

**1 Slide -**



**Presentation of the CAS Team, Lecturers and Participants  
on Advanced Accelerator Physics**

Spa, Belgium

11 November 2024

# CAS Team

- Frank Tecker
- Christine Vollinger
- Delphine Rivoiron
- Maria Filippova
- Noemi Caraban Gonzalez



# Frank Tecker

CAS Director  
Accelerator Physicist  
Fermilab, CERN  
LEP, Recycler, CLIC/CTF3, PS

## Teaching

Accelerator Physics  
Linear Colliders



## Enjoying life

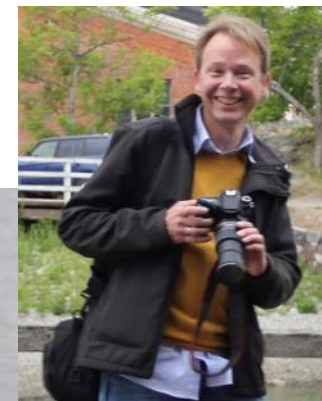
Travelling  
Good food!  
Nice wine, ...



more over a  
glass of wine...



**Sports** Pool (Swimming and Billiard), Kicker,  
Ski, Running, **Volleyball** (indoor, beach)



## Taking pictures

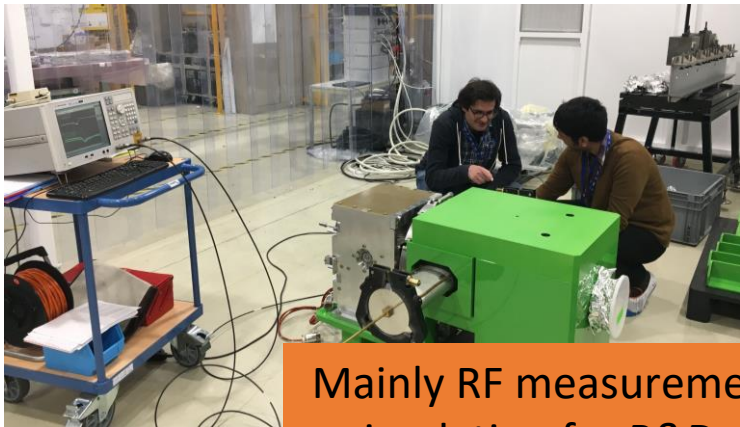


Jaromir Ludwin



# Christine Vollinger from CERN – RF Group

Working on beam coupling impedance mitigation for (almost) ALL CERN accelerators...



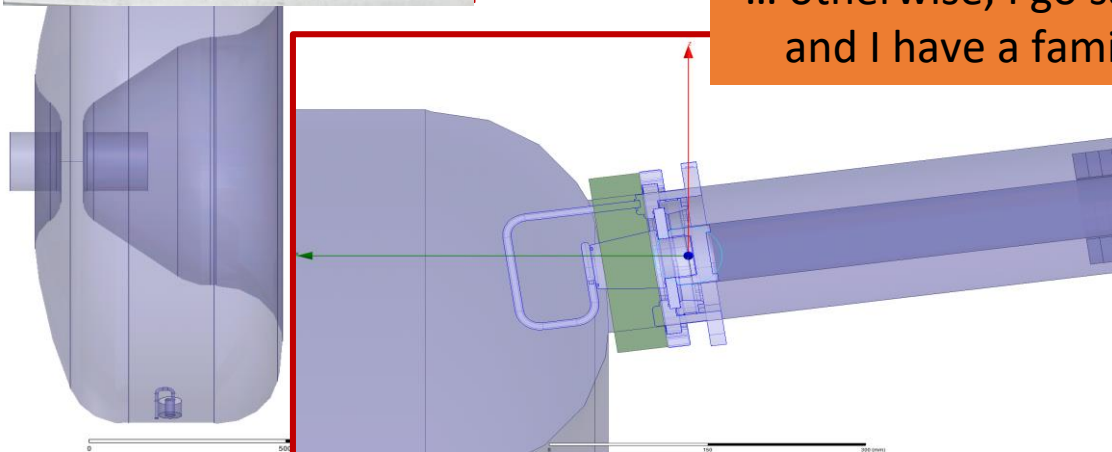
Mainly RF measurements and simulation for R&D work...



... and CAS!



... otherwise, I go sailing, and I have a family...







Since 2000

*Dolphine Delphine RIVOIRON*



The CERN Accelerator School  
Since 2017



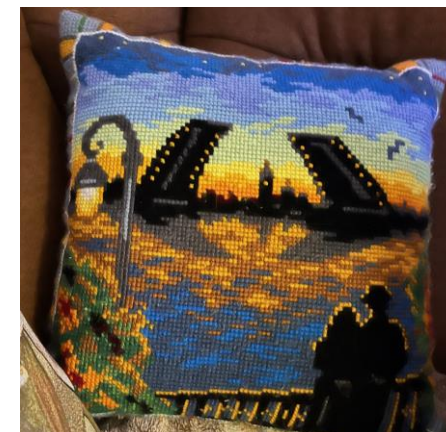




# Maria Filippova

At CERN since 2008

2008-2015: quality assurance assistant at CLIC study  
responsible for RF components (splitters, bi-directional couplers, high-power loads): technical specifications, procurement, contract follow-up, qualification check, shipment, document management.



Cross-stitching

Oct 2018-present (50%):



CAS administrative assistant

- registration and payment follow-up
- travel arrangement for lecturers
- certificates of participation
- formatting of proceedings.

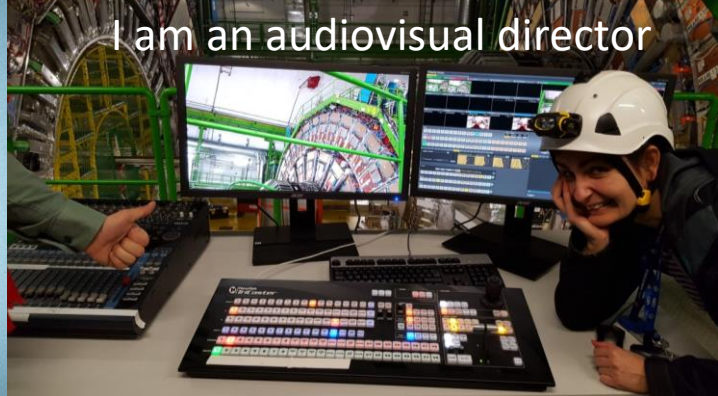
Hiking







Hello, I'm Noemi



I am an audiovisual director



Safety First!



record



I edit, I publish



I won a Lovie Award for a CERN music videoclip



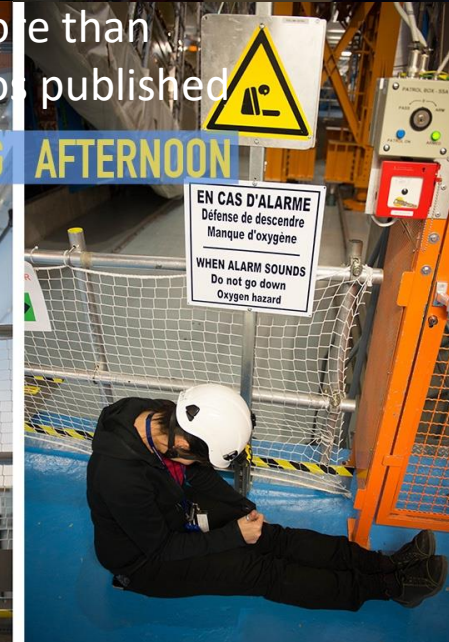
I now I'm recording here!!!! I also take care of Communications and Social Media



I produce content



I have more than 500 videos published



I will be recording the lectures to create a database of knowledge

See you around!!!



I've recorded outside



and underground

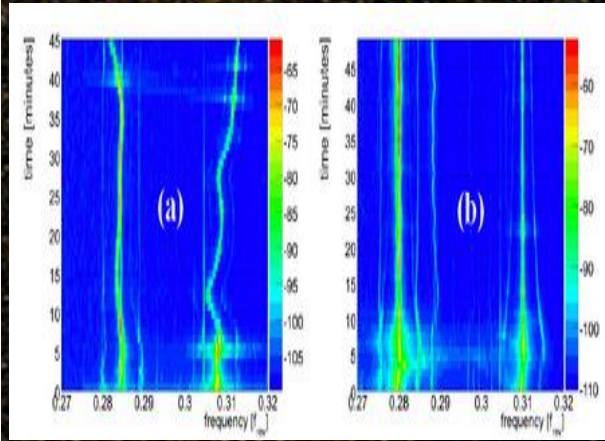


# Lecturers

- Hermann Schmickler
- Piotr Kowina
- Manfred Wendt
- Guido Sterbini
- Sofia Kostoglou
- Marek Gasior



