

Impressions from Young Scientists

“Le Grand Canal”, Claude Monet

Anna Benecke¹, David Marckx², Jas Bierkens³
UC Louvain¹, Ghent University², VUB³
12/09/2025

Who are we: the ECFA ECR panel members

- The ECFA ECR panel was created as a response to the ESPP 2020 update
 - «The objective of the ECFA Early-Career Researcher (ECR) Panel is for its members to **discuss all aspects that contribute in a broad sense to the future of the research field of particle physics...**
 - ...Members act as individuals, but should be able to **represent the views of early-career researchers** in particle physics in the country from which they were nominated.»
- The first generation: Louis Moureaux (PhD ULB) and Aleksandra Lelek (Post-Doc UAntwerpen) appointed in 2020
- The second generation: appointed in 2022



Kirill Skovpen
Post-Doc UGent



Anna Benecke
Post-Doc UC Louvain

Who are we: the ECFA ECR panel members

- The second generation: appointed in 2022



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Timeline for the update of the European Strategy for Particle Physics



Who are we: the ECFA ECR panel members

- The second generation: appointed in 2022
- Transitioning to 3rd generation



David Marckx
4th year PhD UGent



Anna Benecke
Post-Doc UC Louvain

Timeline for the update of the European Strategy for Particle Physics



- Focus: ESPPU

[arXiv:2401.07564](https://arxiv.org/abs/2401.07564)

Future Collider workshop

- Commonly organized by Belgian and Dutch ECRs
[\[indico link\]](#)
- Focus on improving the connection between Belgian and Dutch ECRs
 - Social event
 - Poster session
 - Informal setting



Future Collider workshop

- A full day of invited talks
 - “Current physics landscape and motivation for future colliders”
 - “Impact of future colliders on society and sustainability”
 - “National funding structure and plans for future collider R&D”
 - ...
- Panel discussion

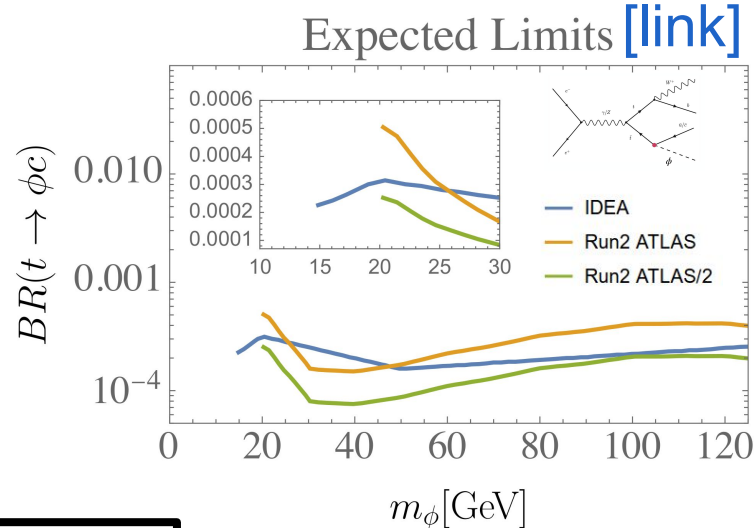


THURSDAY, SEPTEMBER 12		
5:00 PM	→ 7:00 PM	Poster session and social event
FRIDAY, SEPTEMBER 13		
9:00 AM	→ 11:30 AM	Overview
Convener: Matthias Vozak (cern)		
9:10 AM		Introduction
Speaker: Andrea Garcia Alonso (cern)		
Convener: Matthias Vozak (cern)		
9:30 AM		Current physics landscape and motivation for future colliders
Speaker: Dr. Vasilisa Waiswirth (University of Amsterdam)		
Convener: Matthias Vozak (cern)		
10:00 AM		Overview of future colliders options
Speaker: Dr. Clara Hagedorn (University of Amsterdam)		
Convener: Matthias Vozak (cern)		
10:40 AM		Coffee break
11:00 AM		Summary of ECRP-wide event on future colliders
Speaker: Dr. Armin Heide (University of Bonn)		
Convener: Matthias Vozak (cern)		
11:30 AM	→ 12:00 PM	Society and sustainability
Convener: Matthias Vozak (cern)		
11:30 AM		Impact on future colliders on society and sustainability
Speaker: Prof. Jorgen D. Hordt (University of Bonn)		
Convener: Matthias Vozak (cern)		
12:00 PM	→ 1:25 PM	Lunch break and poster session
1:30 PM	→ 1:35 PM	Group photo
1:30 PM	→ 2:45 PM	Belgian and Dutch involvements
Convener: Jeroen Wollf (cern)		
1:30 PM		Past and current national HEP involvement
Speaker: Prof. Antonio Pellegrino (University of Groningen)		
Convener: Jeroen Wollf (cern)		
1:45 PM		Dutch view on involvement and interests in future colliders
Speaker: Prof. Tristan du Pire (University of Twente)		
Convener: Jeroen Wollf (cern)		
1:55 PM		Belgian view on involvement and interests in future colliders
Speaker: Koen Geurts (University of Leuven)		
Convener: Jeroen Wollf (cern)		
2:45 PM	→ 3:15 PM	Coffee break
3:15 PM	→ 4:45 PM	People and money
Convener: Jeroen Wollf (cern)		
3:15 PM		National funding structure and plans for future collider R&D
Speaker: Dr. Masa Sengul (University of Amsterdam)		
Convener: Jeroen Wollf (cern)		
3:45 PM		Future colliders panel discussion
Speakers: Armin Heide (University of Bonn), Clara Hagedorn (University of Amsterdam), Jorgen D. Hordt (University of Bonn), Masa Sengul (University of Amsterdam)		
Convener: Jeroen Wollf (cern)		
4:45 PM	→ 5:00 PM	Conclusions and next steps
Speaker: Marion Mitter (University of Bonn)		
Convener: Jeroen Wollf (cern)		

[\[indico link\]](#)

ECR input to the ESPPU

- We contributed to many inputs to the ESPPU
 - Belgian-Dutch ECR survey
 - Work by Kirill on FCNCs in top decays
- Put significant effort into involving ECRs in the Belgian input process



Perspectives of Early-Career Researchers in Belgium and the Netherlands on the Future of Collider Physics

Anna Benecke¹, Andrea García Alonso², Marion Missio^{2,4}, Paul Malek¹, Matouš Vozák^{2,5}, and Zef Wolffs^{2,3*}

¹UCLouvain, Louvain-la-Neuve, Belgium

²National Institute for Subatomic Physics (Nikhef), Amsterdam, the Netherlands

³Institute of Physics, University of Amsterdam, Amsterdam, the Netherlands

⁴Radboud University, Nijmegen, the Netherlands

⁵CERN, European Organization for Nuclear Research, Geneva, Switzerland

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[\[link\]](#)

June 3, 2025

Results of the 2021 ECFA Early-Career Researcher Survey on Training in Instrumentation

The ECFA Early-Career Researcher (ECR)

July 14, 2021

The European Committee for Future Accelerators (ECFA) Early-Career Panel was invited by the ECFA Detector R&D Roadmap conveners to represent the European ECR community. A working group within the ECFA ECR hall Meeting to get first input, and then designed and broadly circulated to gather feedback from the larger ECR community. A total of 473 responses were received, providing a useful overview of the experiences of ECRs training and related topics. This report summarises the feedback received to serve as an input to the ECFA Detector R&D Roadmap process.

Results of the 2022 ECFA Early-Career Researchers survey on career prospects and diversity

Early-Career Researchers Panel: Career Prospects and Diversity in Physics Programmes Working Groups

April 3, 2024

This document presents the outcomes of a comprehensive survey conducted among early-career researchers (ECRs) in academic particle physics. Running from September 2021 to March 3, 2023, the survey gathered responses from 759 ECRs employed in various physics programs. The study aimed to gain insights into the career prospects and experiences of ECRs while also delving into diversity and sociological aspects within particle physics research. The survey results are presented in a manner consistent with the needs of the community. The document offers insights for the particle physics community, and a set of recommendations for enhancing career prospects, fostering diversity, and addressing sociological dimensions within this field.

