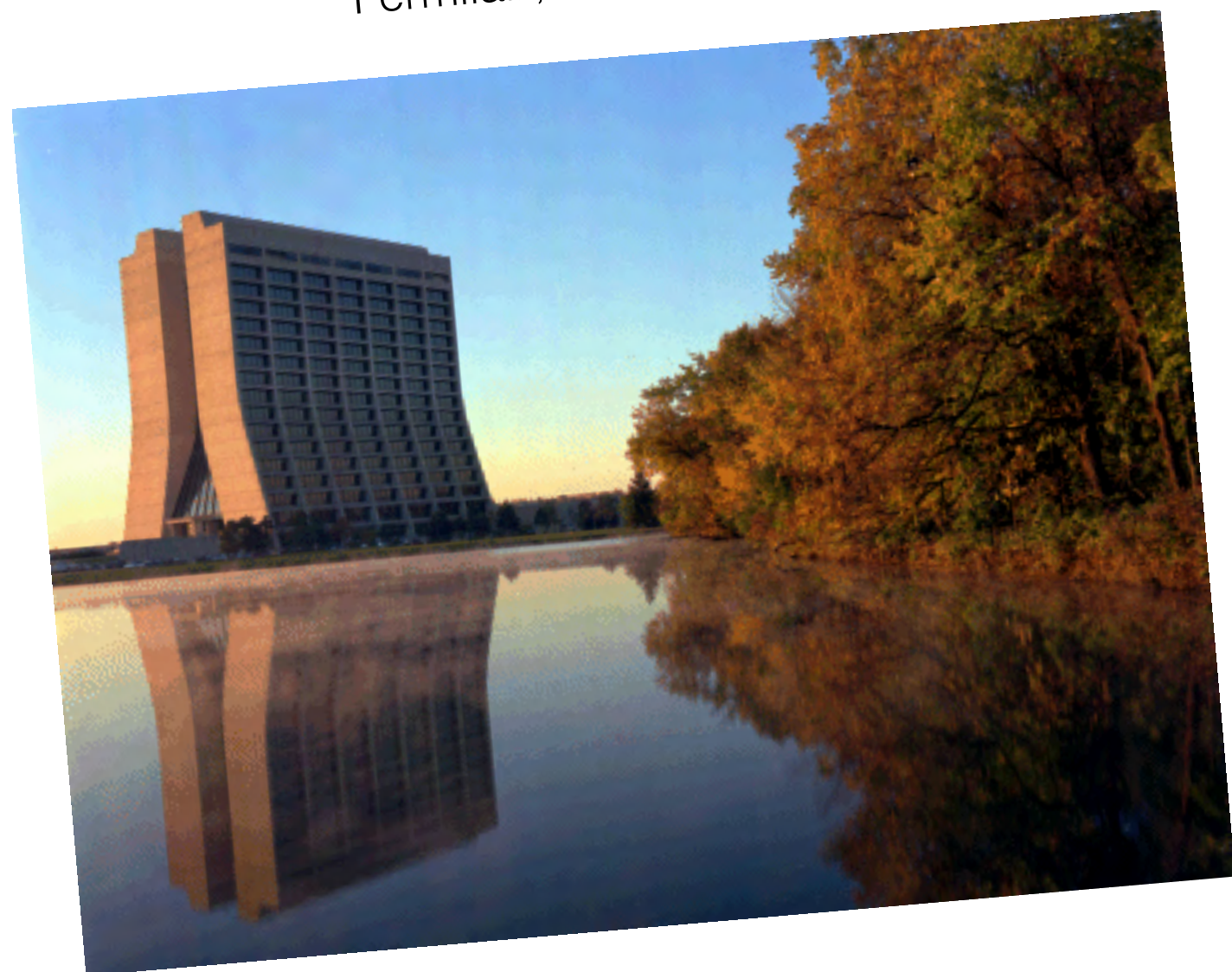


Seeing the world!