PhD in Particle Physics  
1986, Then @ CERN



**Beam instrumentation**

**Control Systems of  
Accelerators**



**CLIC study**



Hermann Schmickler,  
Retired since July 2022 from CERN  
Proud of having always

**kept a good balance of life**

**MUSIC**  
*Opeth*

**FROM  
HEAVY  
(OPETH)  
TO HEAVY  
(WAGNER)**



**HIFI-ELECTRONICS**

**FOOD**

**&**

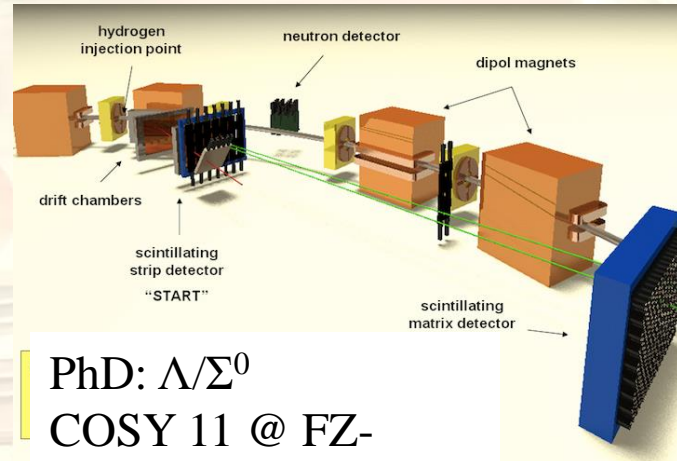
**DRINKS**



Teacher and director



# Piotr Kowina GSI-Darmstadt

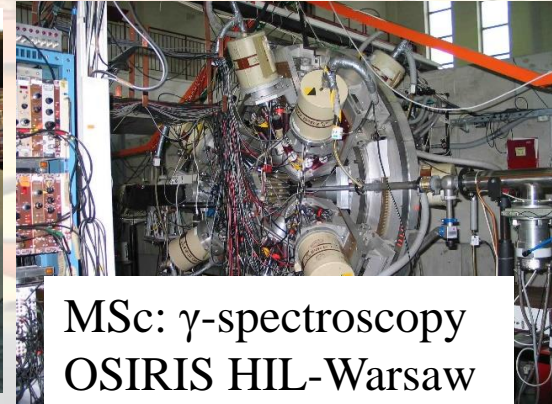


**WPL Beam Instrumentation for SIS-100**  
**Group Leader Ring Instruments**

PhD:  $\Lambda/\Sigma^0$   
COSY 11 @ FZ-  
Jülich



CAS since 2009,  
BW 1MHz – 26.5 GHz



MSc:  $\gamma$ -spectroscopy  
OSIRIS HIL-Warsaw

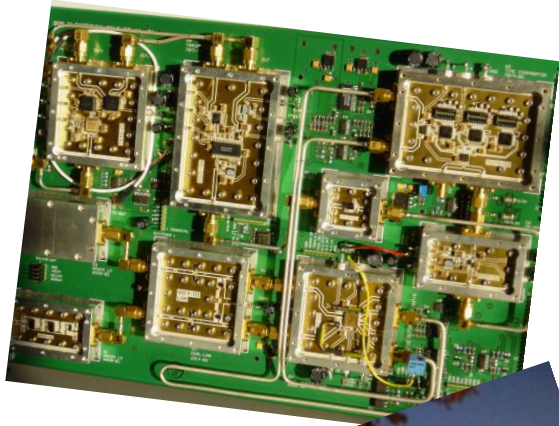


BW 20 Hz – 20 kHz

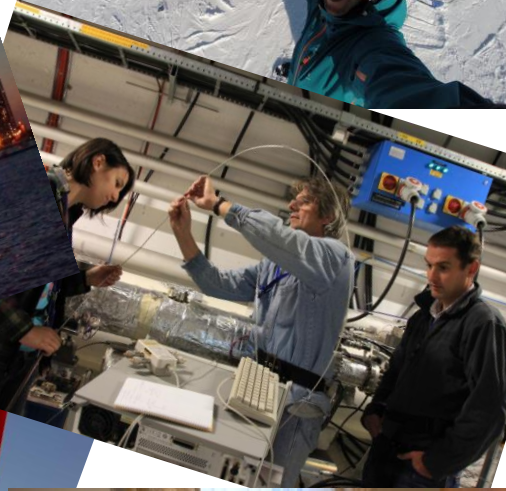




# MANFRED in a



dreamstime





# Guido



ANTENNAS



LEPTONIC PHOENIX



BEAM-BEAM COMPENSATION



MAGNETS



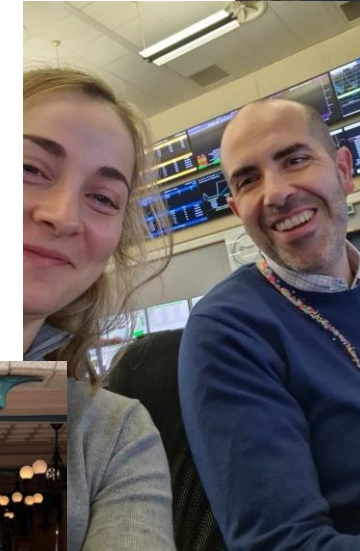
THE "OLD LADY"





# Sofia Kostoglou

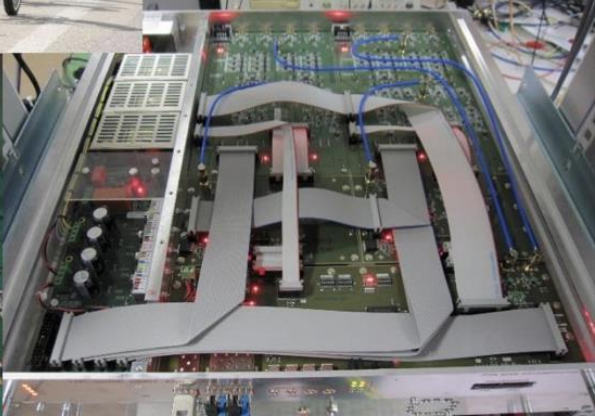
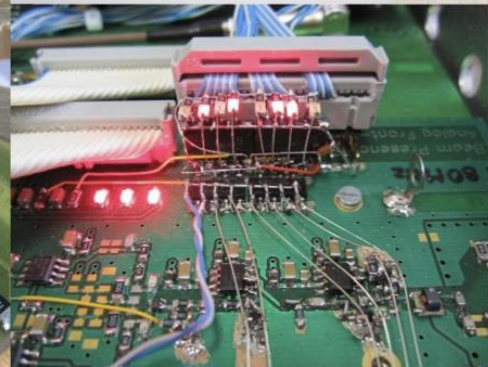
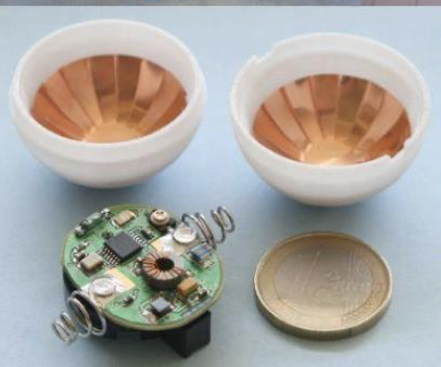
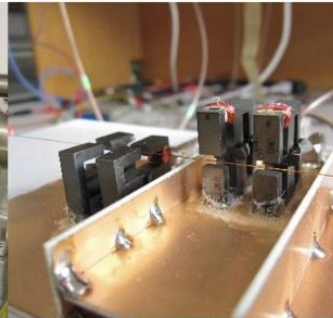
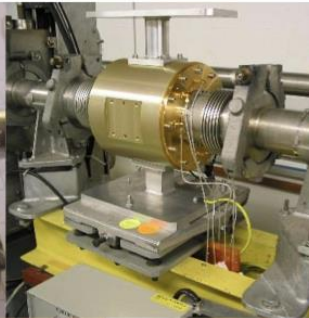
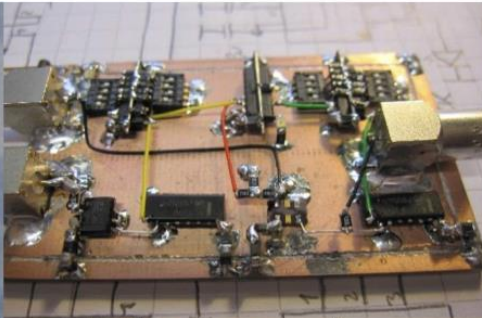
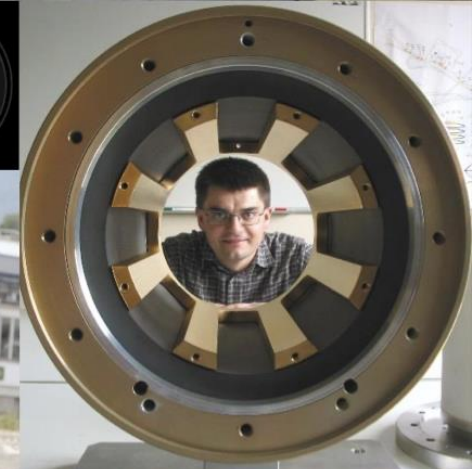
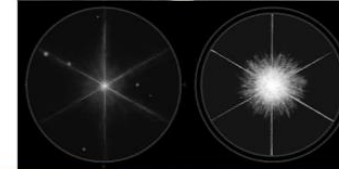
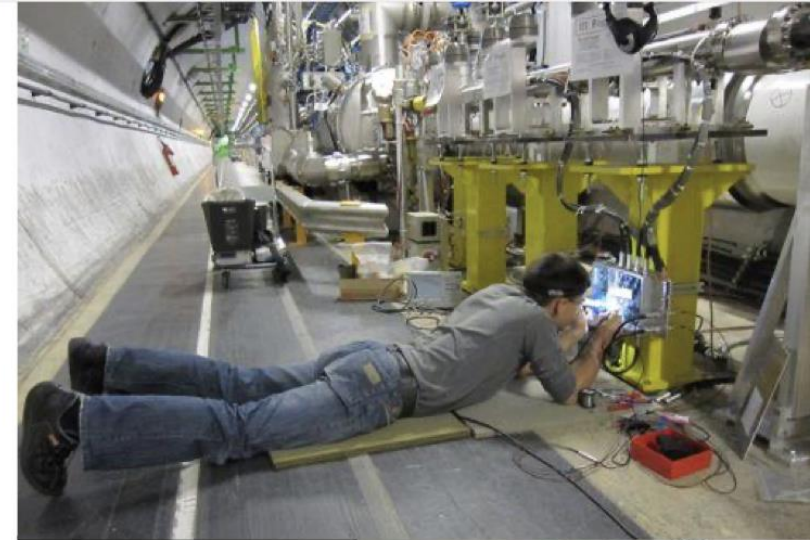
- Studied electrical & computer engineering in Athens, Greece
- At CERN since 2015:
  - Started as a technical student in a small experiment (CAST-CERN Axion Solar Telescope).
  - Discovered accelerator physics by chance in 2016. No regrets 😊
  - PhD on noise effects in the LHC & HL-LHC.
  - Participated in several CAS as a student.
  - Working in BE-ABP-INC (AKA “best section ever”) on beam dynamics for the LHC.
- First time assisting Guido in CAS hands-on. Plot twist: I am still learning..
- Outside CERN: mom & proud survivor of 2 under 2!





# Marek Gasior

- electronics engineer
- M.Sc. and D.Sc. from AGH University of Science and Technology, Krakow, Poland
- since 2000 in CERN Beam instrumentation Group
- specialisation in:
  - electromagnetic sensors of beam position and intensity
  - electronics for processing beam signals (tune, position, intensity,...)
- favourite sport: (road) biking
- favourite hobby: (visual) astronomy





# Students

In groups of 6 people come forward

- Carmelo Barbagallo
- Weijie Fan
- PeiZhi Fang
- Adnan Ghribi
- Maurizio Grossi
- Ali Khalilzadeh



# One slide-one minute : Carmelo Barbagallo



- PhD in Accelerator Physics at Paris-Saclay University
- Accelerator physicist at CERN (Muon Collider)
- Expertise:
  - Design of normal conducting and superconducting RF cavities
  - HOM-damping scheme design for high-current ERL
  - Low-power RF measurements

- Hobbies:
  - Hiking
  - Comics and movies
  - Travelling around the world!



# Weijie Fan

**Post-Doctoral at**

Shanghai Optoelectronics Science and  
Technology Innovation Center

**Skills: Beam Dynamics, Free Electron Laser  
Physics**

**Hobbies: Cats, Biking, Hiking**





PeiZhi Fang (Alan)

Beijing, China

fpz1@qq.com



Ph.D. Candidate

Tsinghua University

Accelerator Physics and Application

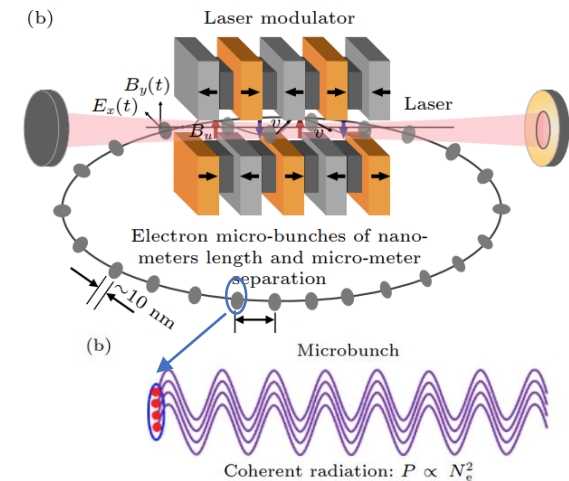
## Current Research

### Steady State Microbunching(SSMB) Light Source

- Steady state: high repetition
- Microbunching: longitudinal coherence

Responsible : Design RF cavity and beam feedback

### Sketch of SSMB light source



## Hobby

Amateur Radio / HAM Radio

- Making Yagi antenna
- Satellites Communication

Callsign: BI1PAX

### QSL card from ISS



### Satellites Operation







The journey continues



# From Gears to Quarks: My Quantum Leap into CERN!



$ct$

$x$

MAURIZIO GROSSI

## Merging Mechanical Engineering with Particle Physics

-From solid mechanics to quantum mechanics!

Understanding material behavior at macroscopic levels, delving into the atomic structure and beyond!

-AI used to analyze massive engineering data is also key in analyzing CERN's experimental data and spotting patterns faster than ever!