A new phase



David Marckx
4th year PhD UGent



Jas Bierkens
3rd year PhD VUB



Anna Benecke
Will step down at next
PECFA endorsements

Timeline for the update of the European Strategy for Particle Physics

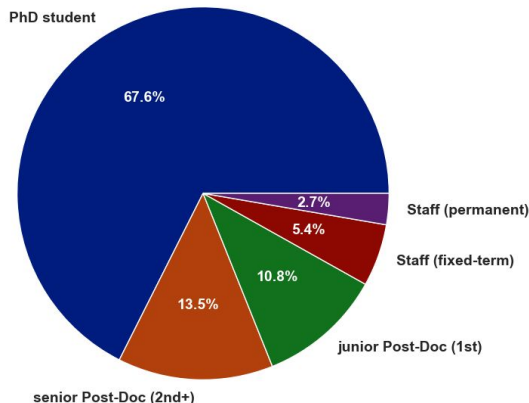


- Continue...
 - informing the ECR community on developments
 - as contact point of the ECR community
- Identify new ways we can contribute to the wellbeing and physics output of Belgian ECRs

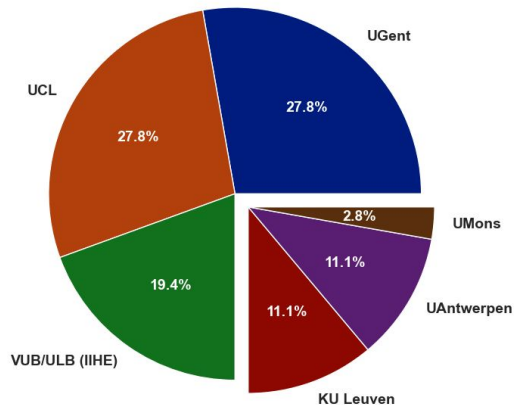
Belgian ECR RECFA survey

- Target group: Belgium affiliated ECRs
 - ~up to 10 years after your PhD finishes
 - 37 respondents
- Home institutes of panel members are slightly overrepresented
- A large focus was placed on reaching people outside of CMS

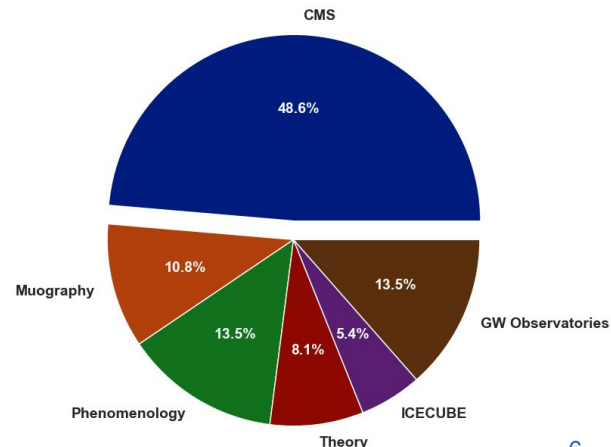
What is your current position?



What university are you affiliated with?



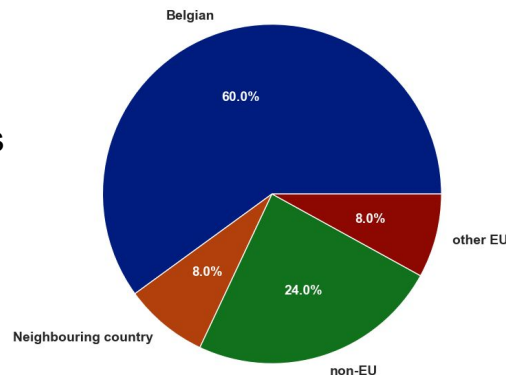
What is your primary field of research?



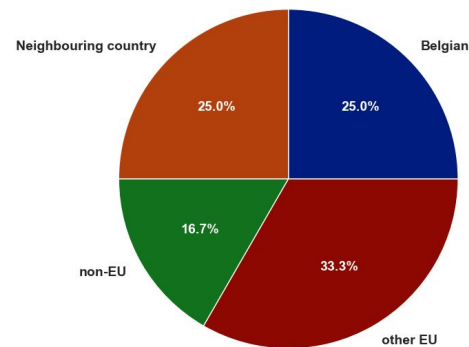
Belgian ECR community

- 60% of PhD students are Belgian
 - More senior positions are more diverse
 - Employer gets **tax exemptions** up to 30% gross annual salary for Foreign researchers (>150 km from Belgium in last 3 years)
 - Discussed more later on
- PhD students are predominantly male
 - This bias is already present at bachelor and master student levels
 - Better in more senior positions
 - Work is still needed on this front!

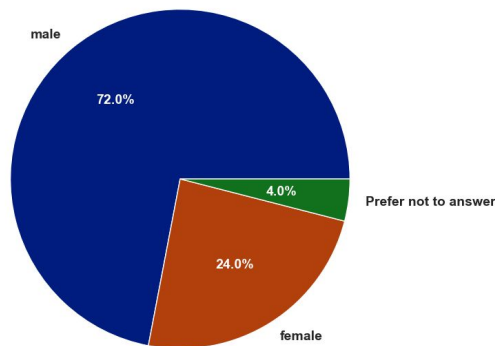
What is your nationality? (PhD students)



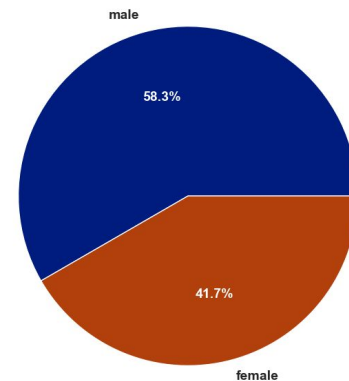
What is your nationality? (Postdocs and staff)



What is your gender identity? (PhD students)



What is your gender identity? (Postdocs and staff)



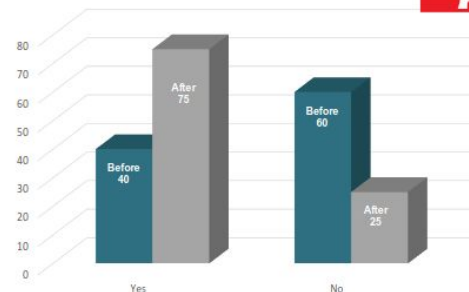
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- Project originated in Germany, get high school girls to experience working in physics in a positive environment
- Extended to UC Louvain, **PPD 2025** was last week!

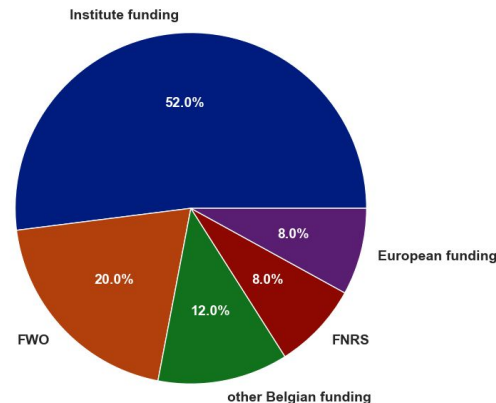
Is studying physics an option?



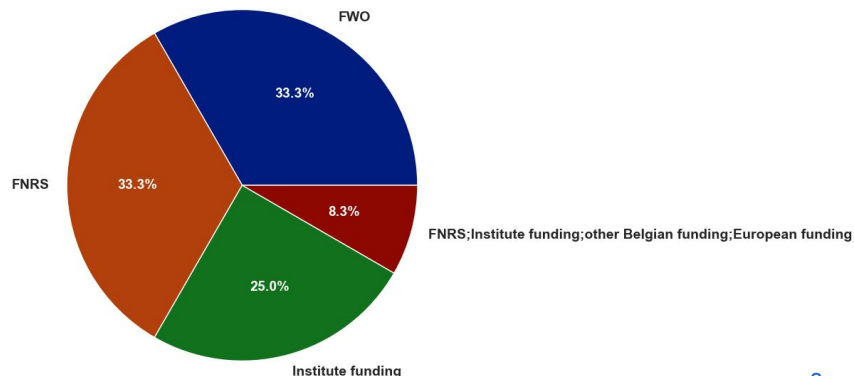
Funding structure

- PhD students are often funded with institute funding
 - Several are hired under iBOF grants (3 promoters from at least 2 Flemish universities)
 - Almost all students have 4 year contracts. TA positions have 6 year contracts
- Postdocs are predominantly supported by FWO and FNRS