London

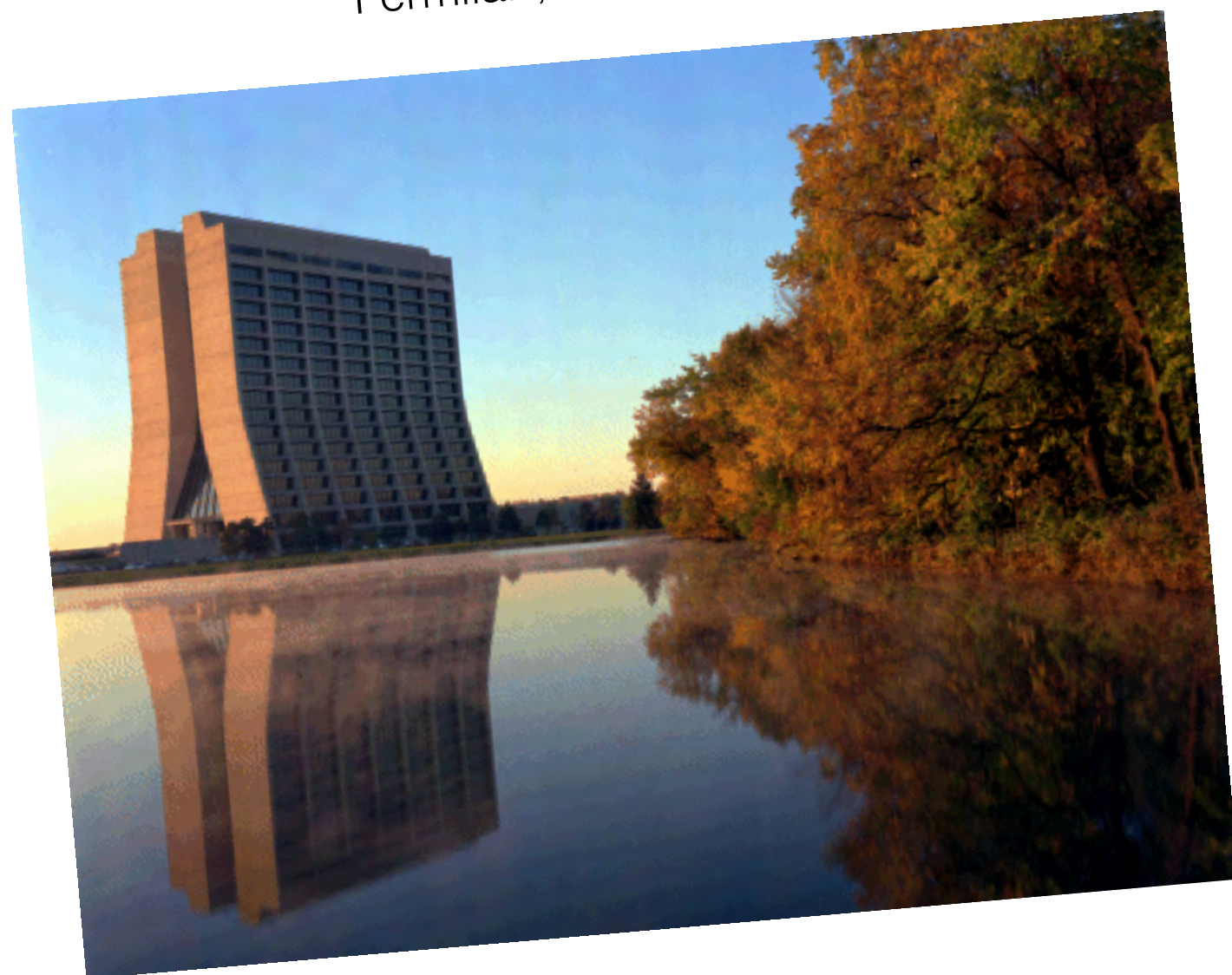
Seeing the world!

Fermilab, Chicago



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Fermilab, Chicago

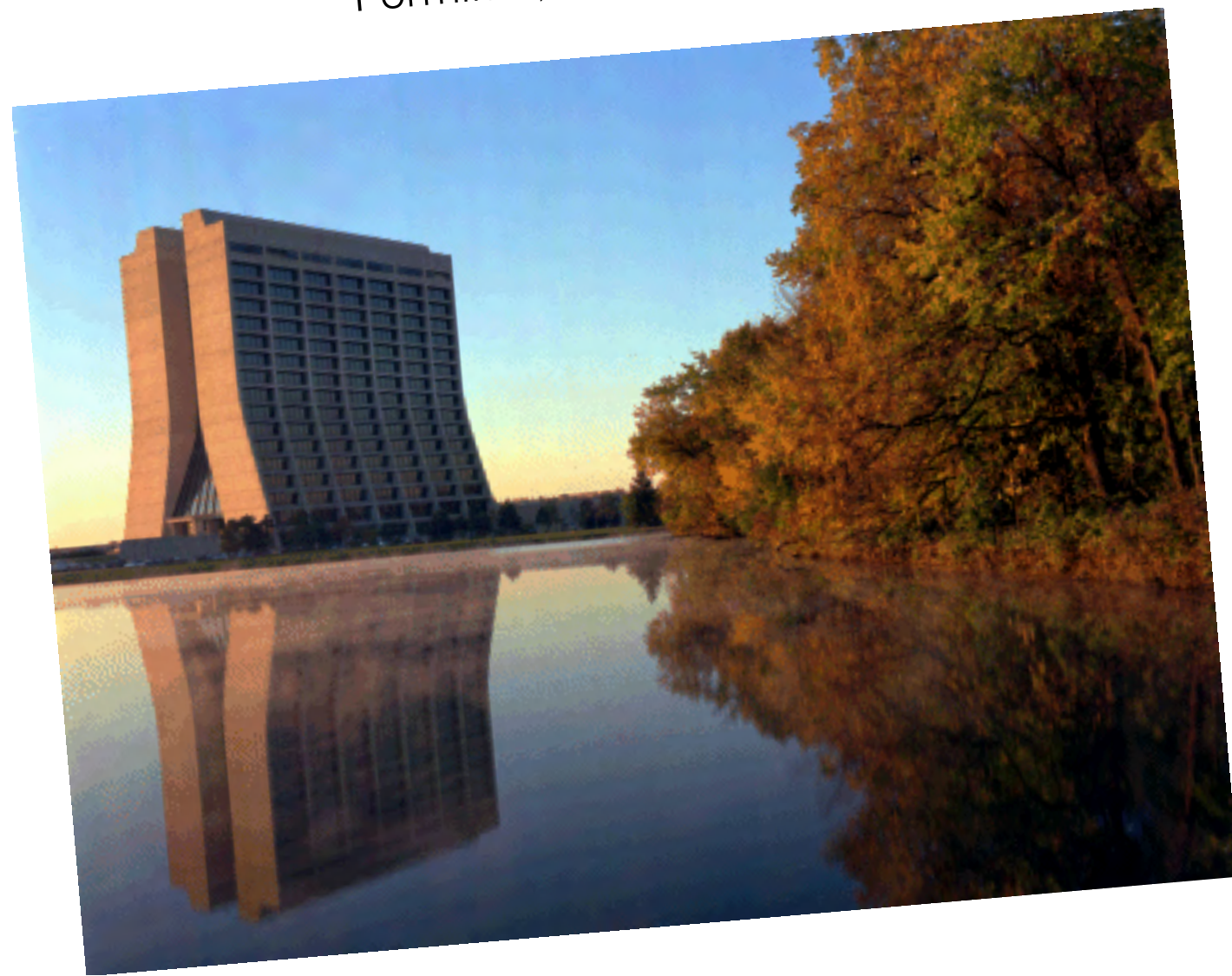


Brugg, Switzerland, $\mu 2e$ experiment



Seeing the world!