- Excited to discover robotics applications in particle physics domain



# Ali Khalilzadeh

(2016-2019) I was working at Light Source control room

(from 2020) PhD Student at *Université libre de Bruxelles (ULB)*

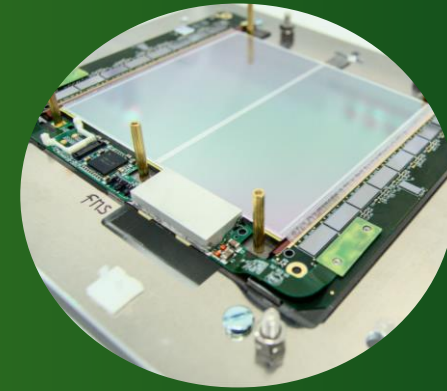
During my PhD, I work on silicon detector for outer tracker of CMS for HL-LHC

## Skills:

- Experimental physicist
- Embedded system developer

## Hobbies:

- Travelling
- Badminton
- Photography
- Online game
- And of course! Accelerator physics





# Students

- Szymon Lopaciuk
- Sophie Morard
- Oleksandr Naumenko
- Samuel Niang
- Chiara Pasquino
- Anna Radoslavova

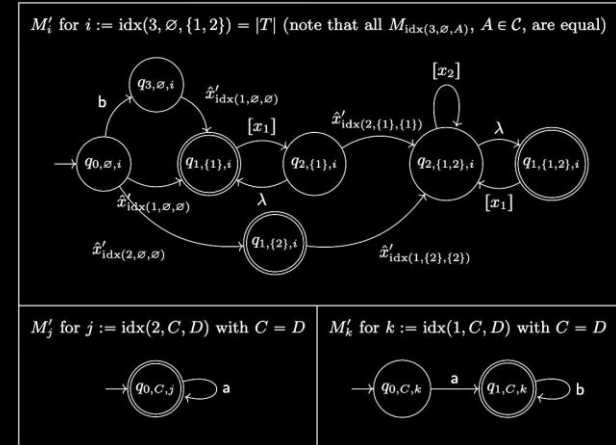


# Szymon Łopaciuk

Fellow @ BE-ABP-CEI



I'm a developer with Xsuite



PhD in Theoretical Computer Science



I do improv at CERN

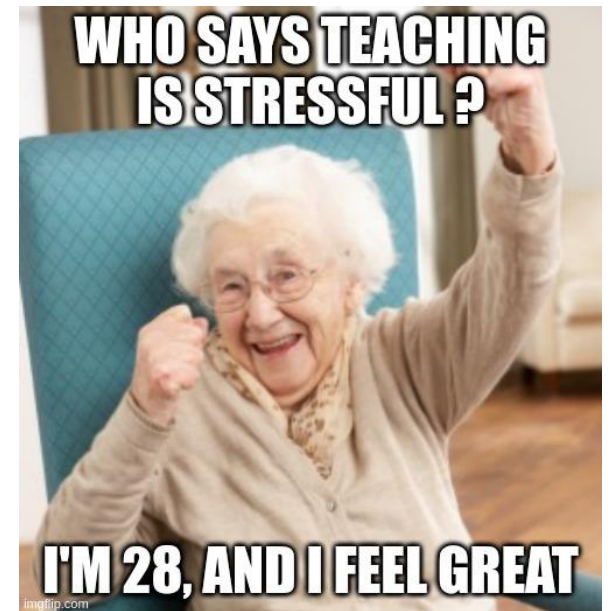
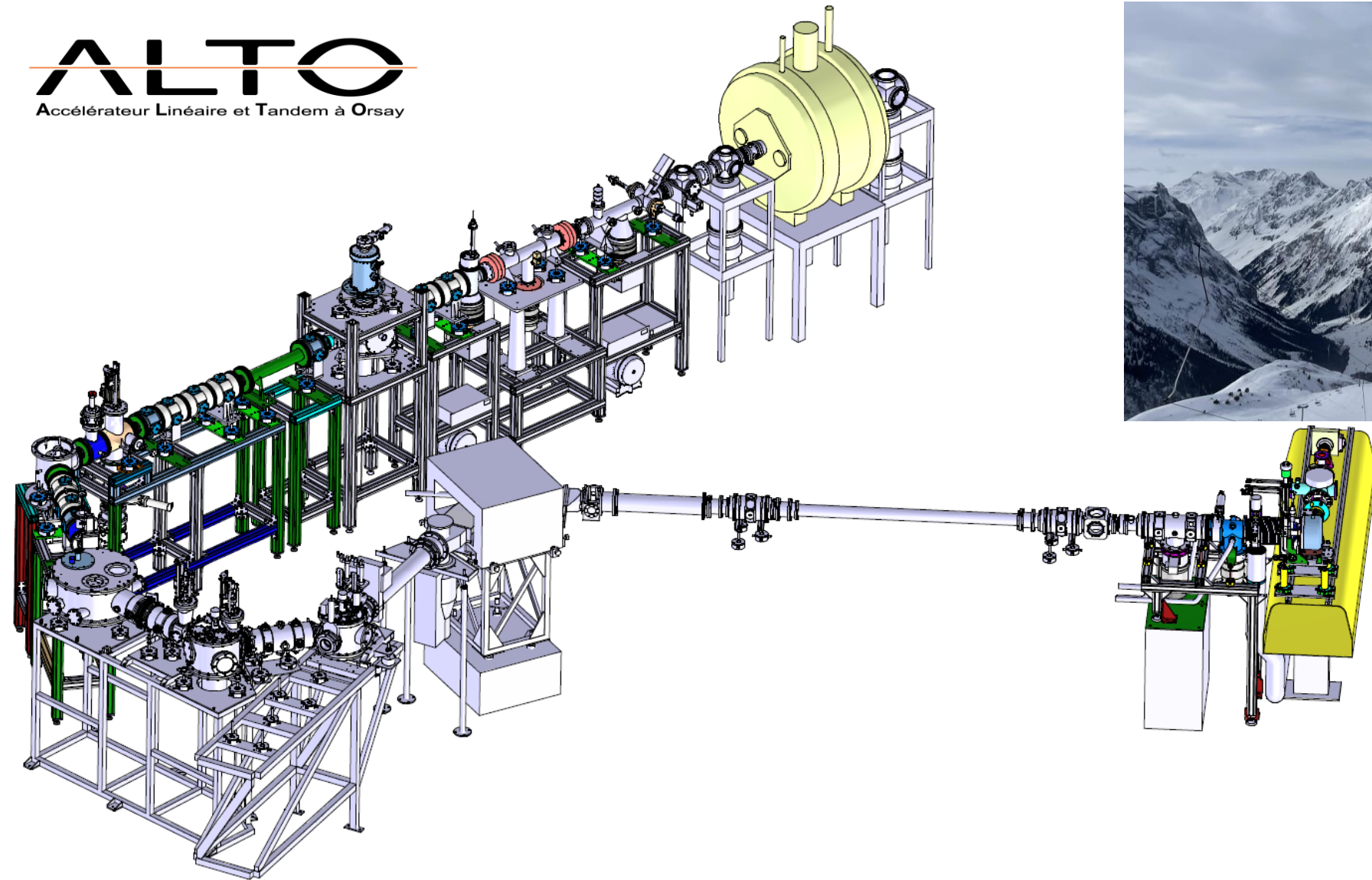


Also interested in retrocomputing





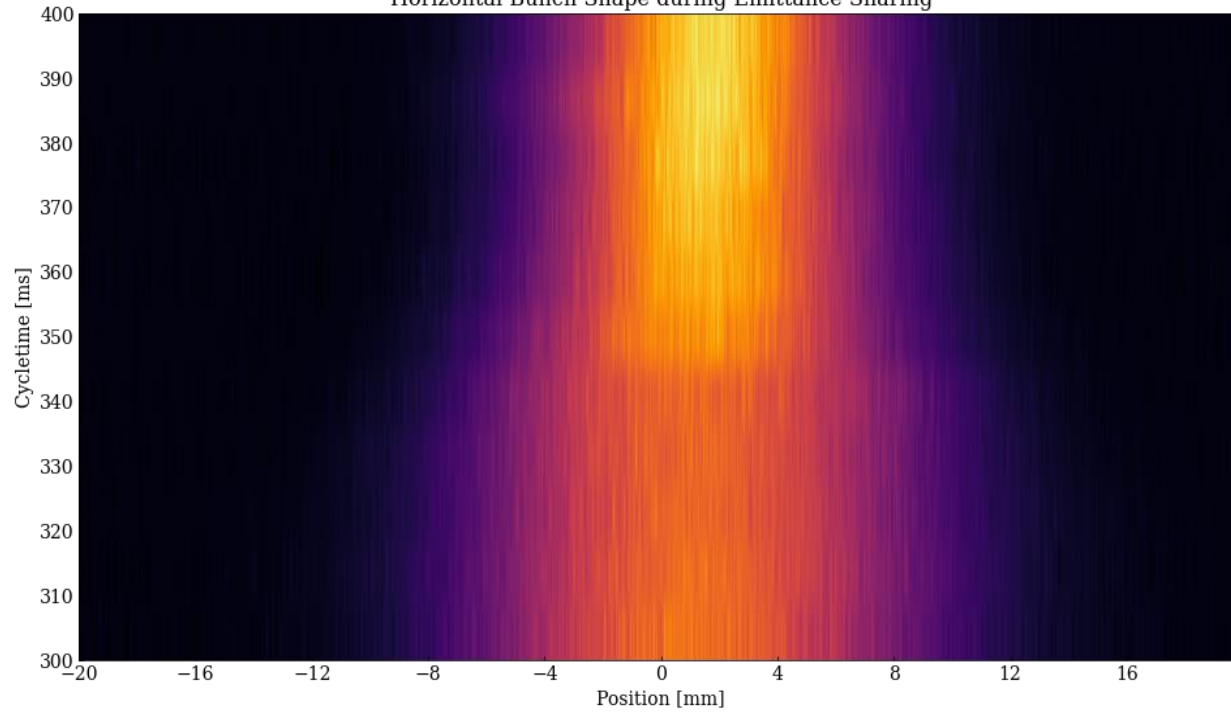
**ALTO**  
Accélérateur Linéaire et Tandem à Orsay





# Oleksandr

Horizontal Bunch Shape during Emittance Sharing



MagicShadow Games

Recently Played (1) All Games (353) Perfect Games (5)

Find a game

Game Title	Total Played	Last Played
Europa Universalis IV	383.7 hours	Jun 28, 2015
Sid Meier's Civilization V	295.5 hours	Aug 12, 2016
Warframe	276.2 hours	Aug 3, 2018










# DR SAMUEL NIANG

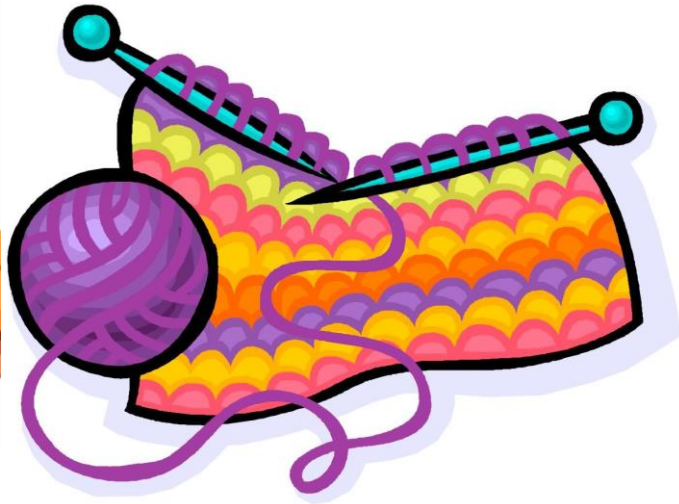
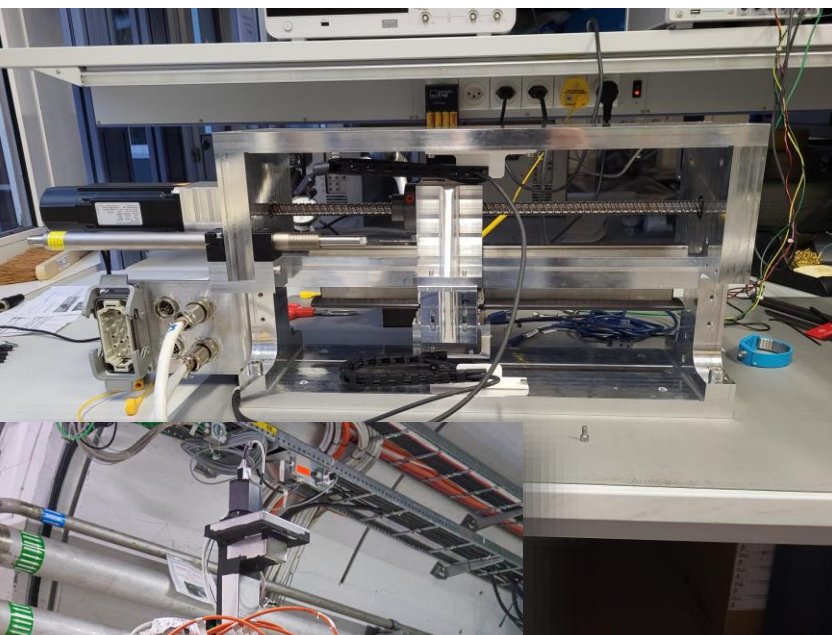


- Age: 32
- Degrees: PhD in particle physics, Engineer degree
- Grew up close the 
- Spoken languages: French **FR**, Italian **IT** and English **GB**
- Almost 7 years at CERN
- 4 years at the  GBAR experiment, antimatter physics
- SY-STI Beam Material Interaction / FLUKA 
- Passionate in new tech, video games, politics and fashion
- Available for jobs opportunities the 31<sup>st</sup> of March!