What is your current source of funding? (PhD students)



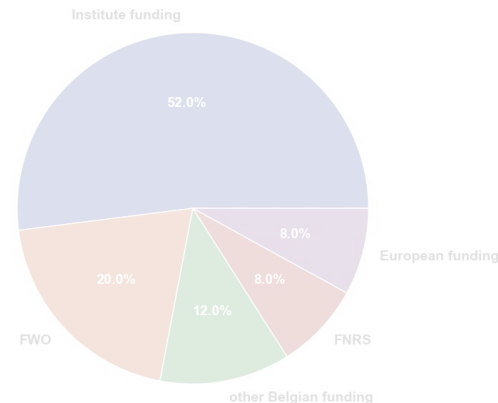
What is your current source of funding? (Postdocs and staff)



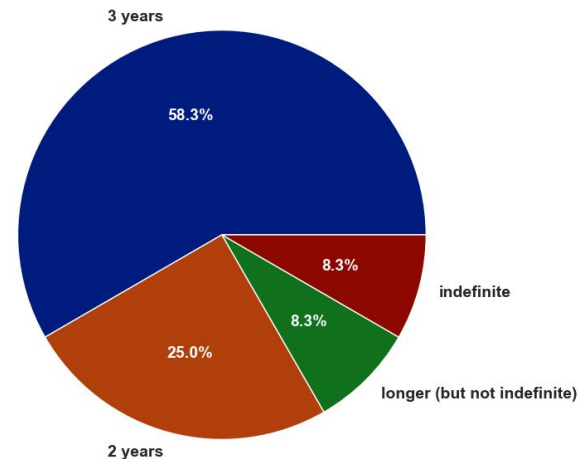
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 - Almost all students have 4 year contracts.
TA positions: 6 year contracts
- Postdocs are predominantly supported by FWO and FNRS
 - Longer-term employment options are requested
 - FNRS [Permanent Researcher program](#) indeterminate period and has 3 levels
 - can **FWO** consider **similar programs**?
 - **Can we aim for longer contracts?**
 - **CERN fellowships** also need longer contracts (also identified in [ECR white paper](#))

What is your current source of funding? (PhD students)



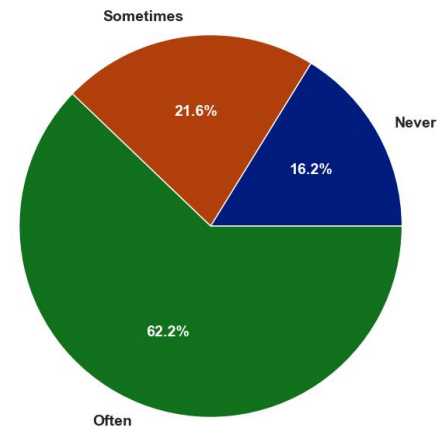
What is the duration of your current contract? (Postdocs and staff)



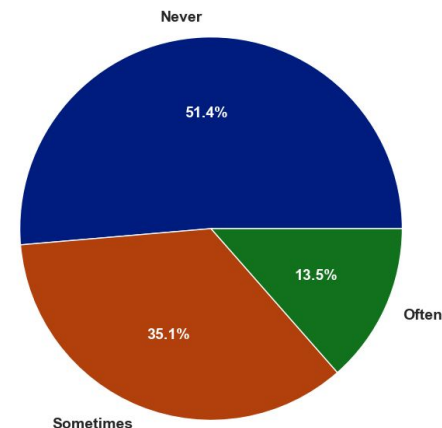
Cooperation of Belgian universities

- HEP is an international field
- Less cooperation within Belgium

I actively work with people from outside of Belgium



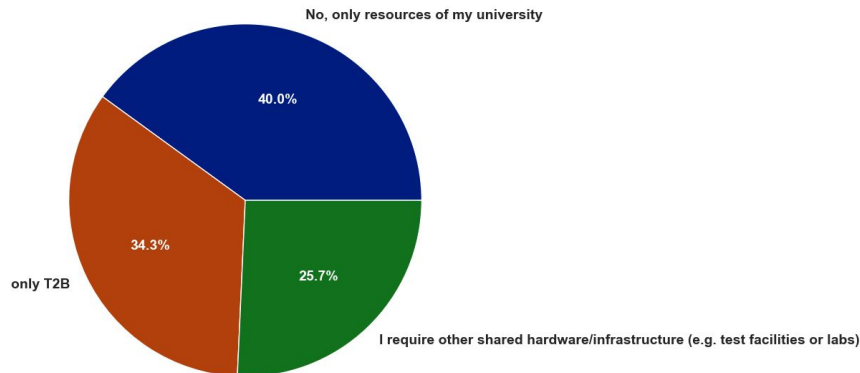
I actively work with people from other Belgian universities



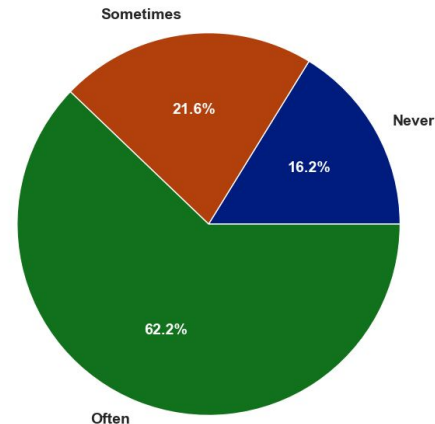
Cooperation of Belgian universities

- HEP is an international field
- Less cooperation within Belgium
 - 25% of ECRs rely on infrastructure at other universities
 - Still, half of ECRs never benefit from Belgian connections
 - Can we benefit more from each other?

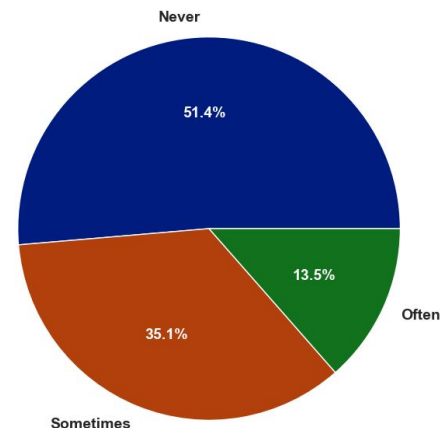
I use hardware/infrastructure that is provided at other Belgian universities/is shared (e.g. experimental setup, ...)



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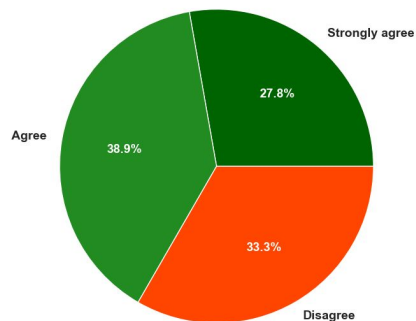
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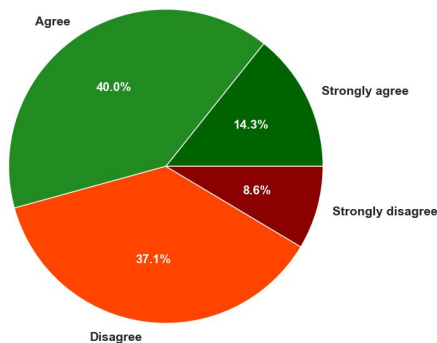
Belgian network

- Are people not connected enough?