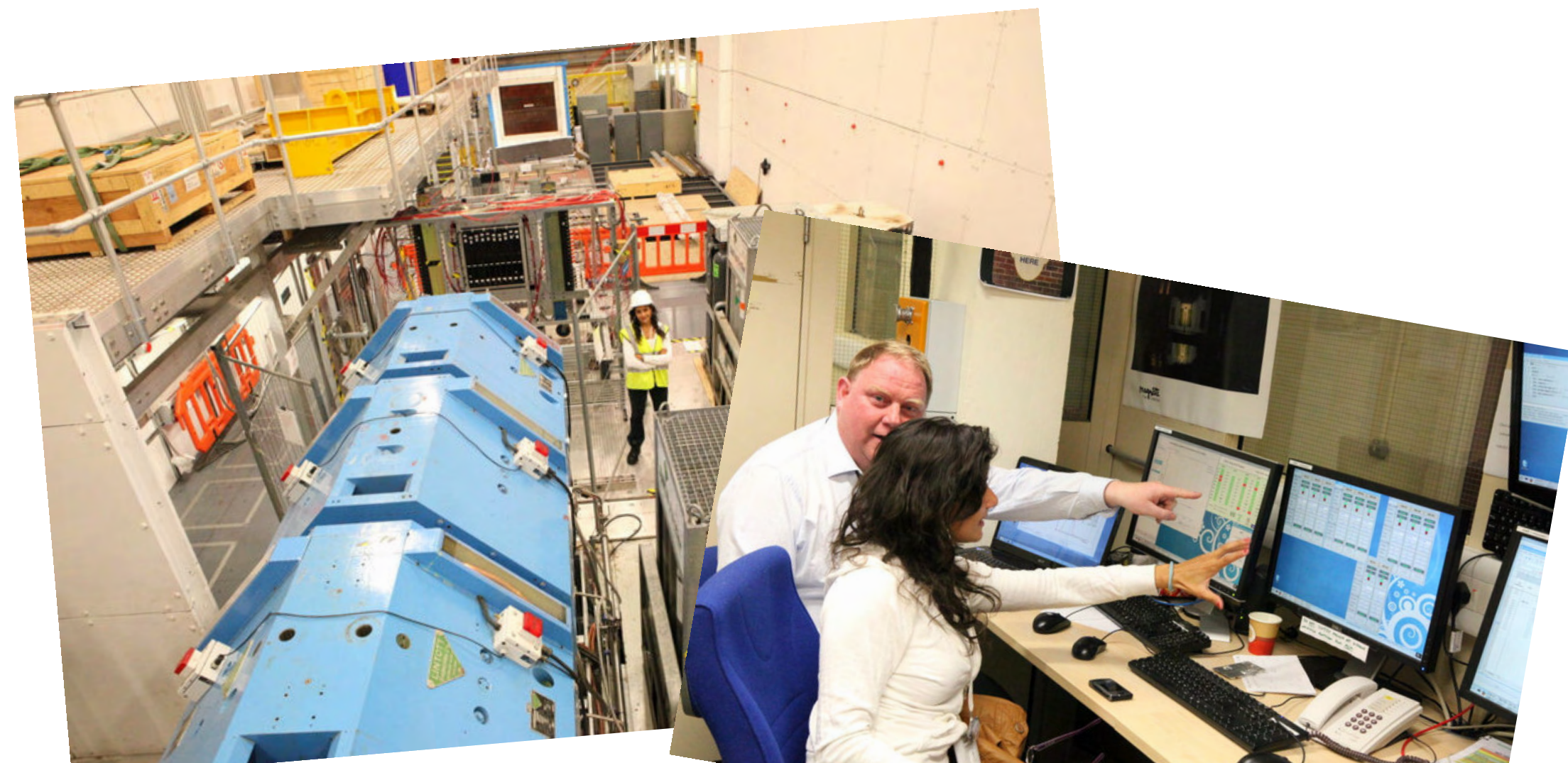
Fermilab, Chicago



Brugg, Switzerland, $\mu 2e$ experiment

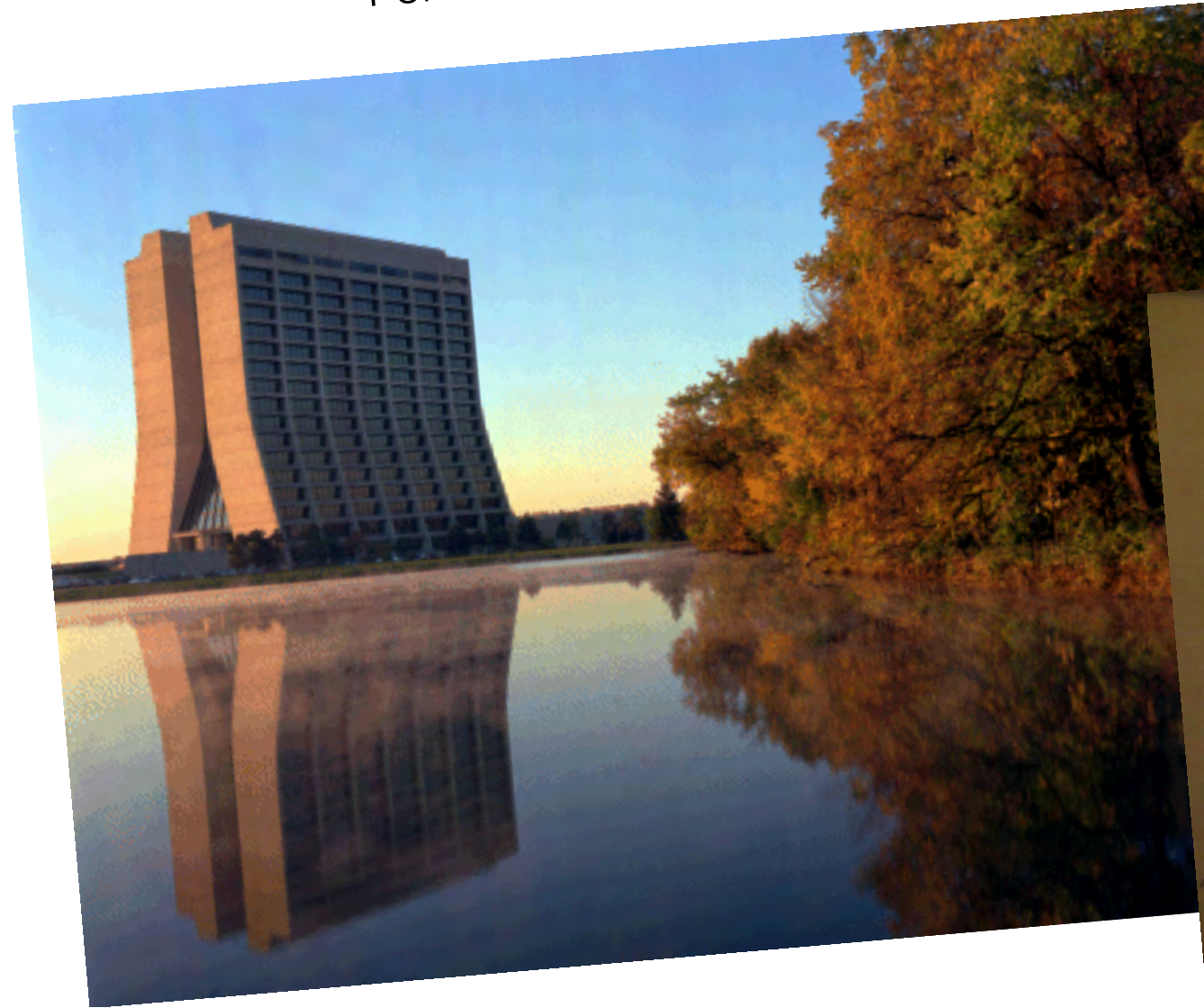


Oxfordshire



Seeing the world!

Fermilab, Chicago



Geneva



Brugg, Switzerland, $\mu 2e$ experiment



Oxfordshire



Seeing the world!

