



# Program Committee

23<sup>rd</sup> June 2023

# What is the I.FAST Challenge based innovation?



- During 10 days 4 teams of 6 students try to suggest innovative solutions based on accelerators technologies to address a challenge.
- On the last day they present their work in front of a jury at CERN.
- The target audience is students (and young professionals) sufficiently advanced in their studies but not yet too specialized.
  - Students in their 2<sup>nd</sup> cycle of studies (typically 3<sup>rd</sup> to 5<sup>th</sup> year of University), before the start of doctoral studies.

# Overall impression (from 2022)

- Everything went well
- All the students were highly motivated.
- The different teams had different dynamics
- It was impressive to see the birth of the ideas and how they evolved over the 9 days.
- ESI logistics was good.



# About students withdrawal (2023)

- Several students withdrew before the challenge
  - Only one student withdrew upon notification. The other withdrew in June/July.
  - Some for genuine reasons, some due to funding issues, one seem to have been careless with the process (incorrect citizenship in the application, visa issue, sloppy replies,...).
  - All but one were replaced within 24 hours
  - Last one was covid+ 4 days before the conference. The next student on the waiting list did not reply.
    - Only 23 students took part in the challenge
- For 2023: so far only one student withdrew.

# About students motivation

- Most students were attracted by the “CERN” aspect
- Very excited by the CERN visit
  - Visit well received
  - Should have allowed more time for each visit
- Some had strong environmental concern, some other much less
  - One student came by ground transportation from the UK to minimize carbon footprint
  - Another took the plane from Paris despite the availability of the train connection

# Team dynamics

- I believe the advice to have only 6 participants per team was good:
  - At least 2 teams experienced minor internal tensions at some point.
    - For one team it was very clear. There was a disagreement on the innovative content of the project => told to find a better idea.
- Some teams dominated by a leader, some other more democratic
- Those who seemed to be the strongest academically did not necessarily perform best in this exercise  
=> asking themselves too many questions to be innovative
- Team arrived well organized (Thanks Kasia)

# The teams: multidisciplinary



- We aim at having strongly multidisciplinary teams.
- Mix of « accelerator experts », physicists, engineers, environmental scientists, lawyers, communication students and business students.
- In 2023 we did not get enough application from law students.

# The lawyers' doubts

- It was difficult to fit the lawyers in the overall scheme.
- Several times I heard that the lawyers were asking themselves how they could contribute.
- Difficult to see if it came from the 4 lawyers or only a subset.
  - Each time I tried to speak to them they said they were fine
  - Seemed well integrated into teams.
- Feedback from Toms Torims: the Latvian lawyers was very happy!
- Difficult to see if the issue was with the field of expertise of with specific individuals.
- For 2023: we invited lawyers again but did not get enough good quality applications so no lawyers in the 2023 CBI.



# The program 2022



- The program is aimed at giving the students the opportunity to learn about accelerators and their applications
- 4 online seminars before the challenge + video session to get to know each other (all together and by team)
- 8 in person seminars with experts of accelerators and/or their environmental applications
- 2 days at CERN
- 2 “conferences”



<b>mardi 26 juillet 2022</b>	<b>mercredi 27 juillet 2022</b>	<b>jeudi 28 juillet 2022</b>	<b>vendredi 29 juillet 2022</b>	<b>samedi 30 juillet 2022</b>	<b>dimanche 31 juillet 2022</b>
	09:30 Transport to CERN	09:30 Seminar	09:30 Prepare 1st conference	09:30 Private studies	
	10:30 Seminar	10:30 Team work		10:00 Feedback to teams 1 and 2	
	11:30 Team work			11:00 Feedback to teams 3 and 4	
12:00 Buffet Lunch	12:00 Lunch at CERN	12:30 Lunch	12:30 Lunch	12:00 Team work	10:45 Visit Annecy - Meet at ESI at 10:45 am to pick up your picnic bag. The bus will leave at 11.00am sharp! Departure from Annecy at 20:30. Remember that there is NO evening meal at ESI !
14:00 Opening of the CBI	14:00 CERN Visit	14:00 Seminar	13:30 1st conference - individual presentations	12:30 Lunch	
14:30 Break		15:00 Team work	16:30 Break	13:30 Private studies	
14:40 Seminar			16:40 Team work	14:00 Seminar	
17:00 Introduction to the I.FAST CBI and Ice breaking activities	18:00 Return from CERN	18:00 Free time	17:30 1st conference - team presentations	15:00 Team work	
18:30 Free time	19:15 Dinner	19:00 Dinner	18:20 Free time	18:00 Free time	
19:00 Welcome Dinner	20:15 Private studies	20:00 Private studies	18:30 Conference feedback	19:00 After work / Dinner	
20:00 Free time			19:30 Dinner	20:00 Social evening	
			20:15 Private studies		19:00 Dinner
					20:00 Free time

