

Input from Early Career Researchers

European Strategy for Particle Physics - Swedish Town Hall Meeting
9th of January 2025

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Introduction

- A discussion session of with us Early Career Researchers (ECRs) was organized on [December 10th](#)
 - Discussion about ECR-specific questions, but also simply about what we *want* to do.
- 6 ECRs joined, different career levels, from Lund, KTH, Stockholm, and Uppsala.
 - Almost all with some involvement in future collider work - either in their research or through ECFA ECR activities for future colliders
 - **With this sample size, we clearly do not represent the full Swedish ECR community.**
- **We discussed some of the recommended topics from ECFA's guidelines, but also more broadly.**

We will have another meeting soon! Date and time TBA.

Which is the preferred next flagship project at CERN?

- A majority favor the FCC
 - Mainly discussed FCC-ee, but the full integrated program is interesting
- In general, the most important elements for us to consider is:
 - **Convincing physics potential**
 - **Timing** and the large time gap before the next collider starts
 - The worry of the participants about the time gap varied a bit
 - Some are more open to a longer R&D period
 - “We can surely hone our analysis skills elsewhere in the meanwhile.”
 - **Sustainability**
- Most of us think CERN should proceed with FCC even if other options start construction, CEPC, ILC etc.
 - If CEPC, maybe go straight to FCC-hh? (Is that possible?)
 - Impression of the CEPC as not being an inclusive and global project. Limited interest in working in China, far away, political etc.
 - No clear expressed interest in the linear collider proposals.

Diverse physics program beyond colliders

- **All agree that a diverse physics program beyond colliders is very important!**
- The European non-collider projects and their physics prospects should be more emphasized in the ESPPU
 - **Clearly there is even potential for experiments in Sweden**
 - Important to get a full picture of the European particle physics community
- In general, even if there some worry that there will be less funding for non-collider projects if CERN goes ahead with FCC, most still support a flagship project at CERN.

Keeping and growing the large community

- Ideally, we want to keep and grow the large particle physics community
 - Support FCC with 4 interaction points (not 2)
 - Keeps the big LHC community and room for a diverse detector program
 - Clearly the best option *for* CERN
- The FCC would put us at the forefront of particle physics, but is it enough to keep the excitement for particle physics?
 - **Disagreement whether the Higgs precision measurements and the rest of the physics program for an e+e- machine is enough or not**
 - “Not only about collecting more digits to the precision of each parameter but fully exploit Higgs connection to the open physics questions and BSM models”
 - **How to make the best of the R&D in hardware and software?**
 - “With FCC-ee being the sort of ‘safe’ collider option, will it produce the most interesting (and societally beneficial) R&D?”

Engaging with the general public and decision makers

- Concern that FCC will be hard to sell to the decision makers.
 - Are funding agencies and the general public as excited about this as we are?
 - Important to highlight the return from particle physics in general, and CERN specifically, to the society
- Design a marketing campaign aimed at decision makers?
 - Can we have a common message from the HEP community?
 - Balance: Also important to highlight the smaller non-collider experiments when promoting

Career prospects

- We want to highlight career prospects, long-term commitment, and ECR leadership questions in the national input
 - Specifically, job security and mobility challenges are emphasized
 - Easier to get people to engage in long-term projects
 - Strengthen the collaboration with industry
 - Also to benefit *us* in HEP
 - Sweden specific - try industrial doctoral student projects (the student is partly connected to a project at the university and then partly in industry)?
 - Make transitioning **into** collider experiments easier, value years spent in industry or other neighboring fields
 - “Where are the engineers?” - concerned data analyst

ECR involvement

- For future strategy updates - appoint an official ECR position in the ESG and/or PPG.
 - To promote the ECR perspective
 - **Always important but even more so now when these long-term projects are being discussed**
 - Hopefully increase transparency of the decision-making and **engage more ECRs in the process**

Sustainability and environmental impact

- **Environmental concerns important for the majority of the ECRs!**
 - How much are we willing to “sacrifice” for the environment?
 - Even *if* not necessarily a collider showstopper, it should be thoroughly considered when building and running.
 - In terms of personal sacrifices: how much are we willing to cut down on travelling? And similar questions.
 - No specific concrete points mentioned during the discussion. To be further discussed in the future after the inputs from sustainability working groups, the different collaborations, etc.

The ECR white paper

A larger ECR white paper is being compiled, with contributions from all the ECFA/CERN member states, on the same time scale as the national inputs. Look forward to that for a broader and more detailed perspective on ECR attitudes about the strategy update

ECRs, **please respond to the survey** that is currently being circulated:

<https://limesurvey.web.cern.ch/174656?lang=en>

Also, [register for and attend](#) the reveal of the first white paper draft on February 20!

Summary

Good 2 hour discussion on December 10th. Consensus about very few things, and we didn't produce an official statement together (yet?), but some takeaways were:

- **Mostly pro-FCC**, concerns and **limited interest in alternative colliders**. The choice or non-choice of collider should especially consider:
 - Convincing physics potential
 - Timing and the large time gap before the next collider starts
 - Sustainability and environmental impact
- **Defend non-collider physics in the national input**
- **Questions about how to convince funding agencies and the public about this.**
- **Highlight career prospects, long-term commitment, and ECR leadership questions in the national input**
- **Propose greater ECR involvement and transparency in future ESSPUs**
- **Environmental and sustainability angle important**

Thank you for your attention!