Fermilab, Chicago



Geneva



Oxford



Brugg, Switzerland, $\mu 2e$ experiment



Oxfordshire



New York



Kyoto, Japan



New York



Kyoto, Japan



California



New York



Kyoto, Japan



California



New York



Mumbai, India



Kyoto, Japan



California



New York



Mumbai, India



Glasgow, Scotland



Kyoto, Japan



California



New York



Mumbai, India



Trondheim, Norway



Glasgow, Scotland



Kyoto, Japan



California



New York



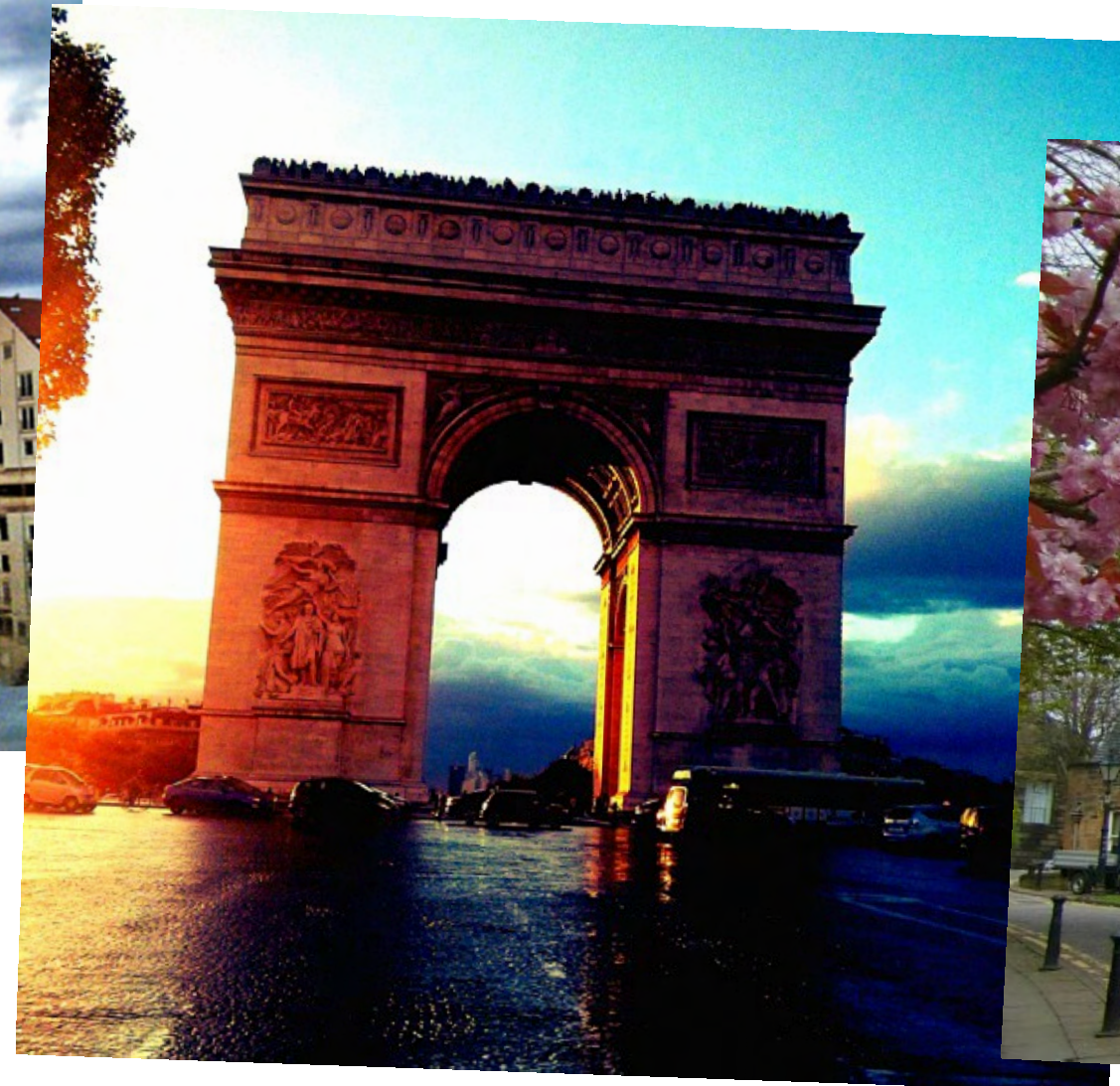
Mumbai, India



Trondheim, Norway



Paris



Glasgow, Scotland



Kyoto, Japan



California



New York



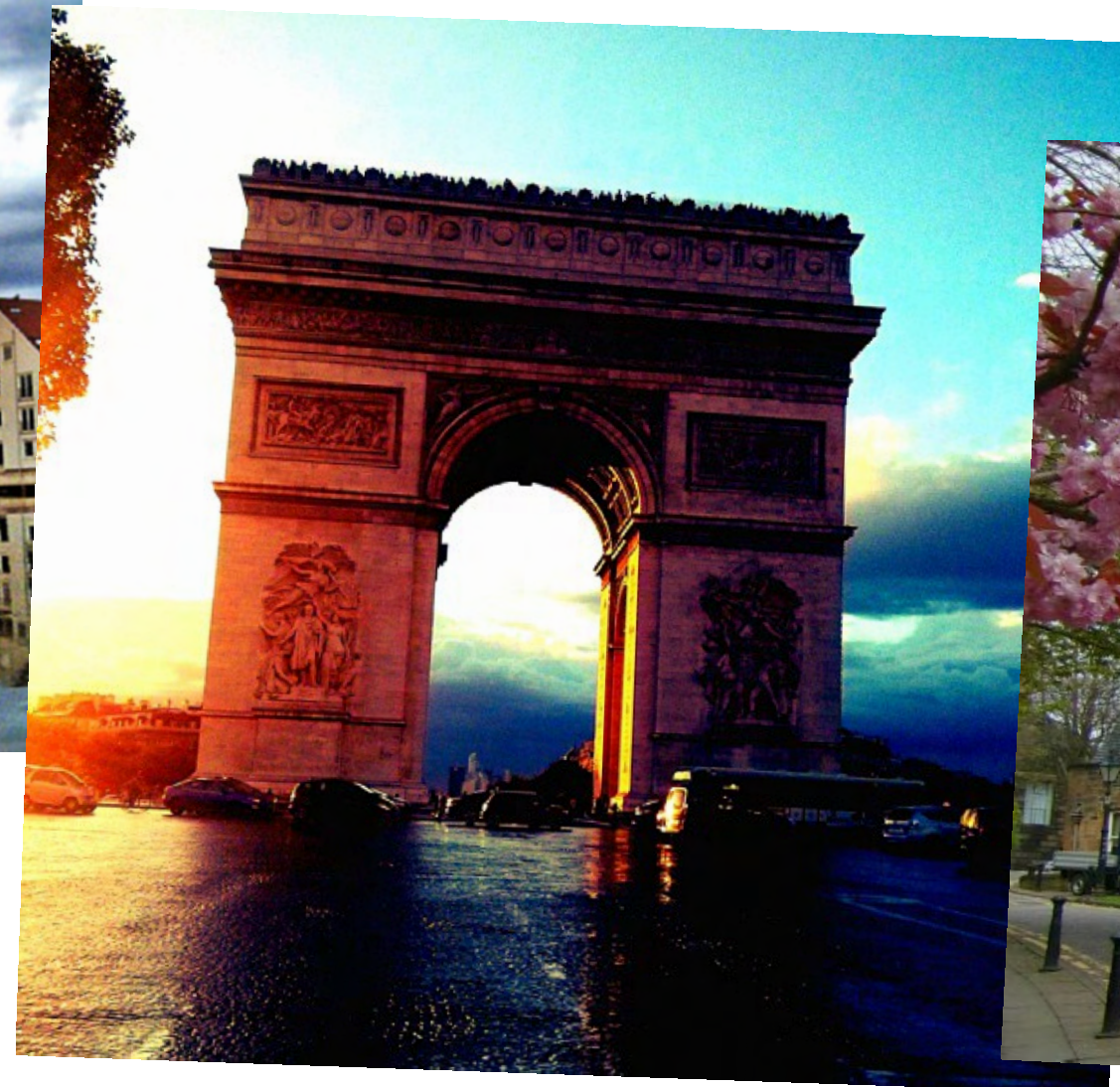
Mumbai, India



Trondheim, Norway



Paris



Glasgow, Scotland



San Fransisco



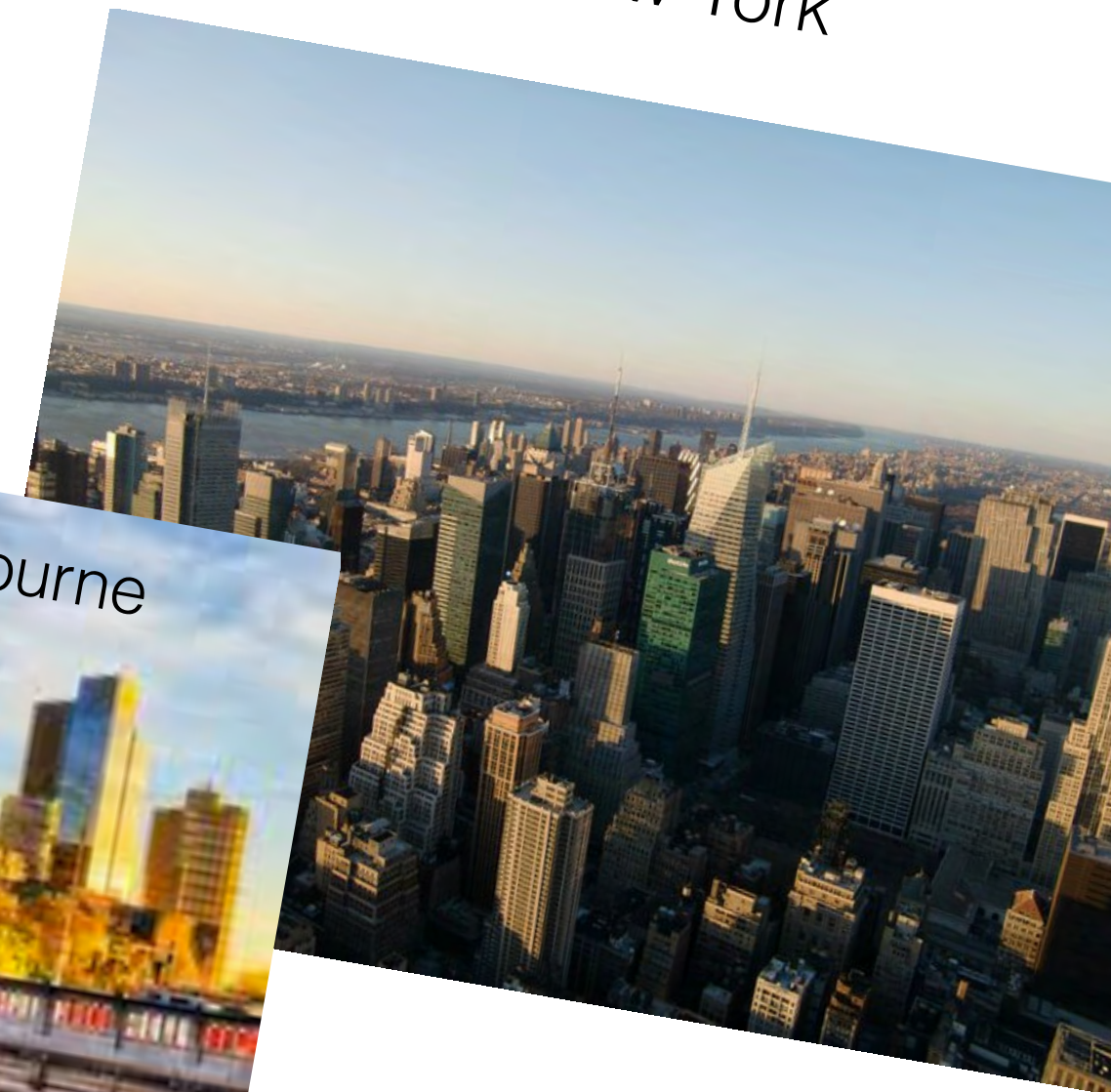
Kyoto, Japan



California



New York



Melbourne



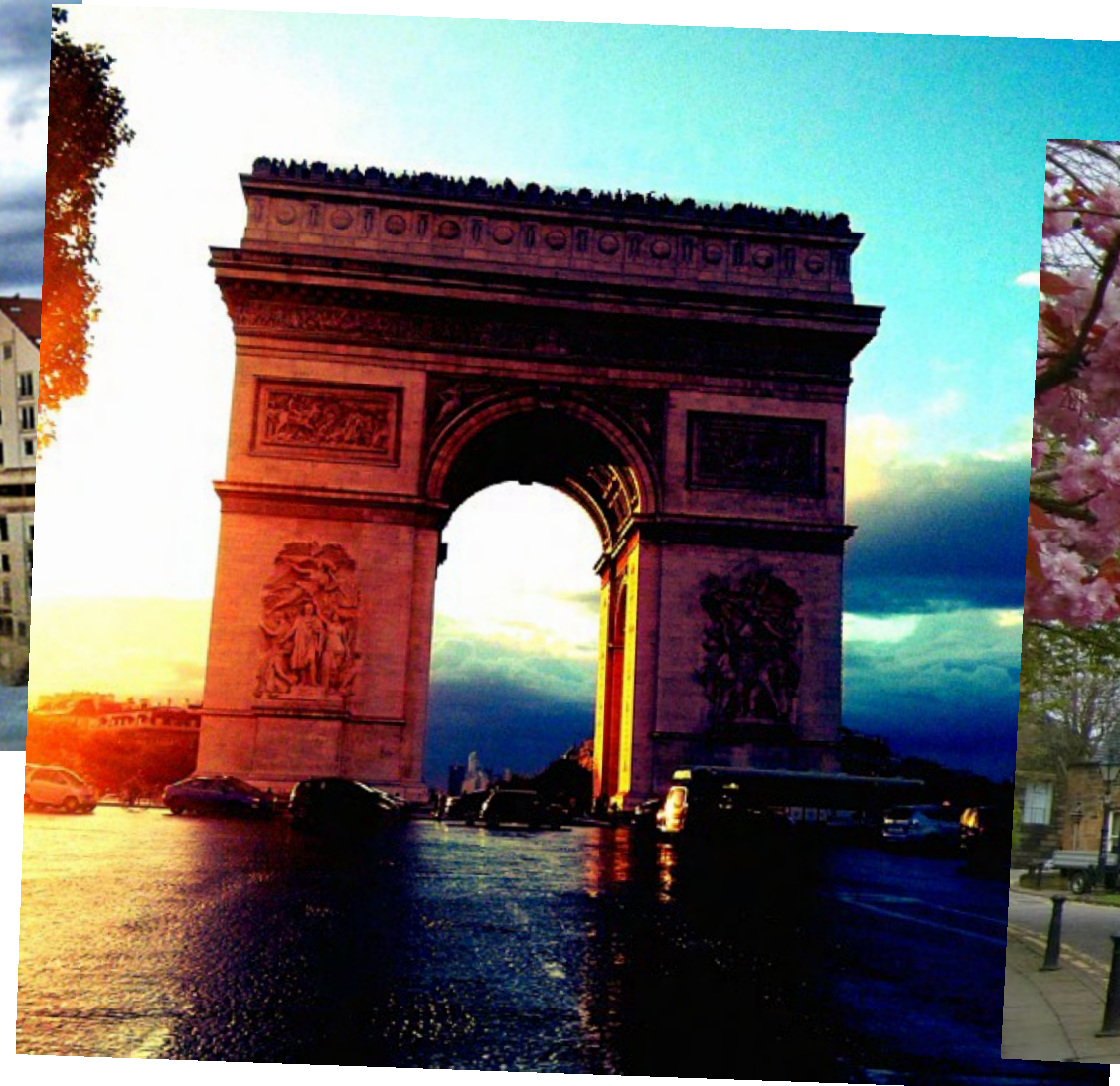
Mumbai, India



Trondheim, Norway



Paris



Glasgow, Scotland



San Fransisco



Transferable
Skills



BRAINSTORMING

**STARTING FROM WHAT
YOU KNOW IT WORKS**