lundi 1 août 2022		mardi 2 août 2022		mercredi 3 août 2022		jeudi 4 août 2022	
						08:30	Transport to CERN
09:30	Seminar	09:30	2nd conference (15' presentation + 15'question / team)	09:30	Prepare final report (due at noon)	09:30	Lunch at CERN + Free time
10:30	Team work						
				12:00	Free time		
12:30	Lunch			12:30	Lunch		
		13:00	Lunch			11:00	Final presentations
13:30	Private studies			13:30	Private studies		
14:00	Seminar	14:00	2nd conference feedback	14:00	Seminar	14:30	Award ceremony
15:00	Prepare 2nd conference	15:00	Team work	15:00	Prepare presentations	16:00	Return from CERN (optional)
17:35	Determine speaking order for			17:45	Fill feedback forms		
18:00	Free time			18:15	Free time		
19:00	Dinner	19:00	After work / Dinner	19:00	Dinner		
20:00	Private studies	20:00	Private studies	20:00	Finalize presentations		

# Online seminars 2022



- Willy Mondelaers, "Small particle accelerators and their applications in medicine and industry"
- Andrzej G Chmielewski, "Accelerators for the environment"
- Lenny Rivkin, "Particle accelerators (general view)"
- Christophe Goupil, "A physicist's journey through the ecological transition"

# Conferences / Pitching events

- Useful to structure the CBI
- Useful to structure the evolution of the projects and have peer feedback
- Good spirit
- To me seeing how students asked questions on other projects help me understand how teams functioned internally.
- We decided not to give a prize for the most insightful question(s) as this was too difficult to judge.

# The final presentations

- On the last day each team gave a presentation in front of a jury made of senior scientist and knowledge transfer experts.
- The order in which the teams present is decided by a quiz on the previous seminars.
- In the afternoon there was an award ceremony with feedback from the Jury for each team.
- The jury was chaired by Frédéric Bordry. They were impressed by the quality of the projects.