# Chiara in a



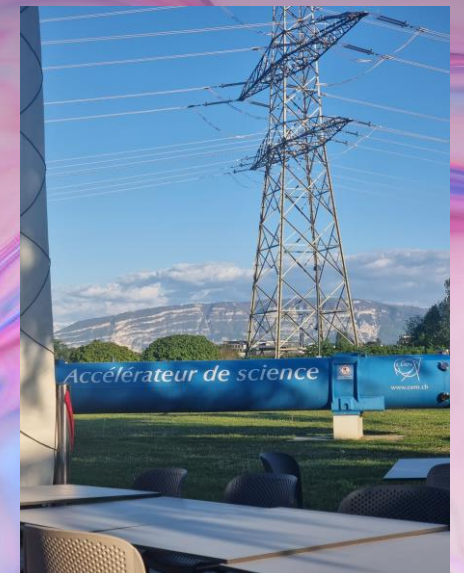




## **ANNA RADOSLAVOVA**

- Born in Sofia, Bulgaria

- CERN PHD CANDIDATE WITH GOETHE UNIVERSITY FRANKFURT
- Studied Bachelor and Master (Physics) in Heidelberg, Germany  
Internship at Max Planck institute
- Summer student and technical student at CERN





# Students

- Melissa Ratzlaff
- Matthias Remta
- Iker Rodriguez
- Leonardo Sito
- Lisa Soubirou
- Rebecca Taylor



# One slide-one minute: Melissa Ratzlaff

- 2017 PhD from the University of Toronto in Theoretical Particle Physics
  - My field of study was particle phenomenology (new physics models with heavy leptons and Higgses).
  - My PhD project was determining how/when these theoretical particles ruled out by measurements.
- In 2021 I switched to accelerator physics
  - I am an accelerator physicist at the Canadian Light Source (CLS is a small 3<sup>rd</sup> gen. facility located in Saskatoon, Canada); I mainly focus on our storage ring.
  - Started by looking at the non-linear interactions of our insertion devices with each other and our SR; I calculating our resonance driving terms, dynamic apertures and generated frequency maps.
  - I still view myself as a theorist but as part of my job I am a certified operator (I have only used this training during development shifts).
  - Currently I am working on measurements related to understanding how to improve our orbit correction algorithm and beam quality.
- Other professional experience: teaching first year physics
- Hobbies, Interests, and non Physics Activities
  - Gardening 5.5 months of the year; because it is winter the rest of the time.
  - Skiing, mostly cross country, because it is flat where I live but also downhill (we are a ~7.5 hour drive to Banff).
  - Taking my kids to various activities.

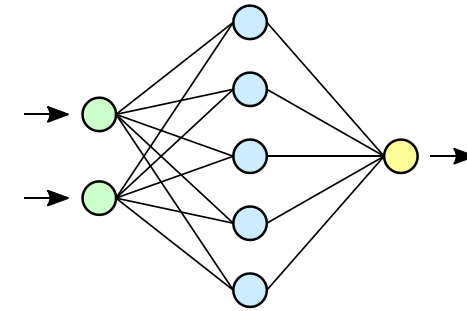
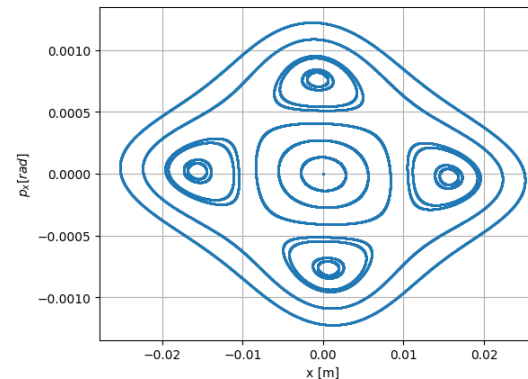


# Matthias Remta (CERN)

- CV:
  - MSc Mathematics (TUW)
  - MSc Data Science (FHTW)
  - PhD-Student (Univie, ongoing)
- Hobbies and interests:  
Climbing, Skiing, Boardgames



- Research areas:
  - Beam transfer physics
  - Nonlinear beam dynamics
  - Machine Learning

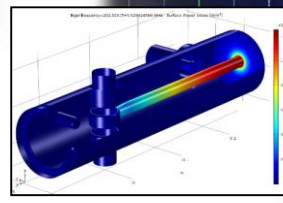
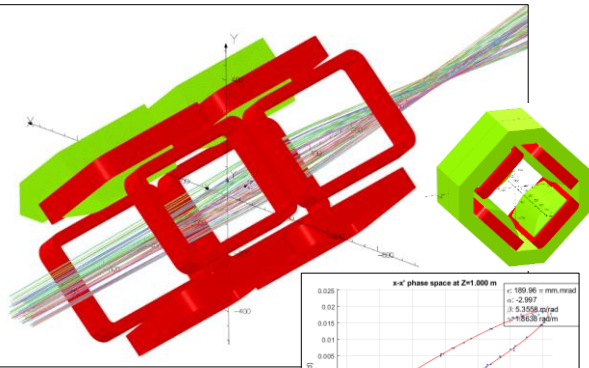
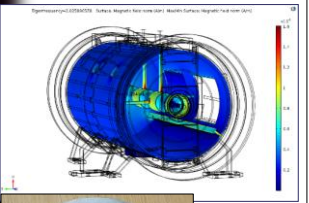
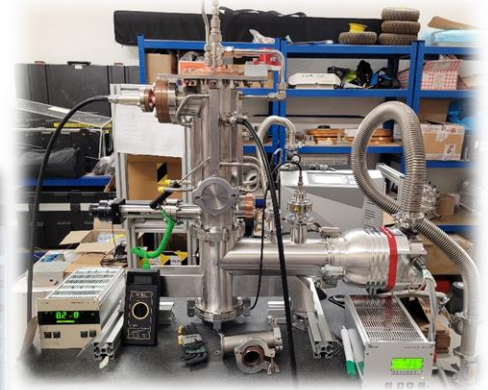
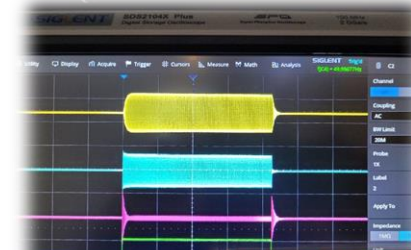
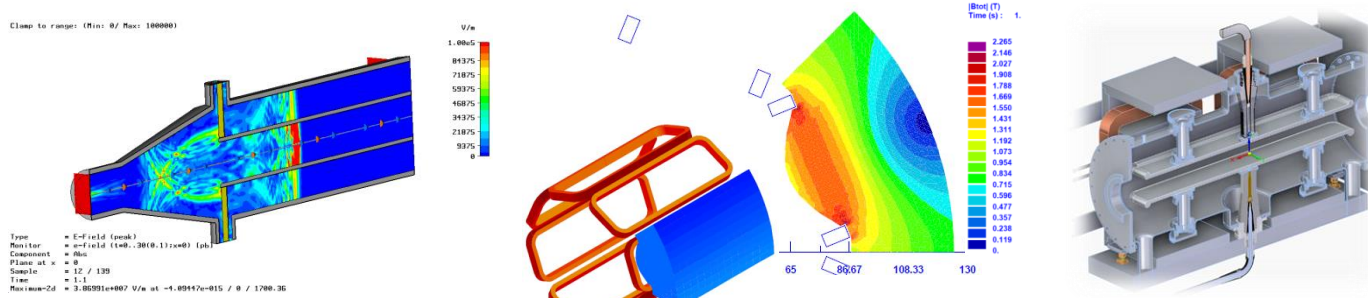




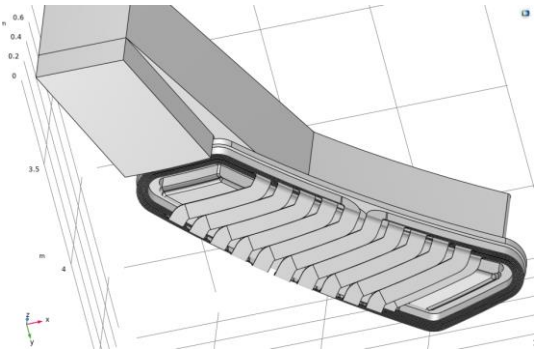
# Iker Rodriguez (iker.rodriguez@stfc.ac.uk)



- **Engineer** since 2002 and **Ph.D** since 2009.
- Worked in **industry** and in **particle accelerators** (alternating).
- Currently working as a **development engineer** (mainly **EM & thermo-mechanical**) in the **ISIS Neutron and Muon Source** (UK), designing magnets, fast kickers, high voltage devices and RF cavities.



I love **science fiction** (movies, series and books), **car mechanics**, **trekking** in nature, **DIY** and a good **meal!**





# About Me:



## Leonardo

Sito

@CERN

### PhD Student at University of Naples Federico II and CERN

- Working in BE-ABP-CEI.
- I mostly work on **electromagnetic** (wake field and beam-coupling impedance) simulations with a focus on dissipated power and its distribution. Some **thermal simulations** are involved as well.
- My PhD project is about studying ways of addressing beam-coupling impedance with the use of metamaterials.

### Education History

#### 2016-2019

B.Sc. Electronics Engineering at University of Naples Federico II

#### 2019-2022

M.Sc. Electronics Engineering at University of Naples Federico II

### Passions

#### Photography:

Analog medium format photography passionate.

#### Sports:

Tennis (a lot!), Padel.