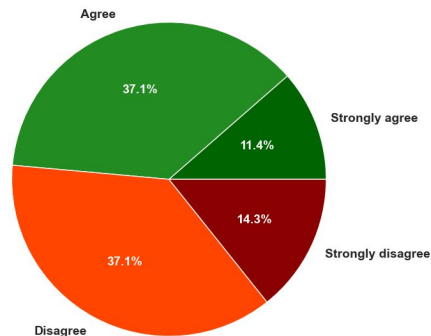
I can easily get in touch with people from other Belgian universities



I would prefer more national meetings



I am well aware of when/where national meetings take place

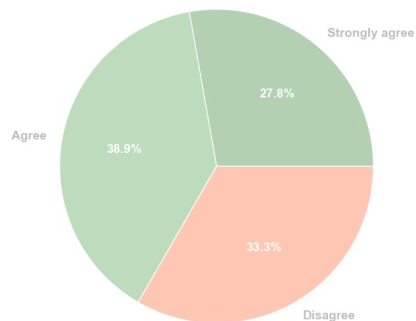


- few central communication channels available (often rely on group leaders)
- ECR mailing list, mattermost channel
- 14.3% of ECRs are not aware when national meetings take place!
- more than half are badly aware

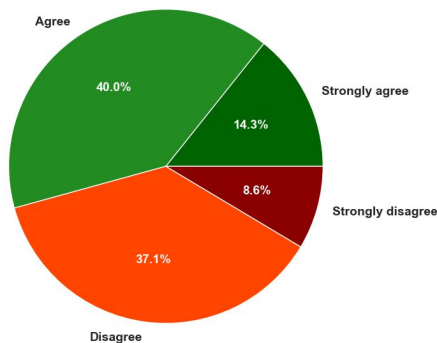
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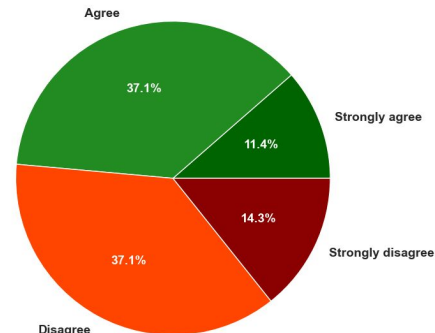
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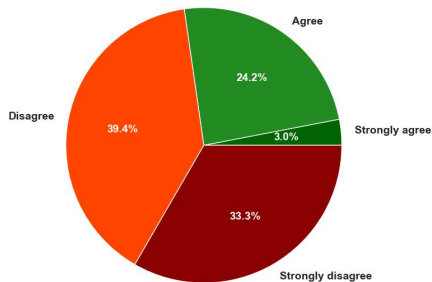


I am well aware of when/where national meetings take place

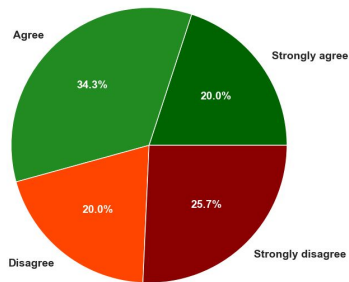


I often join ...

BPS meetings



Be.HEP meetings

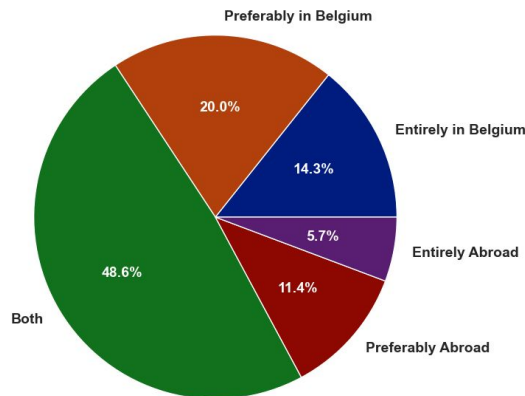


- BPS meetings need better advertisement
- Be.HEP meetings are better communicated but we can always do better!
- one Astroparticle physics ECR raised the lack of national meetings
 - COSPA meetings

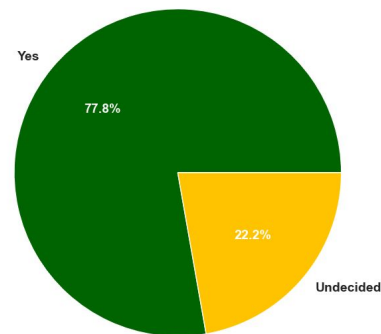
Retention of local talent pool

- People predominantly want to stay in Belgium in the long-term
 - Indicates the qualities of our community!
- In the short term, people have to show more willingness to look abroad
 - Incentivised in tax legislation
 - employed >150 km from Belgium in last 3 years
 - Some people highlight this as a reason for leaving academia
 - Not specific to Belgium, a well known feature of our field

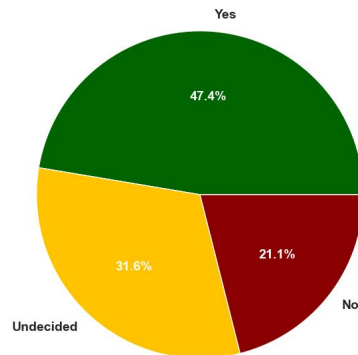
Where will you seek your next position?



Do you want to stay in Belgium in the long-term? (Belgian respondents)



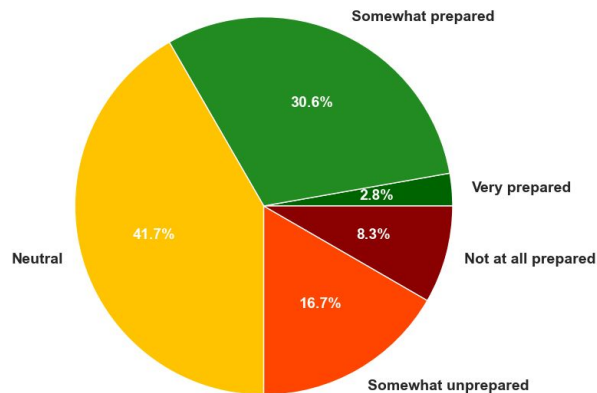
Do you want to stay in Belgium in the long-term? (Foreign respondents)



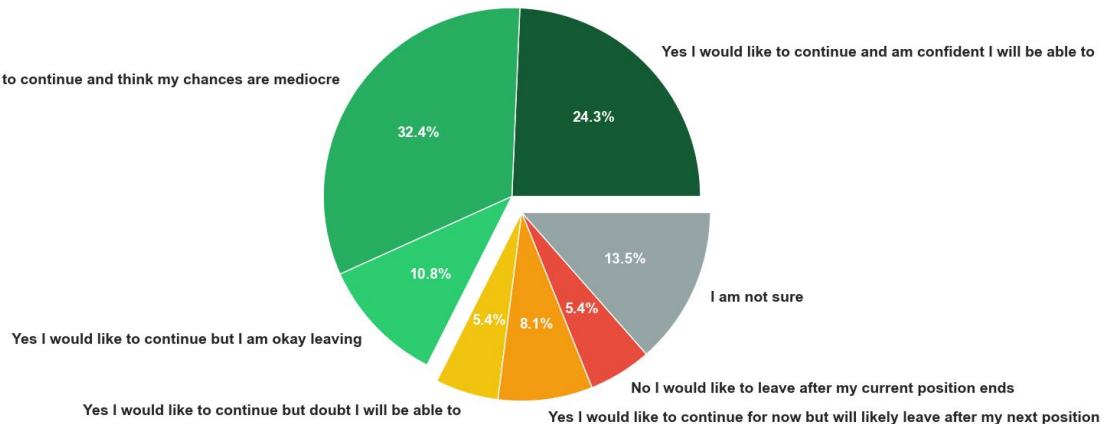
Retention of local talent pool

- $\frac{2}{3}$ of ECRs want to stay in the field and are reasonably confident they will be able to.
- 25% are even confident

How prepared do you feel for the next stage in your career?



Would you like to continue your career in your field of research, and how confident about it are you?