# Goal: Functionalisation of CNF with e-beam irradiation

IFAST CHALLENGE



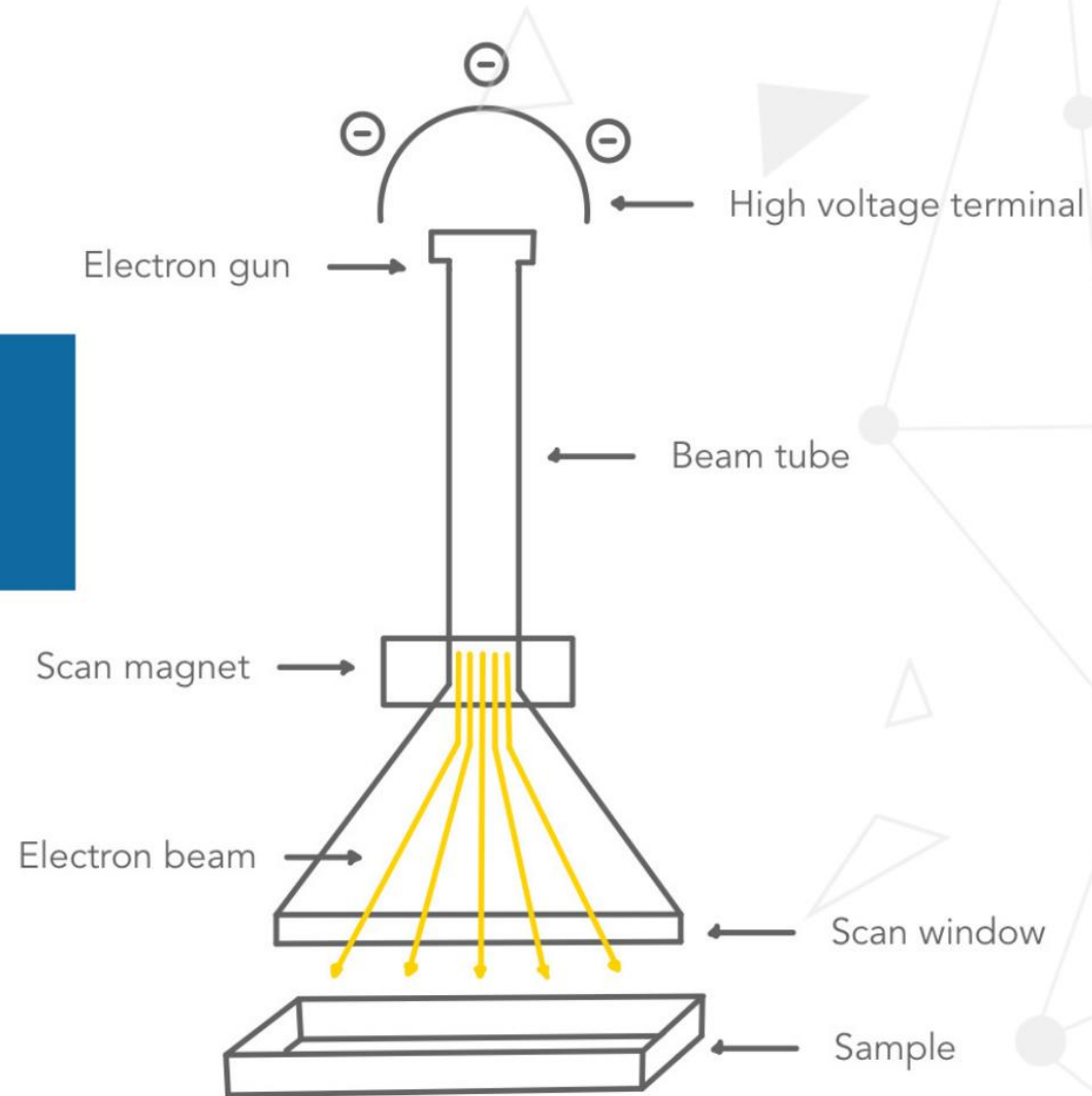
## BEAM PARAMETERS

Energy: 3 MeV  
Dose: 1000 kGy



## SAMPLE

1.245 kg of CNF powder in aluminium pans



Linear accelerator commercially available through IONISOS (France)

Courtesy Team Fellowship of the accelerator ring - Durablade - Accelerating the Green Transition

# THE PLAN

GET COMPACT  
LIGHT SOURCE: THE  
ACCELERATOR OF  
THE FUTURE!