**Studies :**

- ❖ Bachelor: Fundamental Physics
- ❖ Master: Accelerator Physics



irfu



**2<sup>nd</sup> year PhD student:**

« Design of pulsed synchrotrons for the high-energy acceleration chain for a muon collider »

**Badminton**



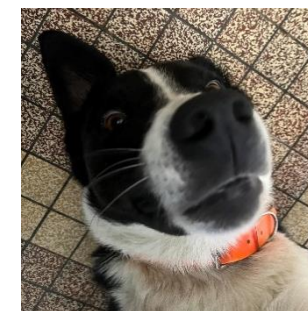
**Running**



**Reading**



**Hiking, walking,  
outdoor activities**



**Family & Pets**

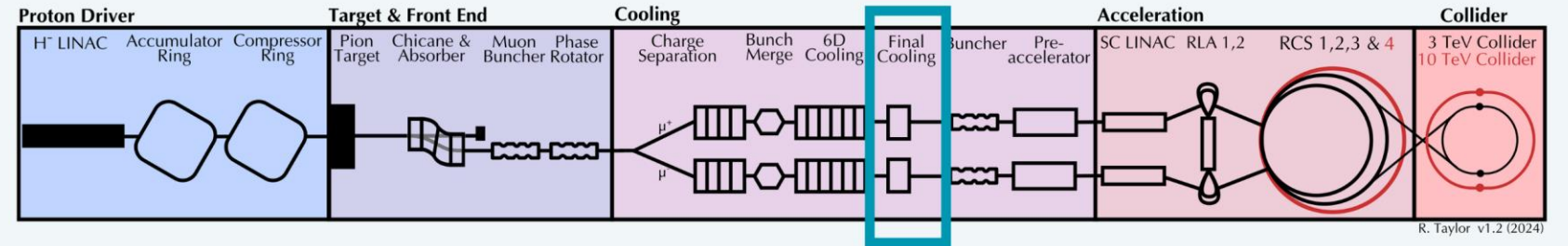


# It's TAYLOR

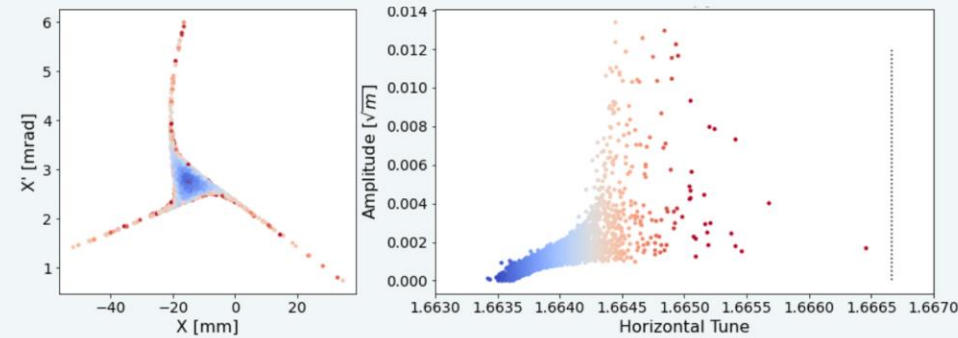
Fellow at CERN (BE-ABP)



Currently researching  
**Muon Collider**  
 Design & Integration  
 Specifically the Final Cooling lattice

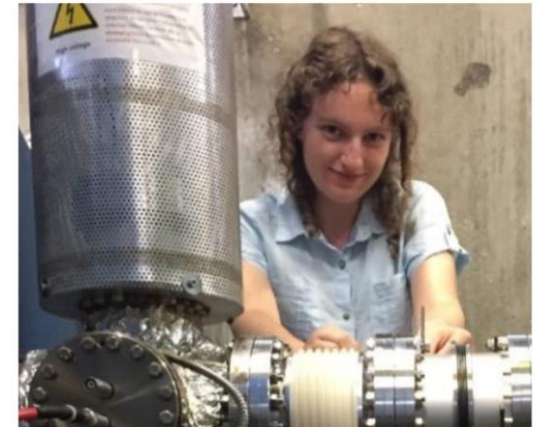


PhD thesis in  
**Slow Extraction**  
 for hadron therapy  
 synchrotrons



**Cool Fact-** direct anagram  
 Rebecca Taylor  
 by acceleRaTOR

Co-founder of CERN  
**LINACTors**  
 Improv Troupe

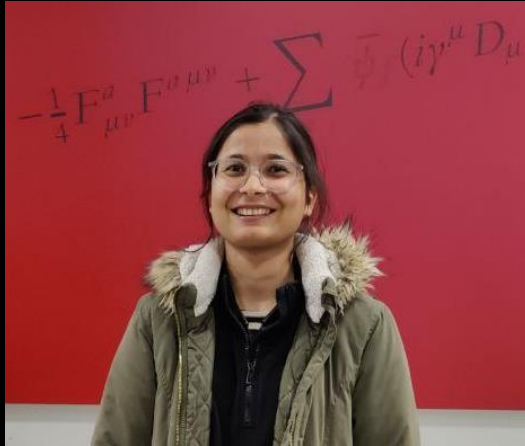




# Students

- Rakshya Thapa
- Xin Zhang
- Zhikai Zhou
- Liwei Pan
- Jake Flowerdew
- Vaibhavi Gawas





**PhD student at Johannes Gutenberg University, Germany**

Research focus: Polarimetry

### **Experience/Interests**

Handling semiconductor laser, Basic electronics design and implementation, 3d modelling, etc.

### **Hobbies**

Hiking, Electronics

### **Objective**

“Empowering Science with sophisticated methods and technology.”

# Zhang Xin

## Education

*JiLin University*

*China Academy of Engineering Physics*

*Nuclear physics & Nuclear Technology and Application*

## Work Experience

*Chinese Academy of Science, Institute of Modern Physics*

*RF Engineer Beam diagnostics for Heavy ion accelerator*

*Elekta Beijing Medical Systems co. Ltd*

*RF Engineer Medical Linac RF system design*

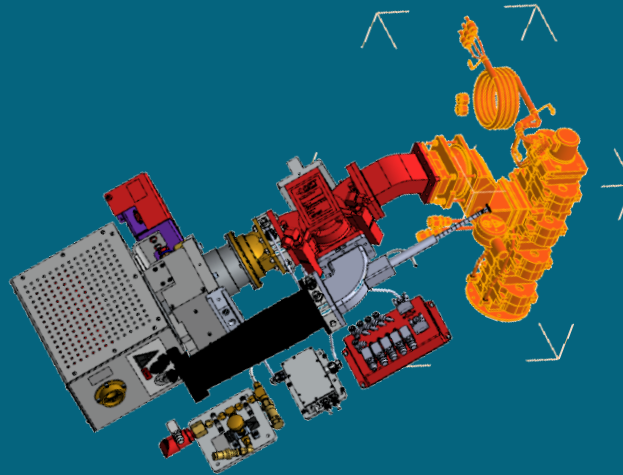
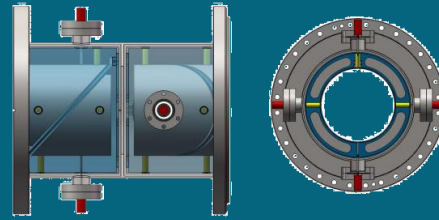
## Current position and function:

*Elekta Systems Engineering – Beam Generation*

## Specific experience within Elekta (skills, etc.):

*NGL development as team member of: BGM RF line design with 3-port circulator, BGM RF system DFMEA, NGL BGM P1 EMC, EM Simulation(CST).*

*Technical support of EBMS SWG and TWG manufacturing support(RF test).*





# Zhou Zhikai

- Present activities:

Master's Student in ShanghaiTech University  
Accelerator Physics & Beamline Science



- Hobbies:

Travel! & photography  
e-games  
Football!





Name: Liwei Pan 潘立维

Birthday: 2000.02.08

PhD student from the Institute of High Energy Physics, Chinese Academy of Sciences (IHEP), Beijing China

Research Area:  
Accelerator Physics, Collective Instabilities, Bunch-by-Bunch Feedback

My hobby: Hiking, Cycling, Photography

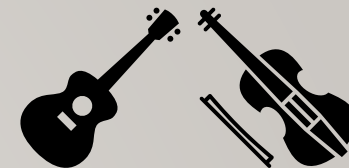


中国地图





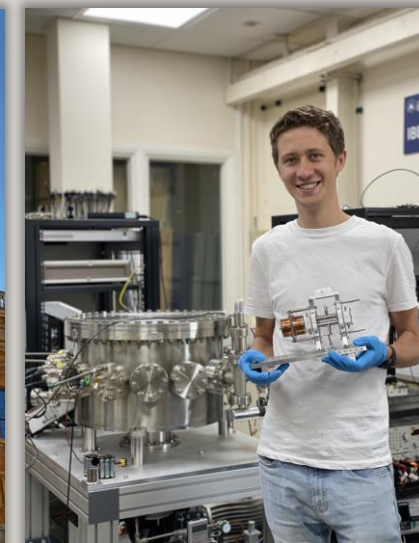
# JAKE FLOWERDEW – CERN



Imperial College  
London

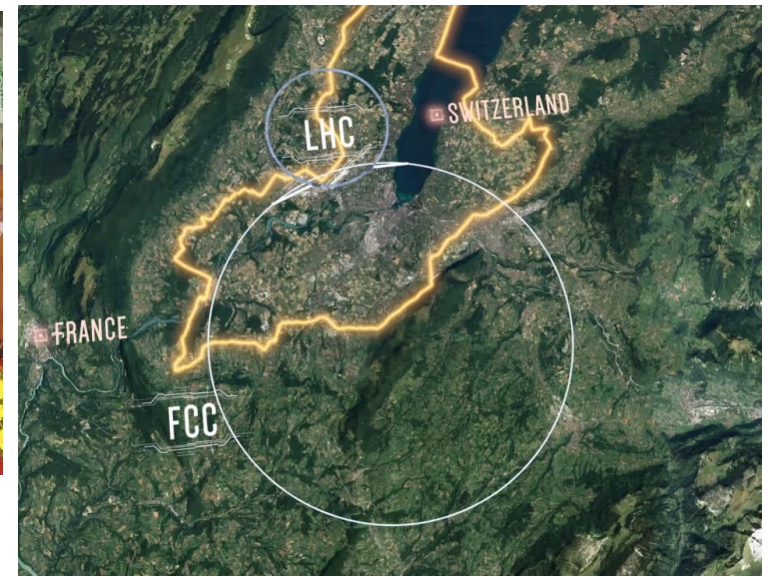


UNIVERSITY OF  
CALGARY

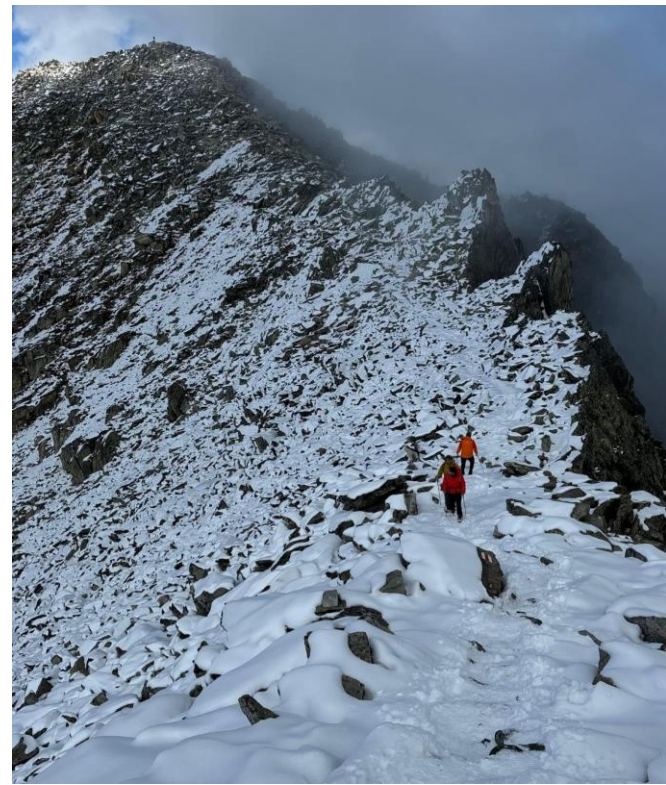


UNIVERSITY OF  
OXFORD





Fantasy fiction



Hiking, Mountains, Mists





# Students

- Elisabetta Parozzi
- Antonin Sauret
- Jesus Avila Pulido
- Liyan Qin
- Angela Potet
- Zihang Zhao