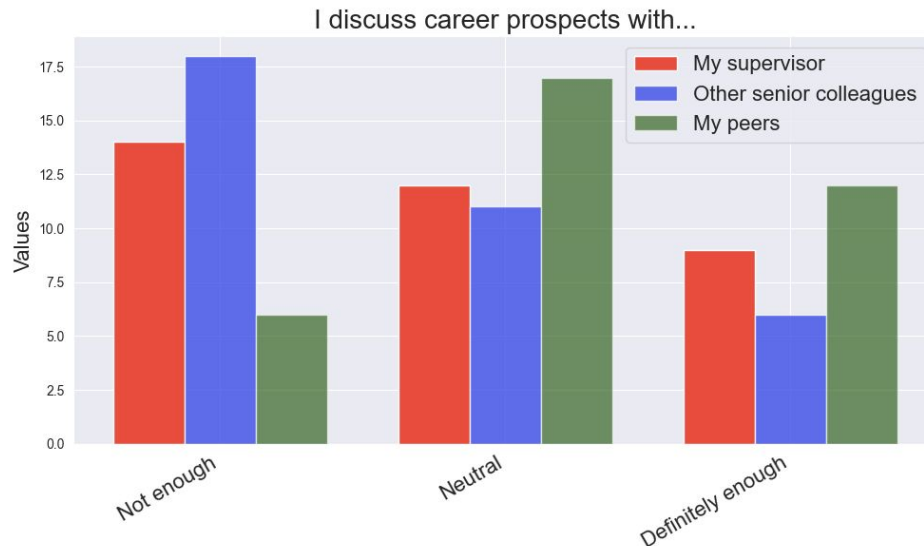


- 25% of ECRs feel unprepared
- strongly correlated with their wish to stay or leave the field

Retention of local talent pool

- A recurring request is getting more guidance in career development
 - especially for PhD students

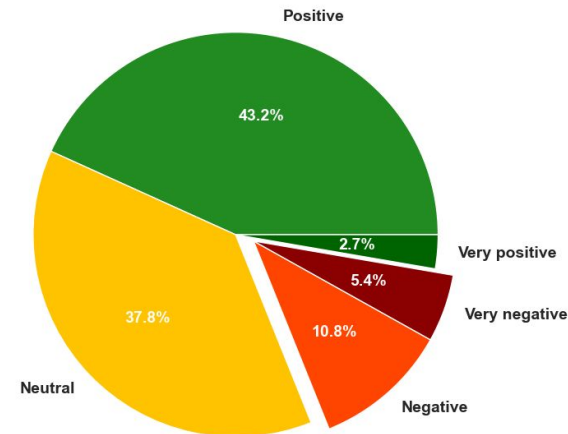
- people discuss with their peers
- For many students, interacting with senior people is challenging
- big untapped pool of knowledge and experience



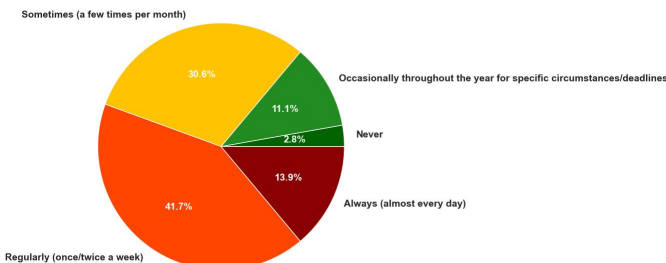
General wellbeing

My current job has a significant impact on my mental health

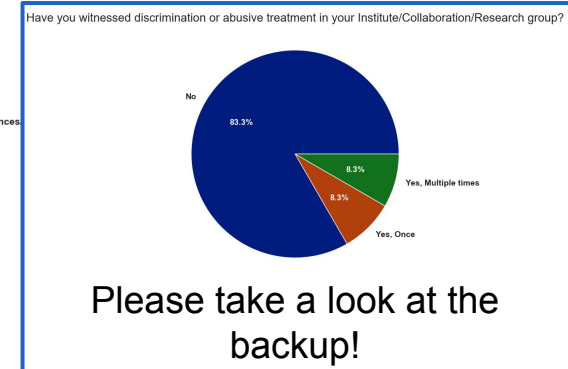
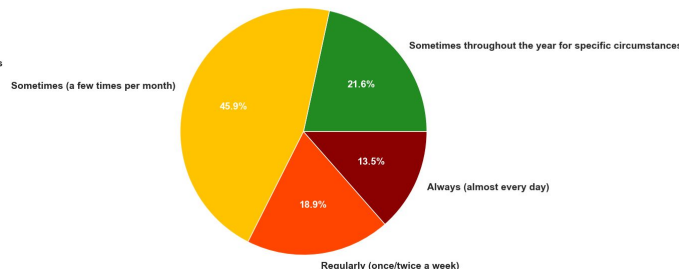
- 16% of ECRs experience their job as having a negative impact on their mental health
- Over half work overtime regularly
- $\frac{1}{3}$ regularly feel under pressure
- This indicates a hypercompetitive field of passionate people
 - What can we do to improve the experience for 16% of the ECRs?



How often do you work overtime?



How often do you feel under pressure and/or stressed?

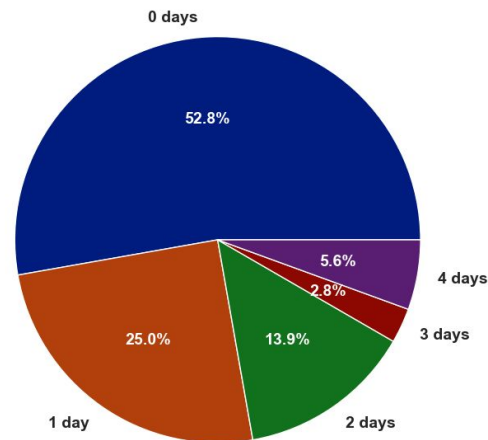


General wellbeing: remote working

- “Less responsibility”, “Less cms meetings”, “Less non-research related tasks”
- “Ensuring meetings don't overrun outside of normal working hours.”
- ...

On average, how many days of your working week do you work from home?

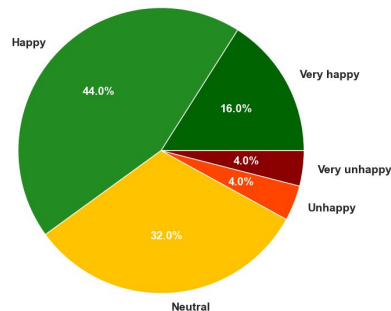
- “working remotely at least 1 day in a week”
(also identified in [ECR white paper](#))
- “save commuting time; noisy work environment”
- “Gives flexibility, and allows for some depressuring.”
- “More comfortable, more efficient & family reasons”



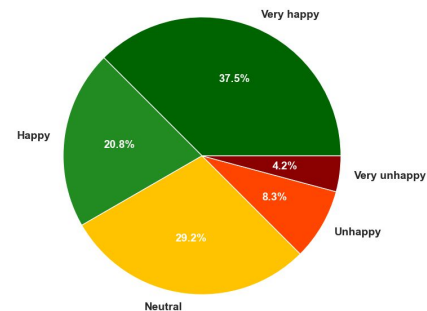
Courses and supervision

- Overall people are very happy with the courses, training and support provided by their institutes and supervisors!

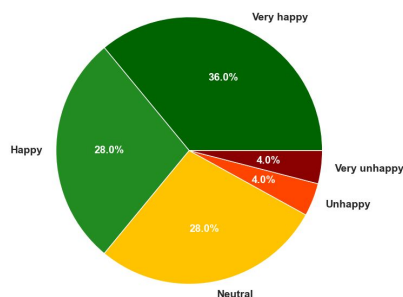
I am happy with the courses and training provided at my institute.



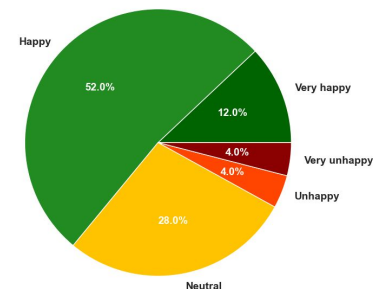
My institute provides a sufficient amount of career development and soft-skills training/resources.



I am happy with the level, and nature, of support my supervisor/university provides for my research work.



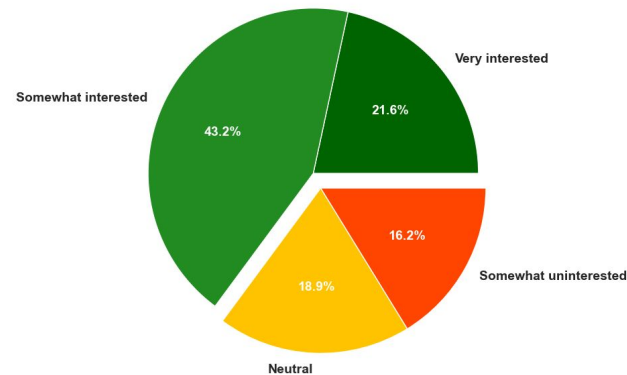
I am happy with the support and mentorship my supervisor/university provides for my wider development as an academic scientist.