TRAVEL TO LOCATIONS OF  
INTEREST

USE THE ACCELERATOR  
TO IDENTIFY  
MICROPLASTICS AND  
TOXIC CHEMICALS IN SEA  
WATER/ORGANISMS



MOUNT THE  
ACCELERATOR ON A  
RESEARCH VESSEL

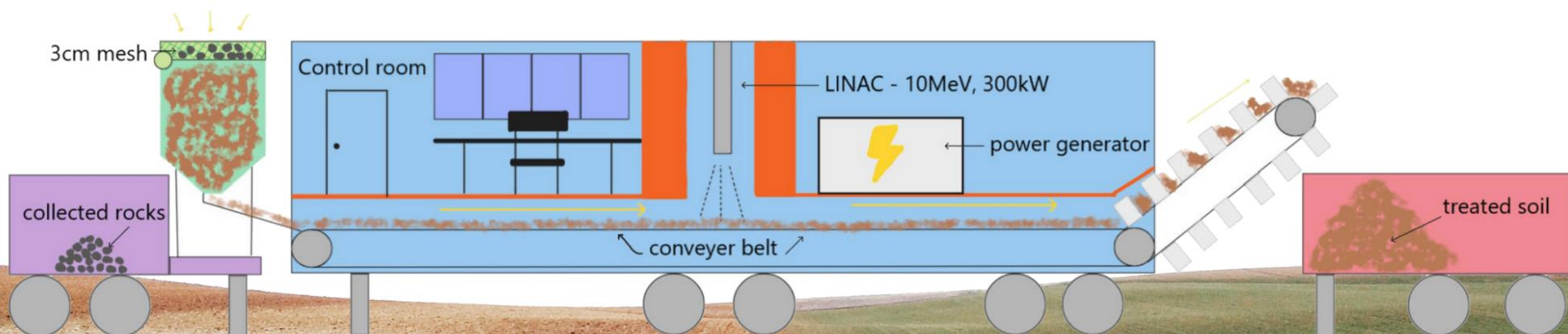
TAKE SAMPLES OF OCEAN  
WATER AND  
MICROORGANISMS

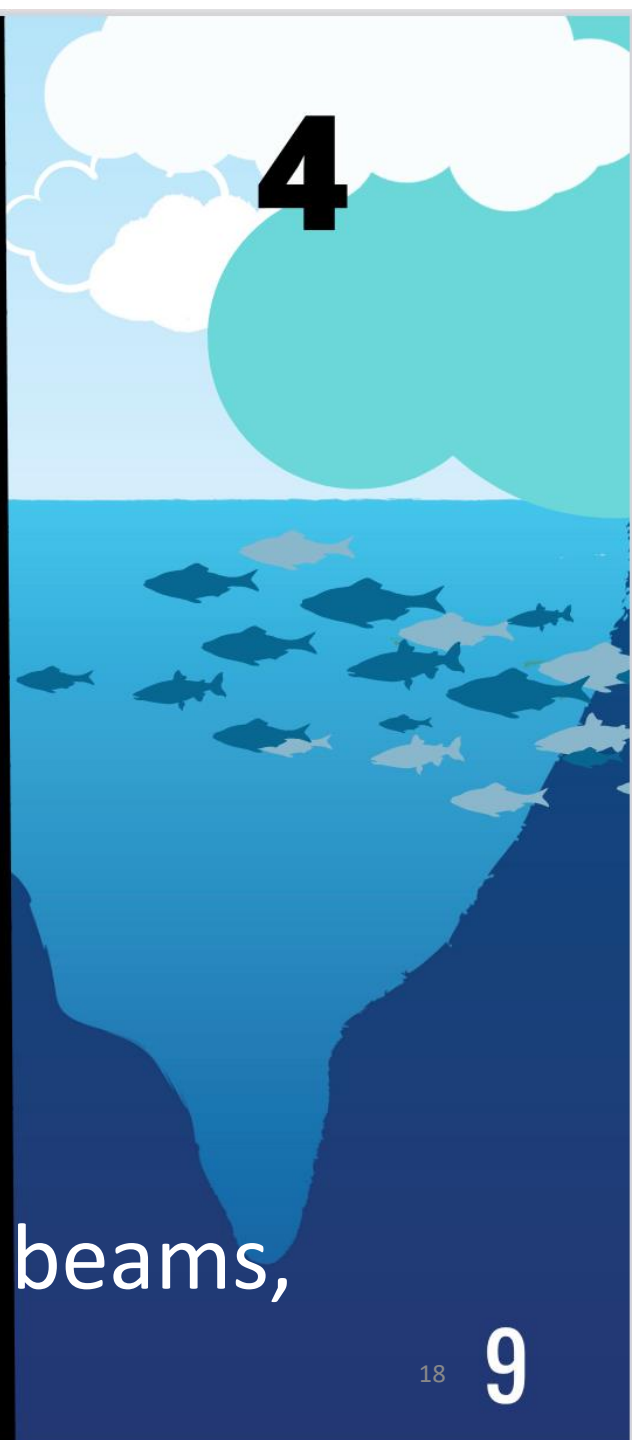
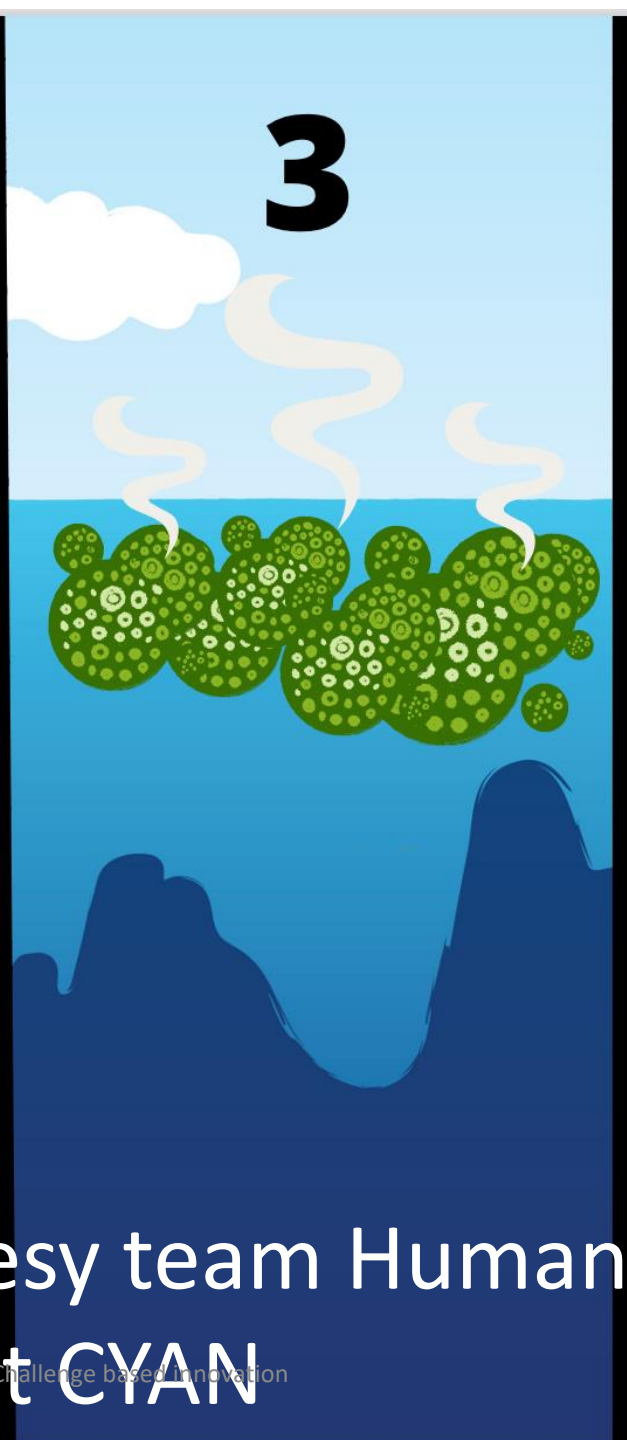