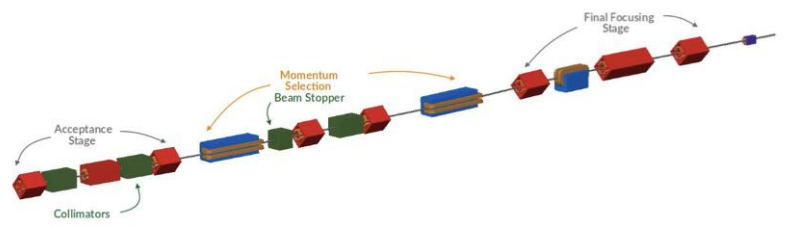
# At work Elisabetta



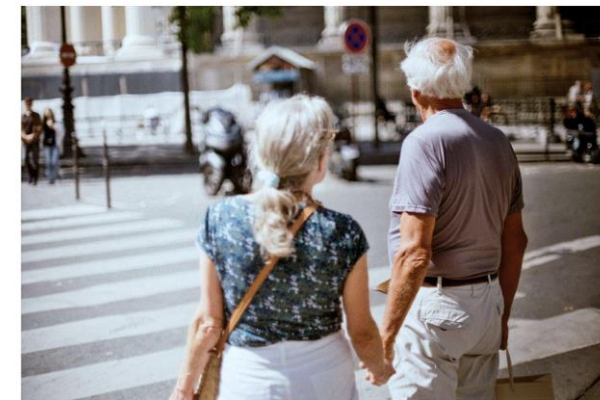
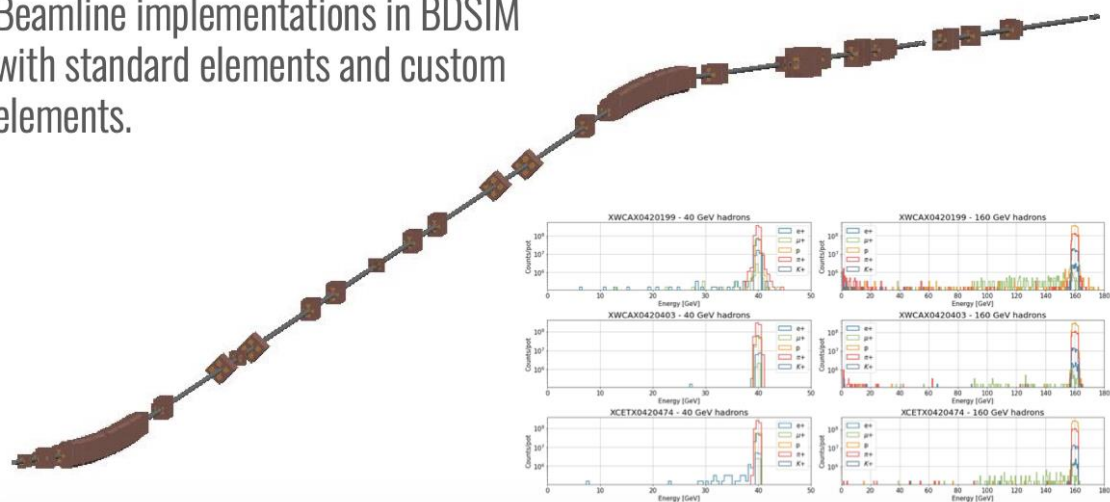
## BE-EA-LE since 2020

Doctoral Student → Senior Fellow

- 1) ENUBET collaboration → designed the beamline
- 2) HIKE, Operations, EA and Na60+



Beamline implementations in BDSIM with standard elements and custom elements.



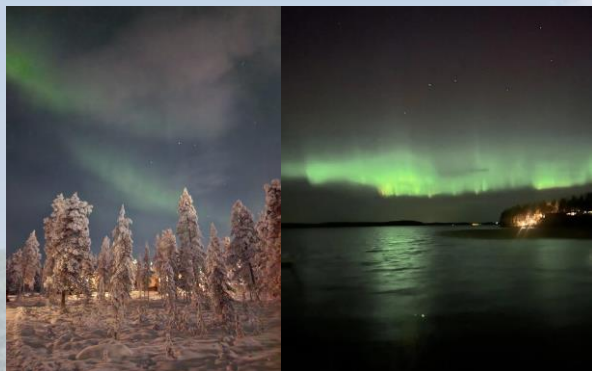
## Main passions:

- climbing
- photography
- travel
- chess
- ...



## Off-work Elisabetta





Finland (2022-2022)



Paris - Saclay (2022-2024)



Paris - Saclay (2020-2022)

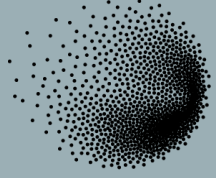


Grenoble (2000-2020)

Antonin Sauret (PhD - ESRF)

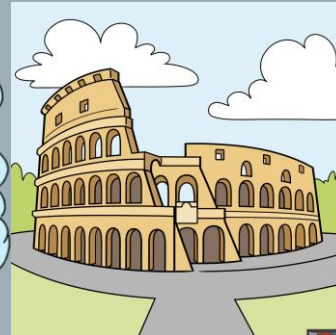
Grenoble (2024-today)





**PSI** Center for Accelerator Science and Engineering

**EPFL**



# 1S1M



**Liyan Qin**

**Institute of High Energy Physics, Chinese Academy of Sciences**

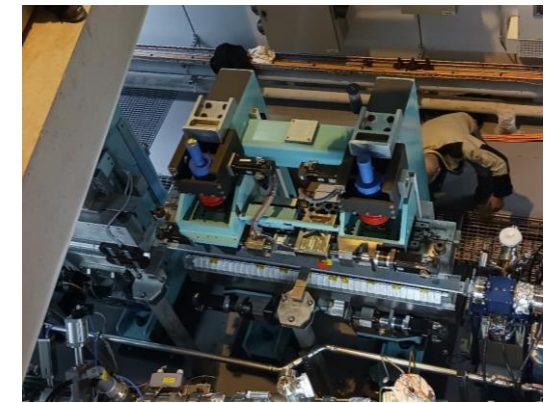
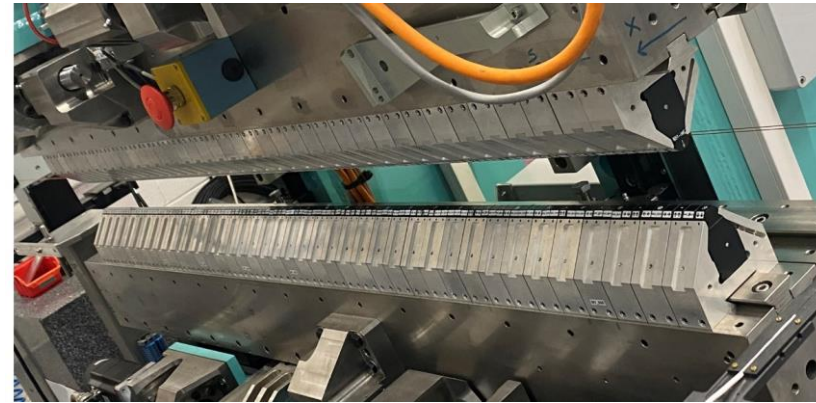
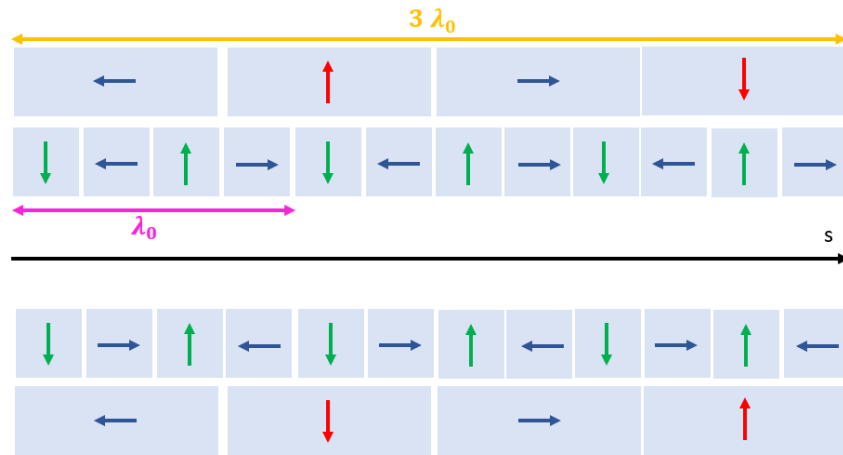
Research focuses: longitudinal beam collective effects (e.g. potential well distortion & microwave instability)

Hobbies: football — a fan of Chengdu Rongcheng & Manchester United

music — an amateur electric guitarist (genres: alternative rock, Vocaloid)



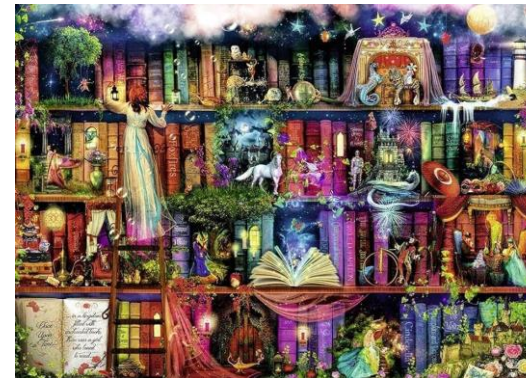
Start of the third year of thesis, Synchrotron SOLEIL, France:  
Development of a new insertion device for synchrotron: Bi-periodic undulator



Board game:



Puzzle:

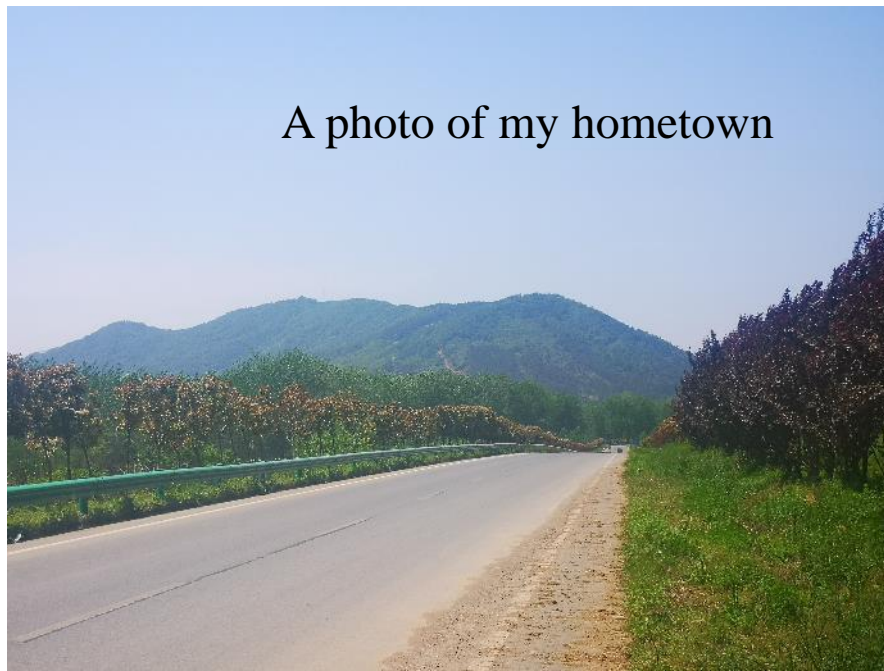




- **Name:** Zihang Zhao
- **Institution:** Institute of High Energy Physics (IHEP), Chinese Academy of Sciences



The office building of IHEP



A photo of my hometown



**Study fields:** Collective effects; space-charge tune shifts...

**Hobbies:** cycling, tea...

**Email:** zhaozihang@ihep.ac.cn

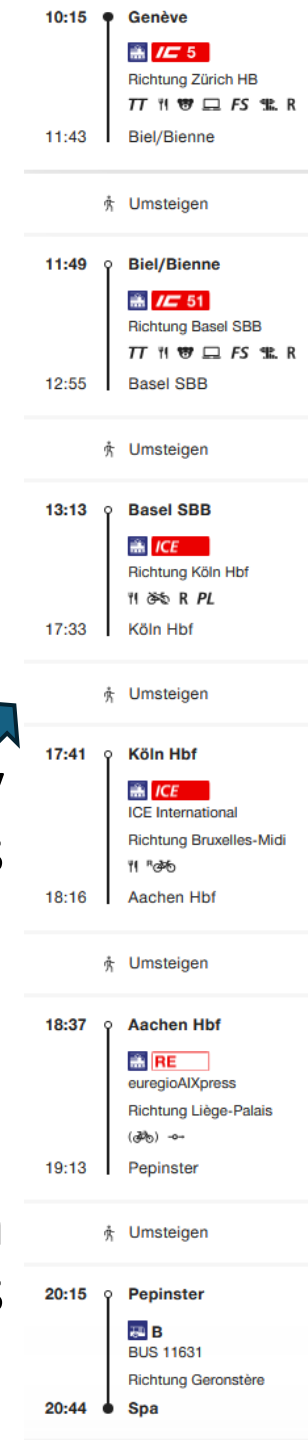


# Students

- Lukas Felsberger
- Siyuan Feng
- Daniel Kalvik
- Vittorio Ferrentino
- Fredrik Groenvold
- Ao Liu

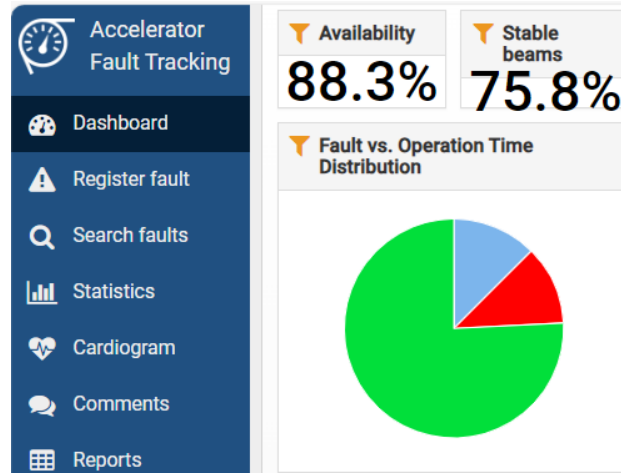


# Lukas Felsberger



At work...