Future colliders

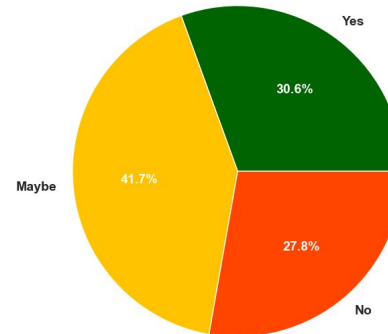
How interested are you in working on future projects for your field of research (e.g. future colliders)?

- Large majority of ECRs is interested in working on future projects
 - but few are currently working on future projects
 - Einstein Telescope
 - EIC, Dune, IceCube Gen2, Muon colliders, SHiP



Would the confirmation of the next major HEP project encourage you to do more work on future prospects/R&D for it?

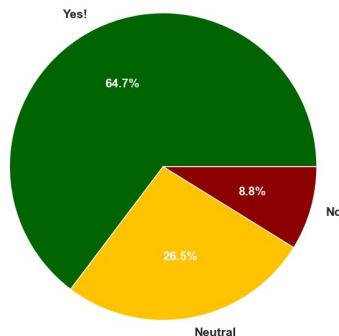
- some involvement in other projects like FCC
- past contributions in LHeC
- HL-LHC R&D and production is currently a big focus
 - CMS tracker, muon system upgrades...
 - The interest is there for young researchers if we want to make the transition!



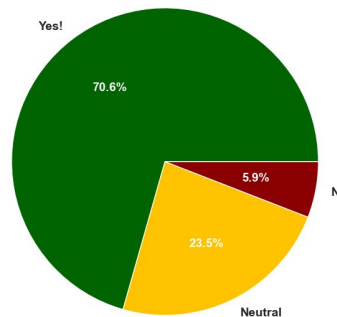
Improving our network: ECR mailing list

- What are people interested in?
 - Job opportunities
 - conferences and schools
 - developments in future projects
 - have more interuniversity collaboration with EPR work
- Belgian mattermost channel
- need input from senior people to keep this going!

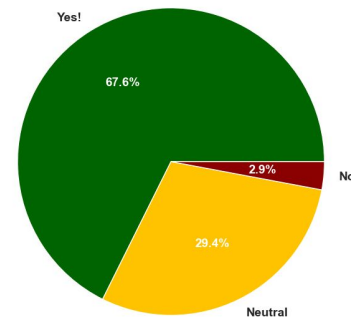
PhD job opportunities to share with your master students



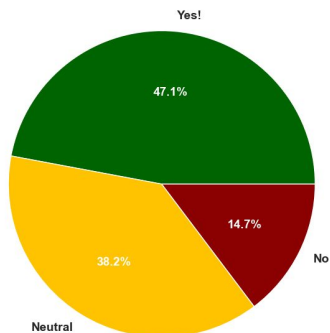
PostDoc job opportunities



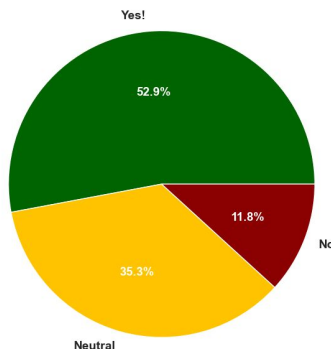
permanent job opportunities



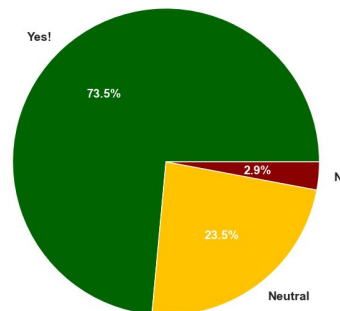
Inform on experiment work in other universities that you can join (e.g. CMS EPR work)



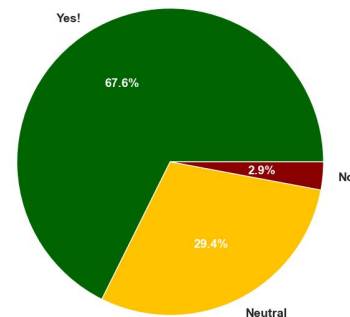
inform on developments in future accelerator projects



inform on Belgian conferences

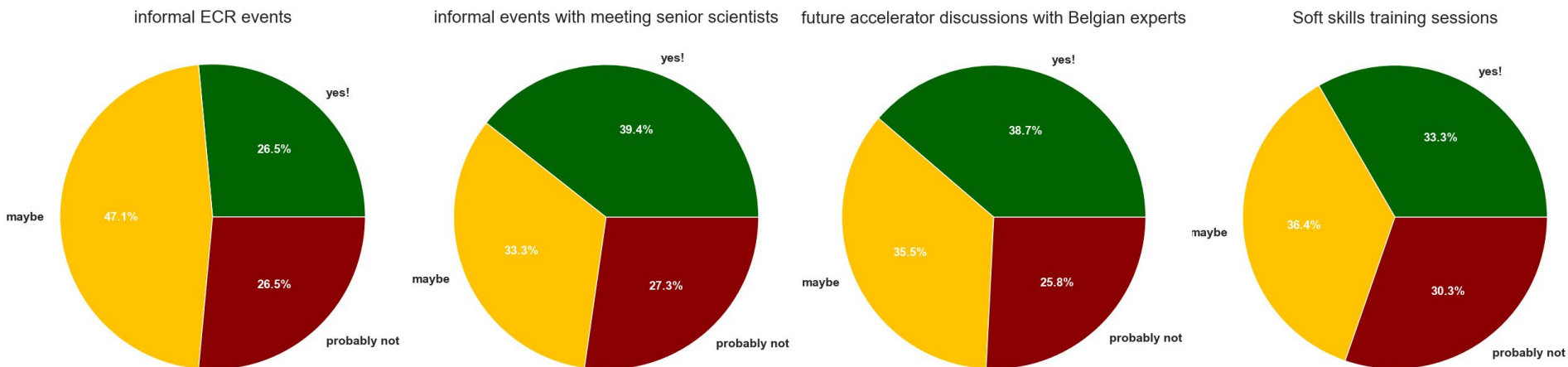


inform on Belgian/online schools, seminars and courses



ECR events

- No immediate target for organising future events
 - It seems like most people look for more interaction with senior scientists
- To be further investigated within the community