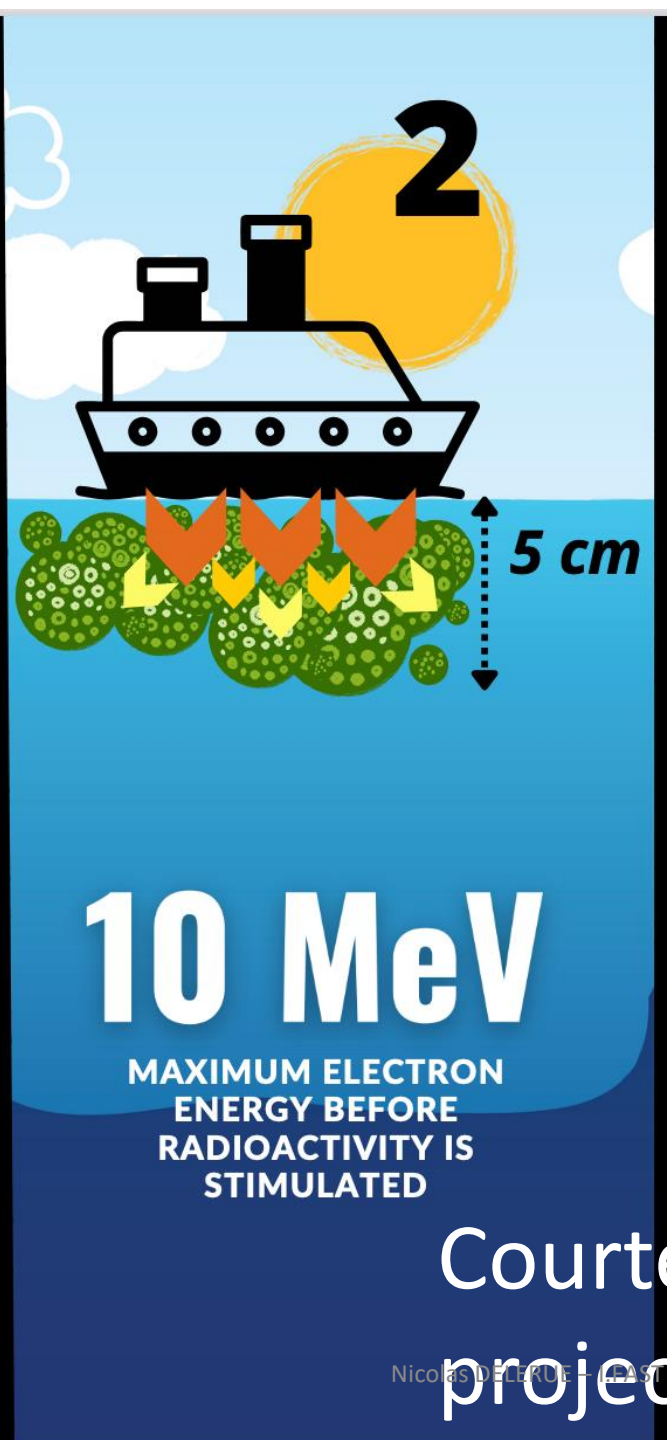
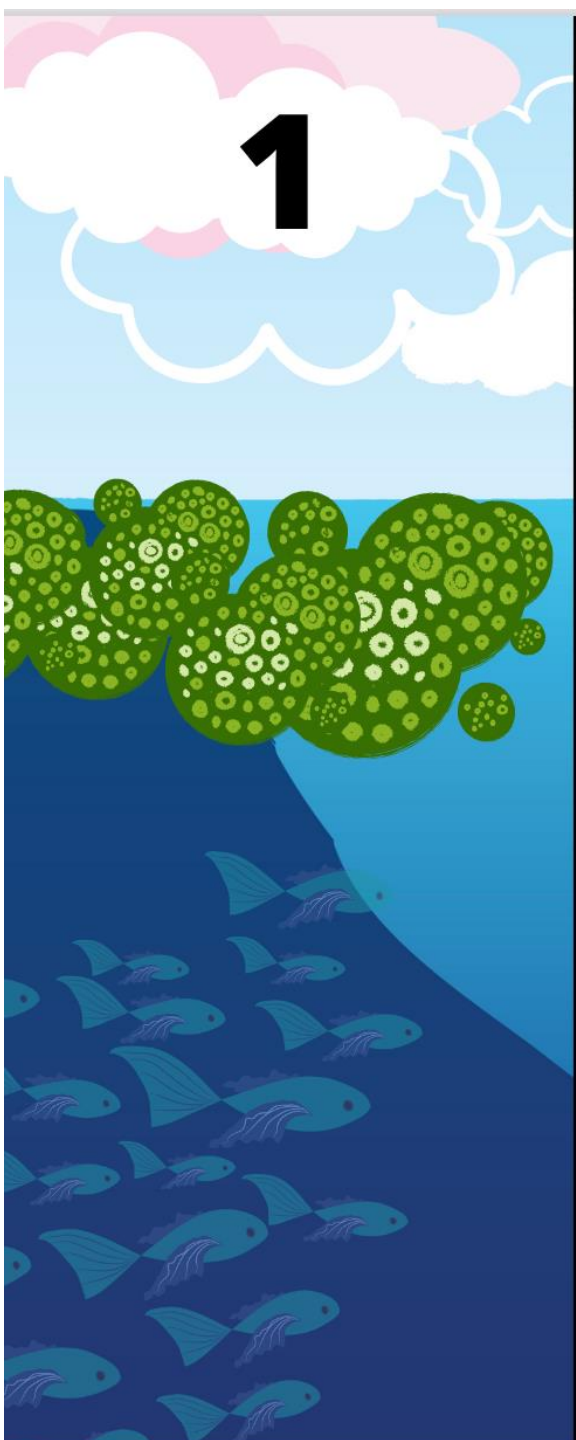
Courtesy Teams White Light - A.M.M.I.R.A : Accelerators for Marine  
Microplastics Investigation and Research Agency.