**CREATING TOY MODELS STEP BY
STEP**

PROBLEM SOLVING

BREAKING DOWN A PROBLEM TO PIECES

DEBUGGING

**PRESENTING COMPLEX TOPIC IN
CONCISE WAY**

**KEEP TO THE POINT,
STICK TO THE TIME**

PRESENTATION

TALKING IN PUBLIC

**ADJUSTING CONTEXT DEPENDING
ON AUDIENCE**

**KEEPING NOTES ON YOUR
EVERYDAY WORK**

**THESIS WRITING IN ACADEMIC
ENGLISH**

SHARE KNOWLEDGE

DOCUMENTATION

JOURNAL PAPERS

**GIVE SUFFICIENT INFO SUCH THAT SOMEONE
CAN REPRODUCE YOUR RESULTS**



ORGANISING TEAM MEETINGS

CONVENOR

LEADERSHIP

**LEADING WORK/TEAM-MATES TO
ACHIEVE COMMON GOAL**

SOCIETY PRESIDENT

**BEING PART OF INTERNATIONAL &
MULTICULTURAL TEAMS**

**UNDERSTAND IMPORTANCE OF
ACHIEVING MAIN GOAL**

COLLABORATION

**WORKING IN MULTIDISCIPLINARY
TOPICS**

**DON'T REINVENT THE WHEEL: HELP
AND GET HELP**

**WORKING ON SEVERAL PROJECTS AT
THE SAME TIME**

**ORGANISE YOUR TIME EFFICIENTLY
TO MEET CONFLICTING DEADLINES**

WORKING UNDER PRESSURE

PRIORITISATION



TAKING THE LEAP

AKA WHY DID I DECIDE TO LEAVE ACADEMIA



Pros

Cons

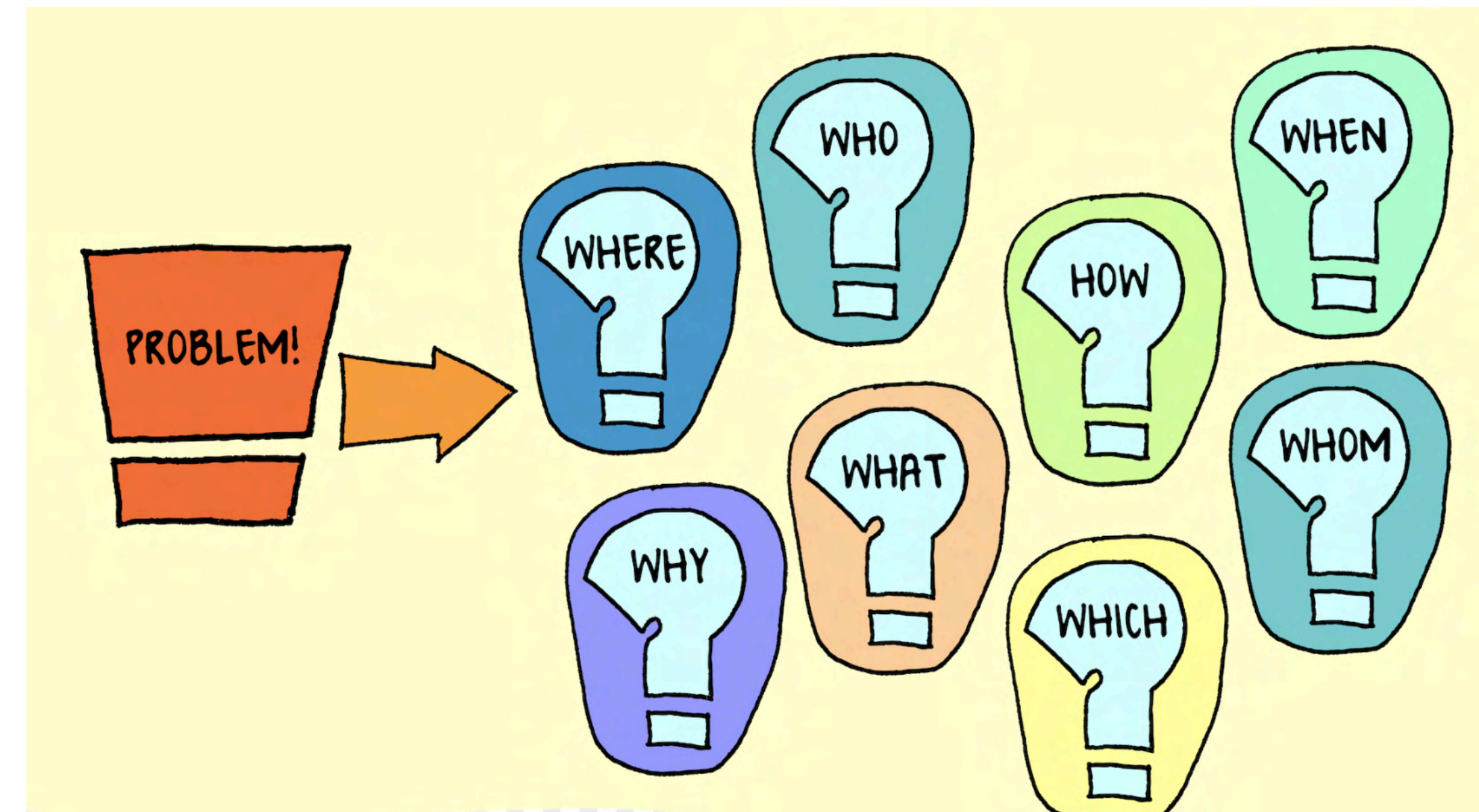