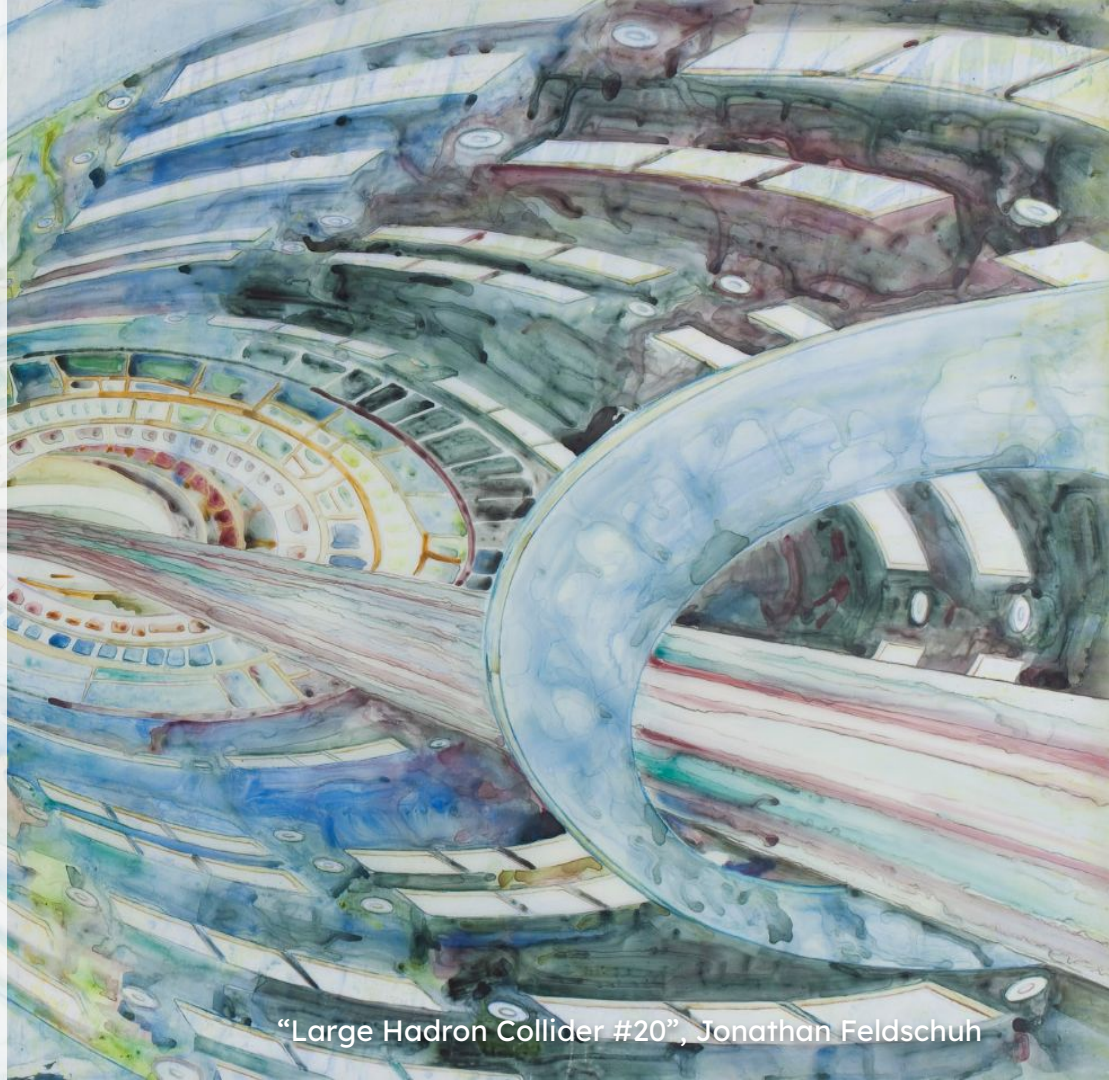
Summary

ECFA ECR panel

- Belgian-Dutch event
- Physics ESPPU contributions
- Physics Project Days

Main findings ECR Survey

- **Postdoc: longer-term employment options**
disincentivized to hire local/long term Postdocs
- **PhDs: more guidance from senior people**
- Remote work positive effect on wellbeing
- **gender imbalance**
 - needs work at **earlier levels** (projects like PPD!)
- Substantial ECR interest in working on future projects!
- Improve cooperation of Belgian ECRs
 - clear advertisement of national meetings, ...
 - mailing list, Mattermost, your help needed!
- Future events targeting ECRs?



“Large Hadron Collider #20”, Jonathan Feldschuh

Summary

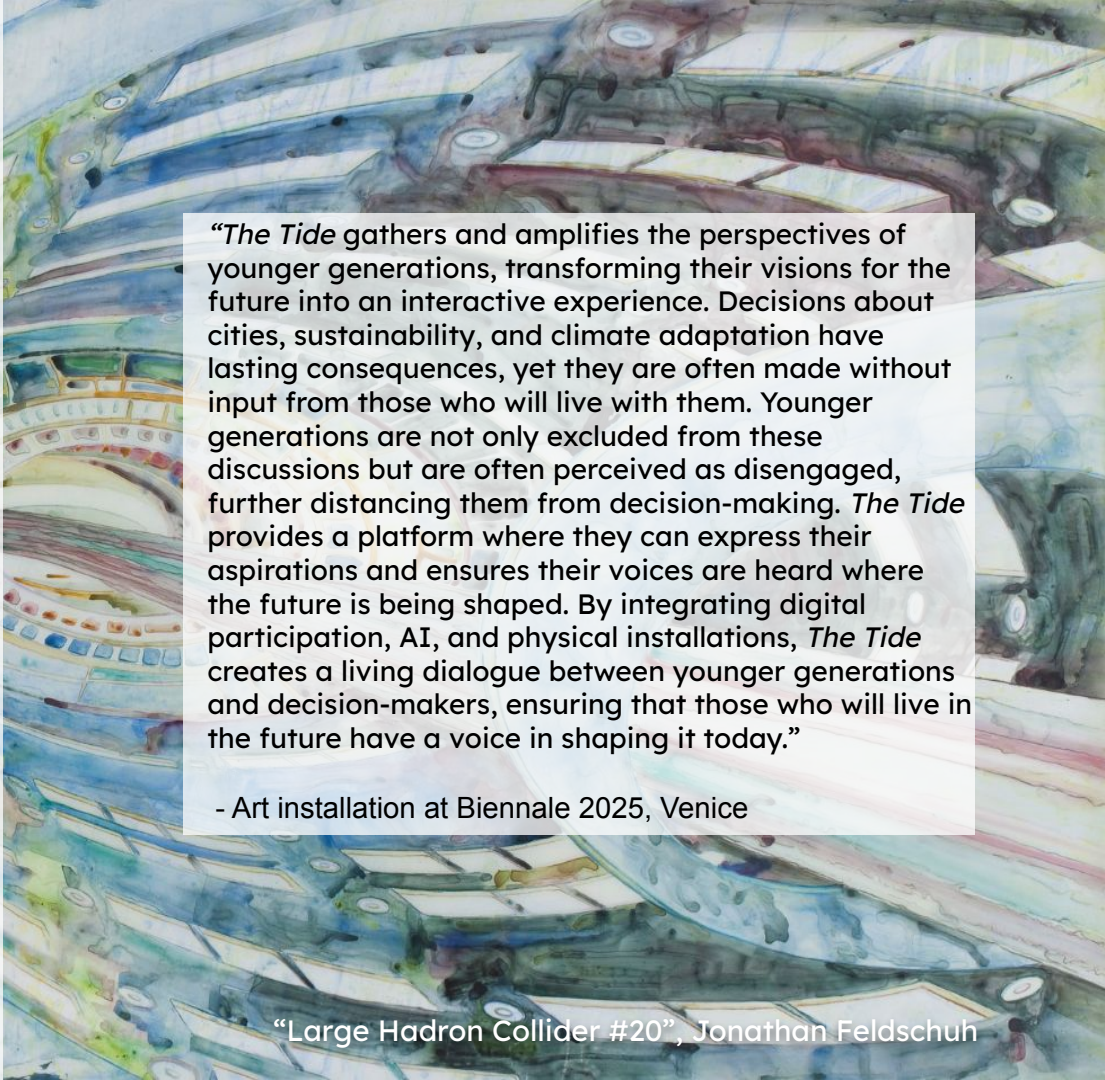
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What can the ECRs do for the wider community?



*“The Tide gathers and amplifies the perspectives of younger generations, transforming their visions for the future into an interactive experience. Decisions about cities, sustainability, and climate adaptation have lasting consequences, yet they are often made without input from those who will live with them. Younger generations are not only excluded from these discussions but are often perceived as disengaged, further distancing them from decision-making. *The Tide* provides a platform where they can express their aspirations and ensures their voices are heard where the future is being shaped. By integrating digital participation, AI, and physical installations, *The Tide* creates a living dialogue between younger generations and decision-makers, ensuring that those who will live in the future have a voice in shaping it today.”*

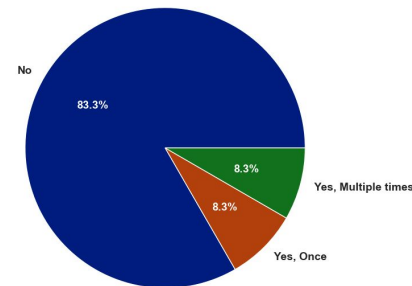
- Art installation at Biennale 2025, Venice

“Large Hadron Collider #20”, Jonathan Feldschuh

Abuse

Have you witnessed discrimination or abusive treatment in your Institute/Collaboration/Research group?