## DEVELOPING TECHNOLOGY - THE SOIL SAVIOUR 2.0 & A PORTABLE PARTICLE ACCELERATOR

# SOIL SAVIOUR 2.0





Courtesy team Human beams,  
project CYAN

# Students' Feedback

- Students feedback was very positive.

2) How do you rate your overall experience at I.FAST CBI?

Average: **9,4**/10

3) Did the challenge fulfil your expectations?

Average: **9,4**/10

4) How did you find the timetable in terms of volume of hours, number and length of sessions, balance between lectures and group work, etc.?

Average: **7,6**/10

5) How did you find the programme content in terms of balance between topics?

Average: **7,3**/10

6) Was the speakers' expertise sufficiently diverse to help you build your project?

Average: **7,6**/10

## v. CROSS-PITCHING DAYS

1) Did you find the first cross-pitching session useful (Thursday 28 July)?

Average: **9,5**/10

2) Did you find the second cross-pitching session useful (Tuesday 2 August)?

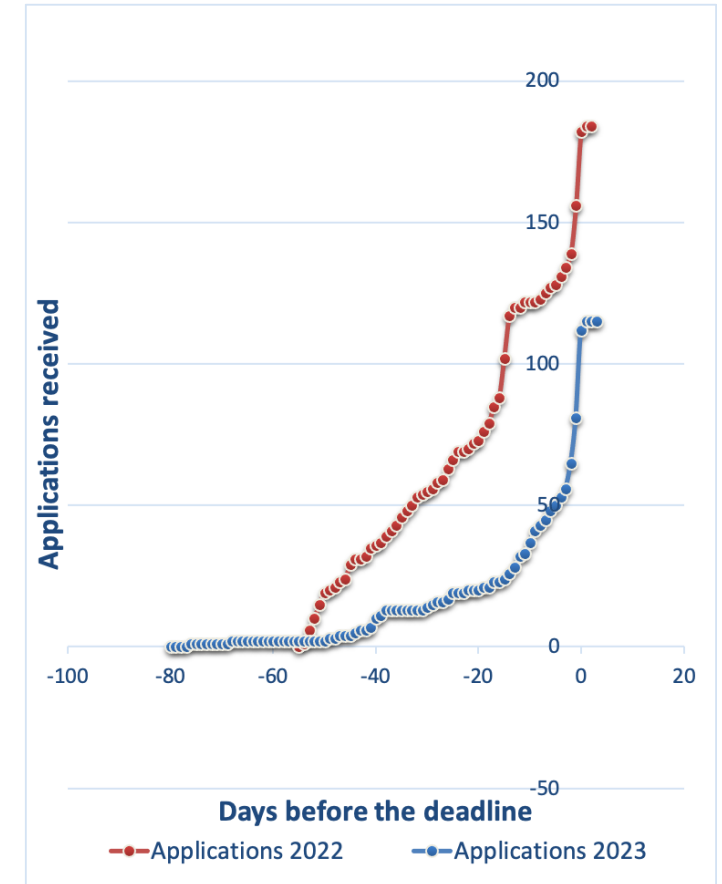
Average: **9,7**/10



# Applications statistics



- 187 applications in 2022 and 115 in 2023
- Most applicants (>85%) are studying in I.FAST participant countries.
- Good gender balance in the applications.
- Less applications in 2023 but good quality (and fewer students withdrew so far).