- fascinating topic
- intellectually stimulating
- not impossible to get a permanent job: got offered 2 tenure tracks throughout the years

- geographic location depends on existence of accelerator
- contract duration
- permanent positions: rare

THINGS I LIKED ABOUT MY PHYSICS CAREER

AND WANTED TO KEEP

1. Solving problems!
2. ... as a part of a multicultural team
3. ... in a fast paced and energetic environment
4. ... full of people that are passionate about what they do!



THINGS I DID NOT LIKE ABOUT MY PHYSICS CAREER

AND WANTED TO GET OUT OF



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THINGS I DID NOT LIKE ABOUT MY PHYSICS CAREER

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1. Gender imbalance (I hated it!)



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THINGS I DID NOT LIKE ABOUT MY PHYSICS CAREER

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1. Gender imbalance (I hated it!)

2. Normalisation of working outside working hours



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1. Gender imbalance (I hated it!)
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3. How slow things could be at times (e.g. when you want to publish a paper)



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THINGS I DID NOT LIKE ABOUT MY PHYSICS CAREER

AND WANTED TO GET OUT OF

1. Gender imbalance (I hated it!)
2. Normalisation of working outside working hours
3. How slow things could be at times (e.g. when you want to publish a paper)
4. You have to be very (very!) flexible on the geographic location or salary or...



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TAKING A PEEK!

WHAT'S OUT THERE?



MY CONSTRAINTS

1. Keep what I enjoyed in Physics (see sl.22)
2. Stay in Geneva
3. Good salary (& benefits)
4. Gender equality & diversity: big part of company's philosophy!
5. 9am-5pm, MON-FRI job!





FOUND EVERYTHING I WANTED IN THIS COMPANY!



- 1. Working with very smart people in a very fast paced, diverse environment!**
- 2. 50-50 F-M representation from the bottom to the top**
- 3. 9am-5pm & great benefits**
- 4. Permanent from the 3rd month ;)**
- 5. Job recognition reflected in salary/bonus!**
- 6. Keeping you on your toes: changing teams every 2-3 yrs within the company**
#never.stop.learning

WHAT I DO FROM DAY TO DAY

APART FROM THE END GOAL: VERY SIMILAR TO WHAT I WAS DOING IN PHYSICS

1. Analysing data for all Pampers Websites: a parameter goes up/down when it “shouldn’t”; need to understand why
2. Code development: collaborate with others on code writing, data visualisation and analysis (GitHub)
4. Learning new tools (Google Analytics, BigQuery)
5. Meetings with business partners and creative teams

ALEKOU. A., 25MAR2021

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first touch



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*Based on sales of the newborn hospital diaper

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MY ADVICE TO YOU

“WHAT WOULD YOU DO IF YOU WEREN'T AFRAID?”

SPENCER JOHNSON, M.D., “WHO MOVED MY CHEESE”

Imperial College
London

THANK YOU

ANY QUESTIONS?

2013/05/01