Accelerator fault tracking



System reliability studies



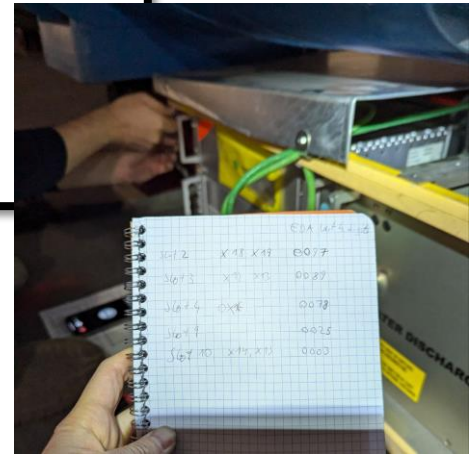
LHC - is it falling apart? How to get out of the series of unfortunate events? (20'+10')

7 Dec 2023, 11:05  
30m  
Royal Plaza Montreux & Spa

Speaker

Lukas Felsberger (CERN)

Working as LHC QPS piquet



In my free time...

Train travel



Train connection's reliability studies



Working on steam trains





Name : Siyuan Feng.

From : Altay, Xinjiang.

Affiliation : Institute of High Energy Physics, Chinese Academy of Sciences.

Research Field : Collective Effects, Beam-Cavity Interaction.

Hobby : Powerlifting, Video Games.

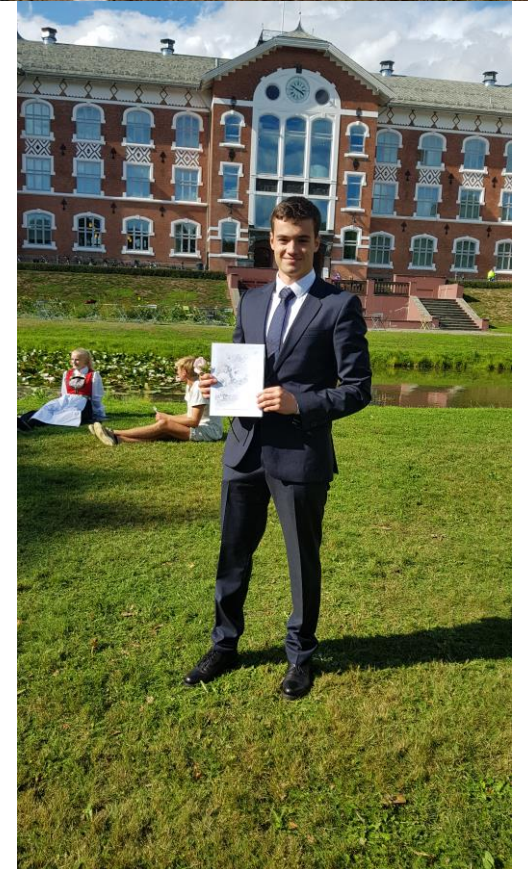
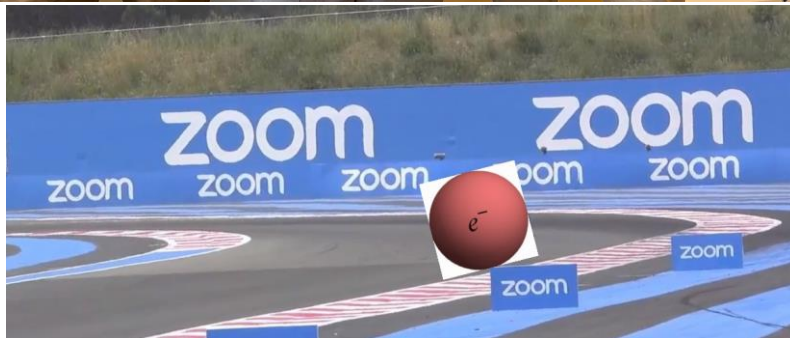






# Daniel Kalvik

PhD research  
fellow at UiO





**Name:** Vittorio

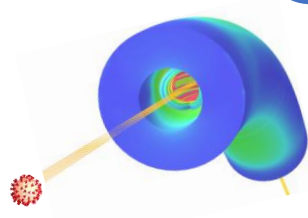
**Surname:** Ferrentino

**Nationality:** Italian

**Date of birth:** 17.02.1995

**Graduated in:** Electrical Engineering at University of Naples Federico II, Italy

**Hobbies:** travel, reading, walking, taking photos, watching sports, running, hiking



Starting internship at CERN

June 2020

December 2020

Started to working in Italy as Electrical Engineer

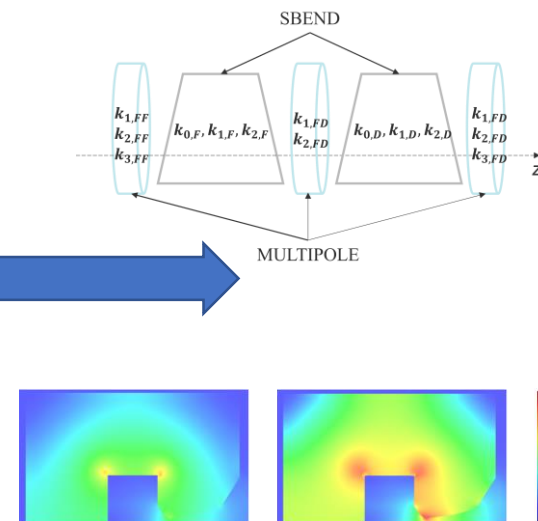
February 2021

Got my master's degree and ended the internship at CERN



March 2022

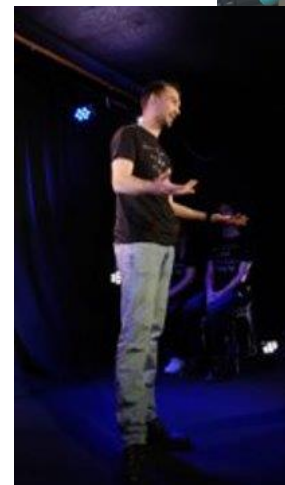
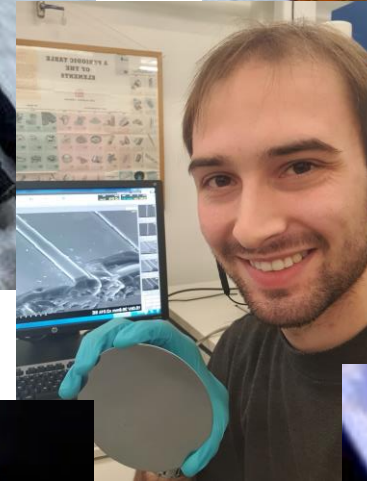
Start of the PhD at CERN





# Fredrik Sommerfelt Grønvold

- Doctoral student at CERN working on Fast Beam-Ion Instability
- Previously studies micro and nano-systems technology, and industrial cybernetics
- Worked on a student cubesat called SelfieSAT
- Theatre and Improv at CERN



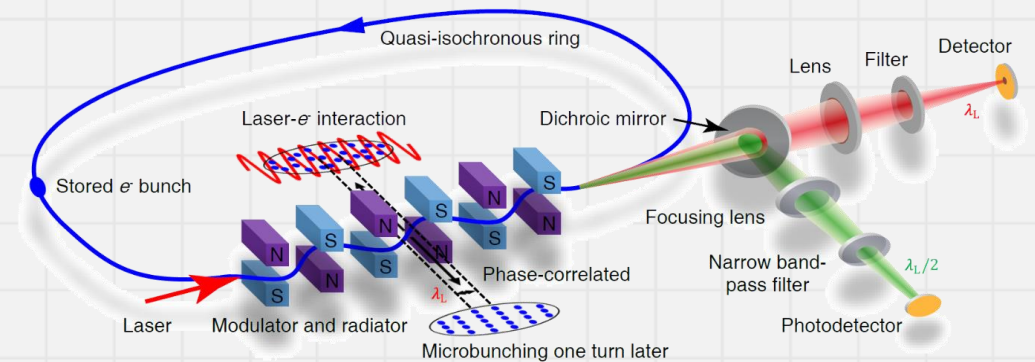


# Ao Liu

## ShanghaiTech University, China

[liuao@shanghaitech.edu.cn](mailto:liuao@shanghaitech.edu.cn)

- Research of Interest:  
Physics and technology of combining storage rings and free-electron lasers such as Steady State Microbunching (SSMB).
- Hobbies:  
Hiking  
Electronic Music (EDM, Drum & Bass, Techno, Ambient Music)



# Students

- Simon Lauber
- Leonard Thiele
- Andre Donadon Servelle
- Ruben Nicholas Heine
- Kirill Grigoryev
- Piotr Szwangruber

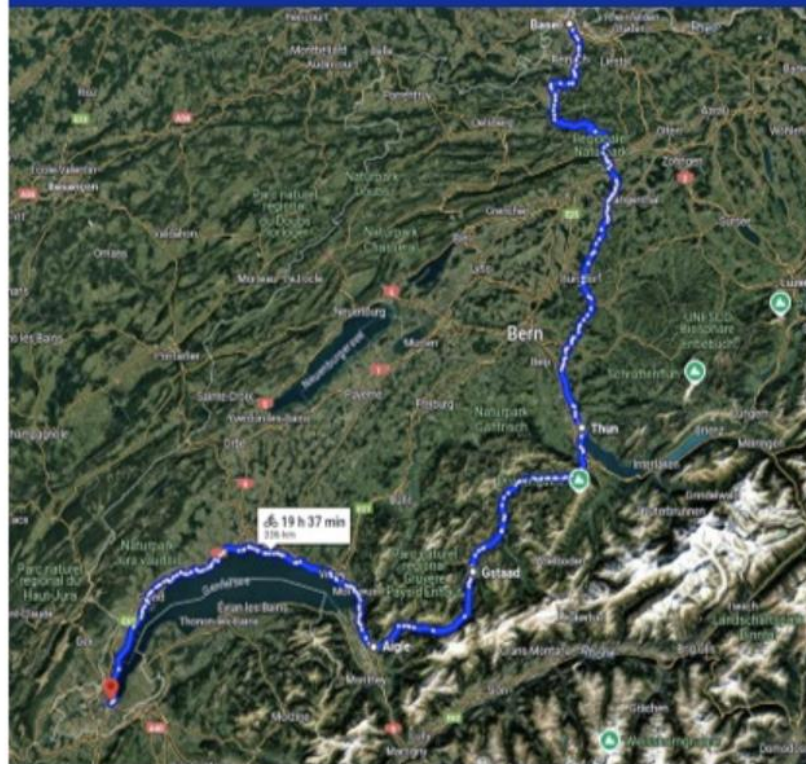


# Simon Lauber | Sports | Accelerator Physics



**Bouldering, Climbing**  
**Highlight:**  
**Deepwater solo at Mallorca**

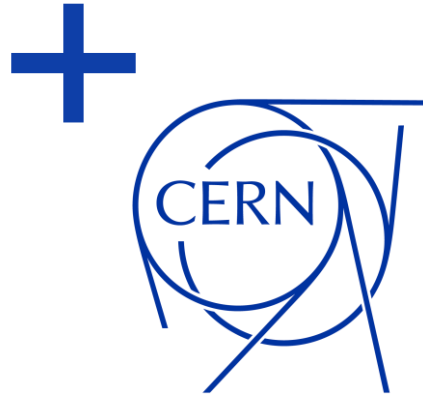
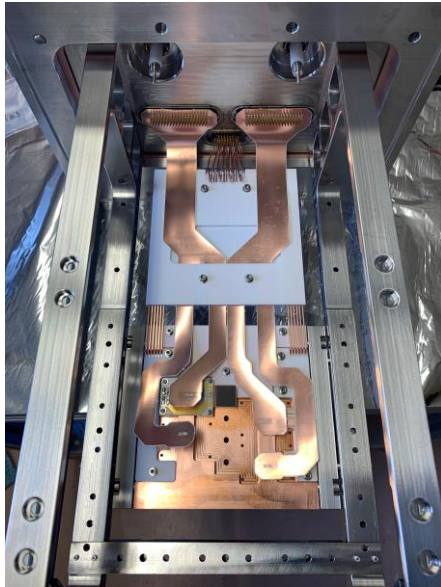
**Jogging, Cycling**  
**Highlight: Tour from**  
**Basel to Geneva (2 days)**