# Topic:

## Accelerators for the environment

- The selected topic for 2022 was “**Accelerators for the environment**”
- Thank to you (Program committee) for selecting this topic which worked well.
- We decided to keep the same topic for 2023.
- Today we will discuss the topic for 2024.



# Outlook

- The 2022 I.FAST CBI went very well.
- It is a unique opportunity to engage students and young professionals on particle accelerators and their applications.
- Good media coverage (accelerating news, Cordis, CERN Bulletin...).
- Cost is about 40k€/CBI (value 2022).
- Looking for complementary funding (25k€) to organize a 3<sup>rd</sup> CBI in 2024 and ideas to fund it beyond 2024...
- Our challenge: make the 2023 CBI as successful as the 2022 edition.
- We need your help to find a topic for the 2024 CBI.



# iFAST



This project has received funding from the European Union's Horizon 2020 Research and Innovation programme under GA No 101004730.

## Accelerating solutions for the environment



HOME

News > > Issue 38 > Topic: I.FAST (IFA)

# Accelerators for the environment: Announcing I.FAST Challenge-Based Innovation programme 2022



Nicolas DELERUE – I.FAST Challenge based innovation

# Media coverage



HOME PAST ISSUES

News > > Issue 42 > Topic: I.FAST (IFA)

## How can accelerators address environmental challenges? A 10-day event near Geneva for university students



PRESENTS  
**PROJECT CYAN**



# ACCELERATORS FOR THE ENVIRONMENT

**10-DAY CHALLENGE @ ESI & CERN**  
**25 JULY - 03 AUGUST 2023**

Are you...

...a senior bachelor or master student  
(all backgrounds)

...from a European university

...interested in making an impact

**APPLY NOW** ➔

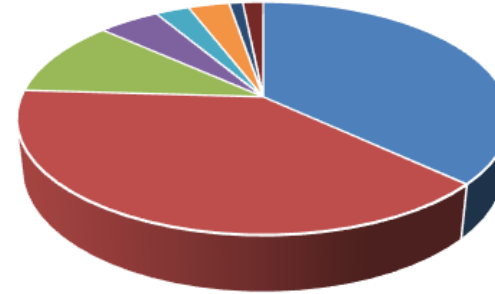
[ifast-cbi.particle-accelerators.eu](https://ifast-cbi.particle-accelerators.eu)



# Field of studies

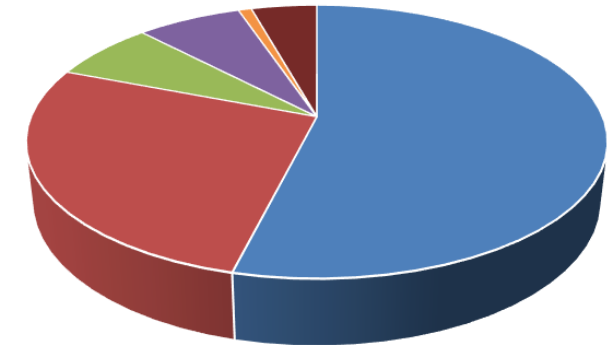


Field of study 2022



- Physics
- Engineering
- Environment/Bio
- Other science
- Business/Economics
- Law
- Medecine

Field of studies 2023



- Physics
- Engineering
- Environmental science
- Other scientific studies non listed above
- Business/Economics
- Law
- Medecine
- Maketing/Communication
- Other

# Hosting

- The challenge takes place HERE at the European Scientific Institute (ESI) in Archamps near Geneva:  
<https://www.esi-archamps.eu/>
- ESI has strong experience in hosting scientific schools
- The ESI team is taking care of the logistics, full board accommodation and travel arrangements for the participants.