- Bullying
- Racism
- abusive treatment of a project supervisor towards phd students and postdocs
- Ageism
- Gender discrimination (i.e. Sexism or Transphobia)

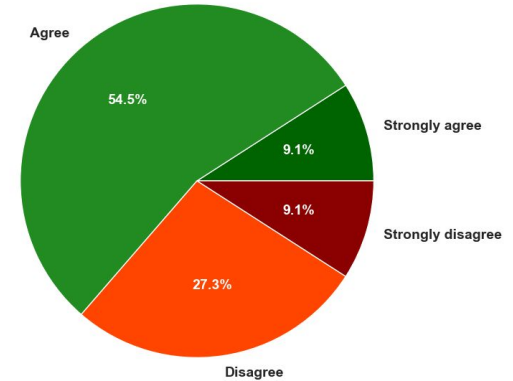
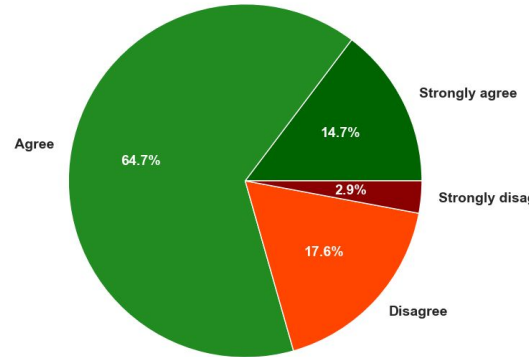


- “i would like people be more friendly and caring at the workplace. Sometimes, it is impressed that they would not care if anything happens to you! As an expat, this is the most depressing fact encountering in Belgium.”
- “There is a hyper-hierarchical work culture in my university, and my attempts to discuss that are only bouncing against a rubber wall”
- “Especially in the hardware projects (since mostly we have to work together), the work style plays an important role to get a good progress. Of course everyone has own working style, but I would like to find a platform to train how we can be better in this aspect”

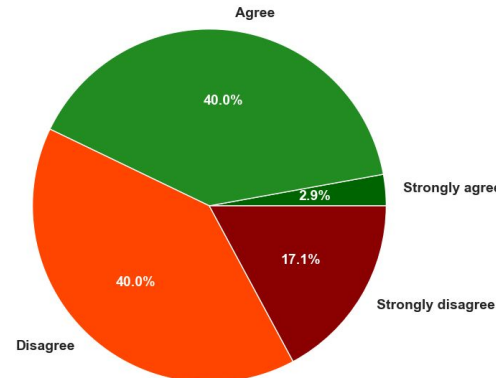
Future collider projects

I am interested in future collider projects and their developments I believe working on future collider projects is good for career prospects

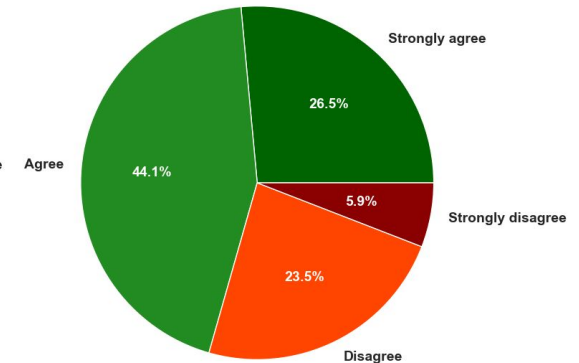
- People are interested in the future of their field
- Overall people are ill-informed about timelines, political landscape, etc.



I am well informed on future collider projects

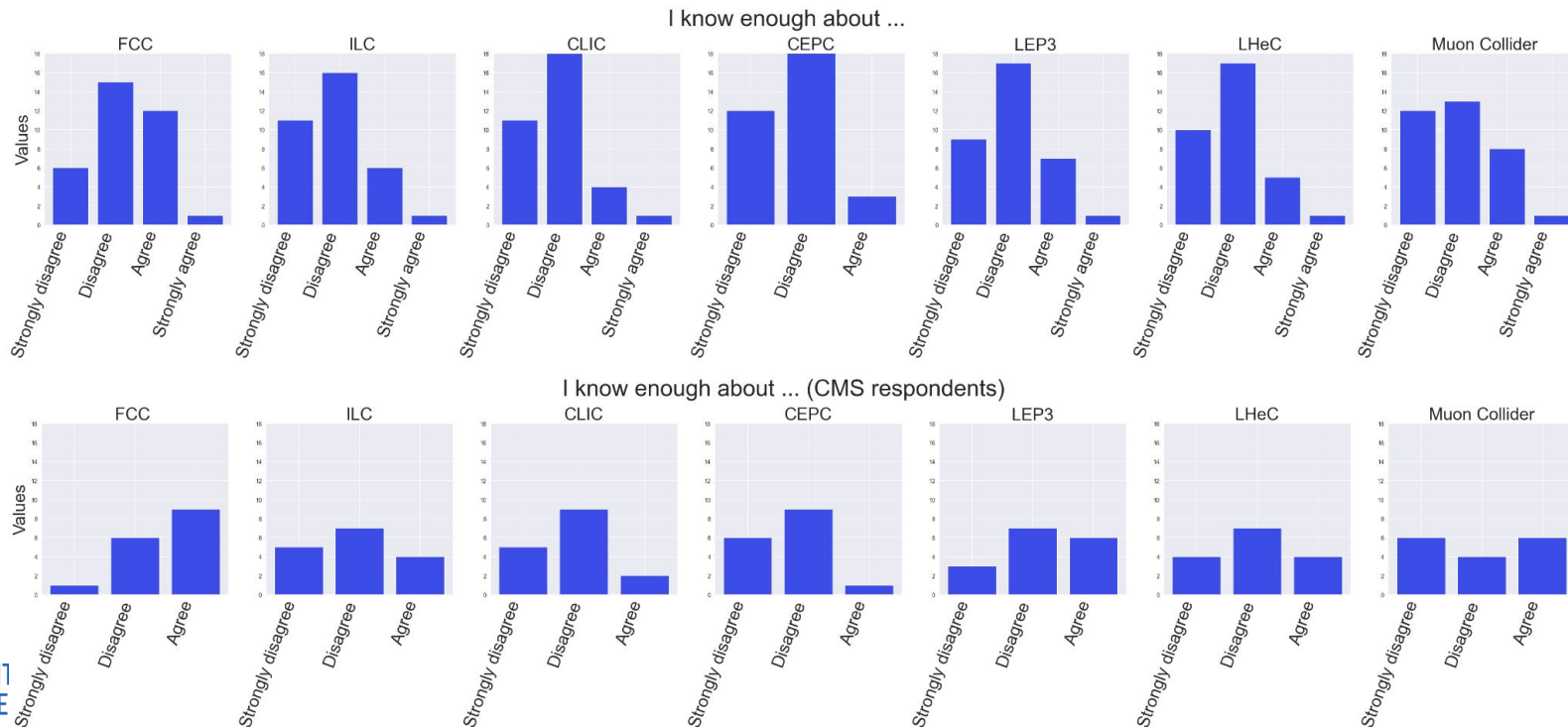


I would want to be better informed by senior people



Knowledge on future colliders

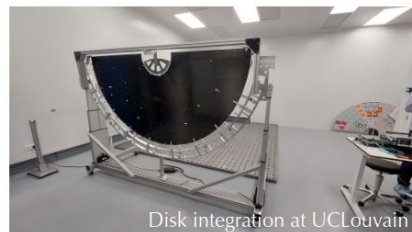
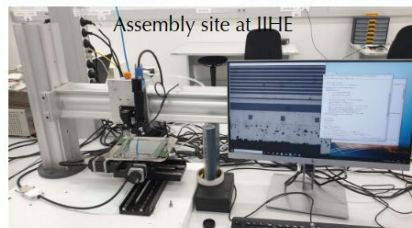
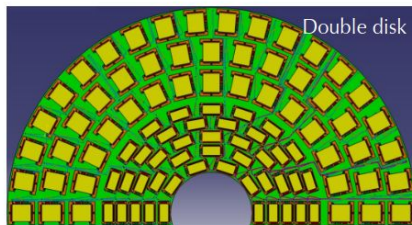
- Few projects are well known
- FCC, LEP3 and Muon collider are best known



Phase 2 contributions in Belgium

CMS tracker

- Belgium is building a **full endcap** (5 double disks) for the Phase-2 Outer Tracker
- **Advanced** capabilities: track information at L1, extended pixel coverage $|\eta| < 4$, reduced material budget, and higher granularity
- Diverse **Belgian contributions** to the Tracker development, production, tests, etc.
- **Mass production** of ≈ 2000 2S modules starts this year at **IIHE (VUB, ULB)**, Brussels
- Followed by the integration into disk modules at **UCLouvain**
- A **major involvement of all Belgian HEP institutions** at the national scale



CMS muon system