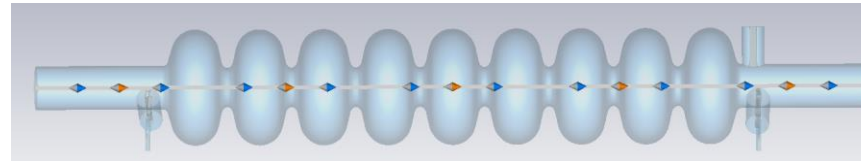
**Hiking, Mountaineering,**  
**Via Ferrata**  
**Highlight: Zugspitze ( $\Delta$**   
**2.120 m)**



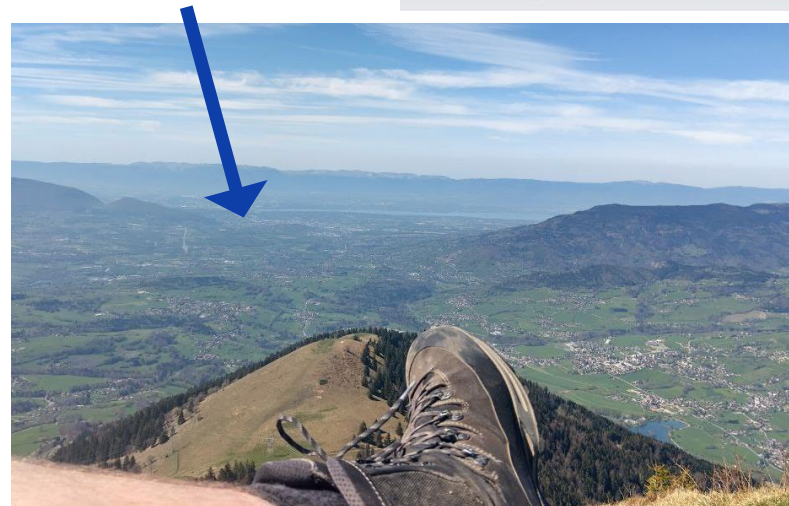
# Leonard Thiele – CERN, University of Rostock



Currently: PhD on RF cavity design for the RCS chain in MuCol



Master thesis on GUI development for BGI

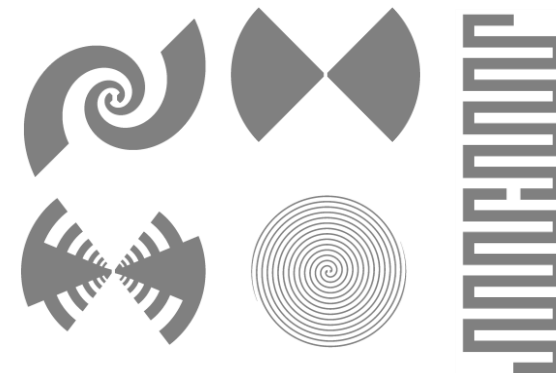




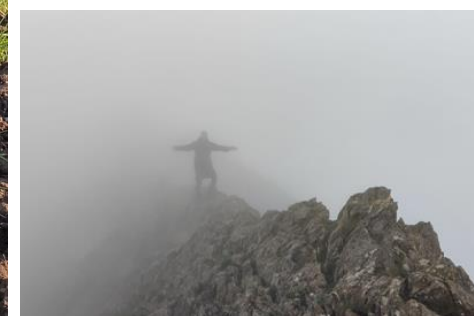
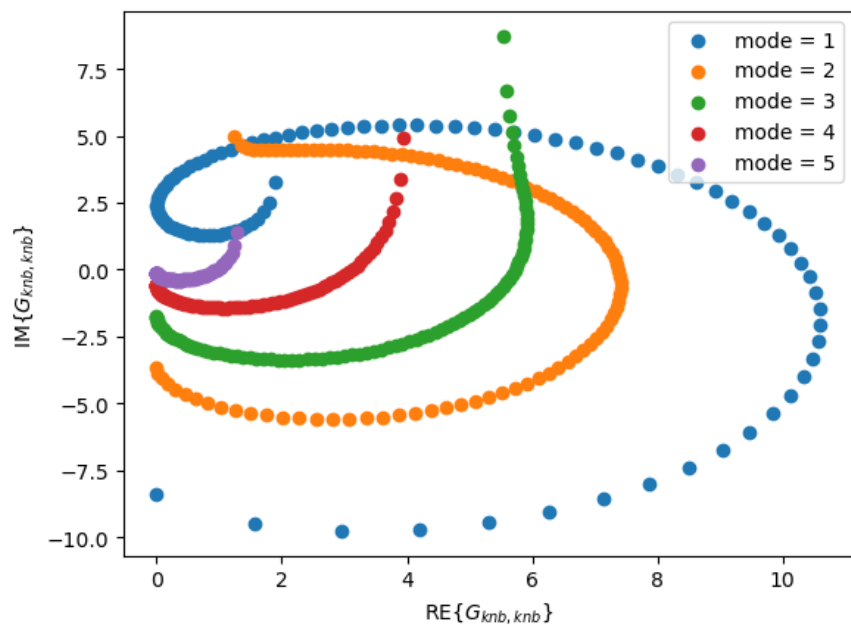




# Ruben Heine - CERN



## Thresholds of longitudinal multi-bunch instabilities





# Kirill Grigoryev

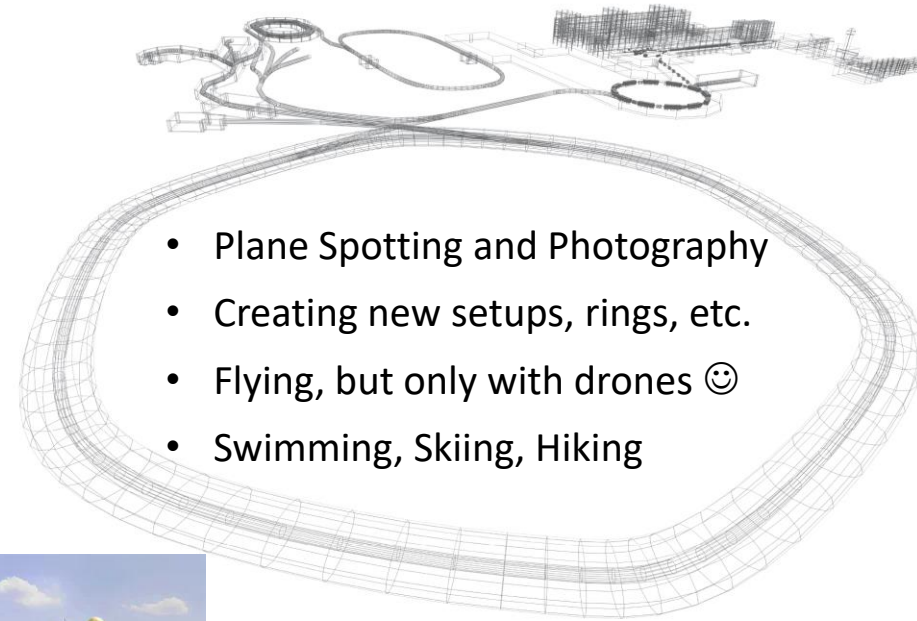
Accelerators Physicist from USSR (Leningrad)

PhD as experimental particle Physicist

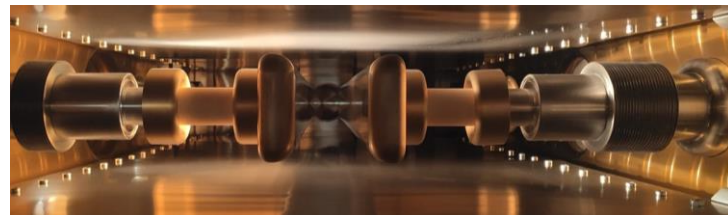
HV development for electrostatic accelerators

Injector and Accelerator-Team of COSY storage ring

Currently Operating Physicist at GSI Darmstadt



- Plane Spotting and Photography
- Creating new setups, rings, etc.
- Flying, but only with drones 😊
- Swimming, Skiing, Hiking





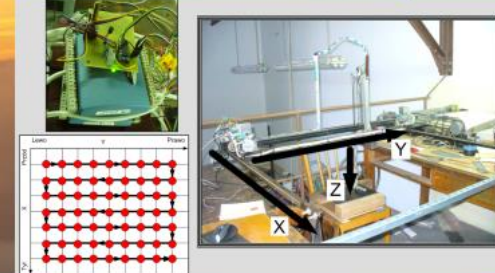
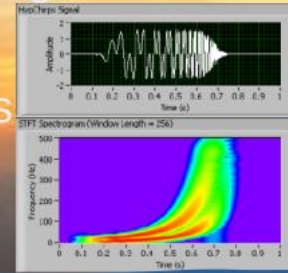
# Piotr Szwangruber – Electrical Engineering, Technical Physics & Computer Science

## CV

- ▶ Born in Kwidzyn (Poland) in middle 80s
- ▶ Studied in Gdansk University of Technology, Gdansk, Poland (GUT)
  - ▶ electrical engineering (MSc.-Eng. 2003 – 2008)  
"Wavelet Analysis in Diagnostics of Induction Motors Bearings"
  - ▶ technical physics (MSc.-Eng. 2005 – 2011)  
"The Automation of Residual Magnetization Measurements for Metal Diagnostics Applications"
- ▶ Assistant prof with PhD perspective at GUT 2008-2010

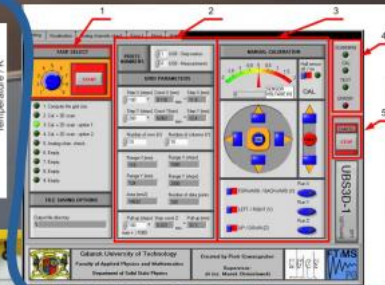
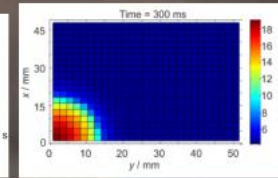
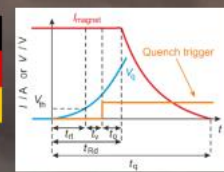


Dumplings  
mniam!



Oder river

- ▶ PhD Studies: Helmholtz Graduate School at GSI/TU Darmstadt, Germany (2010 – 2013)
- ▶ Position at GSI in superconducting magnet department (2013- ...)
- ▶ PhD "Quench Study for FAIR Magnets" at TU Darmstadt/GSI (2017)



## Hobby

- ▶ general aviation
- ▶ python, IoT, automation
- ▶ smart gardening
- ▶ dogs, hiking, traveling







Welcome drink!