Future colliders WG

ECFA ECR Panel Meeting
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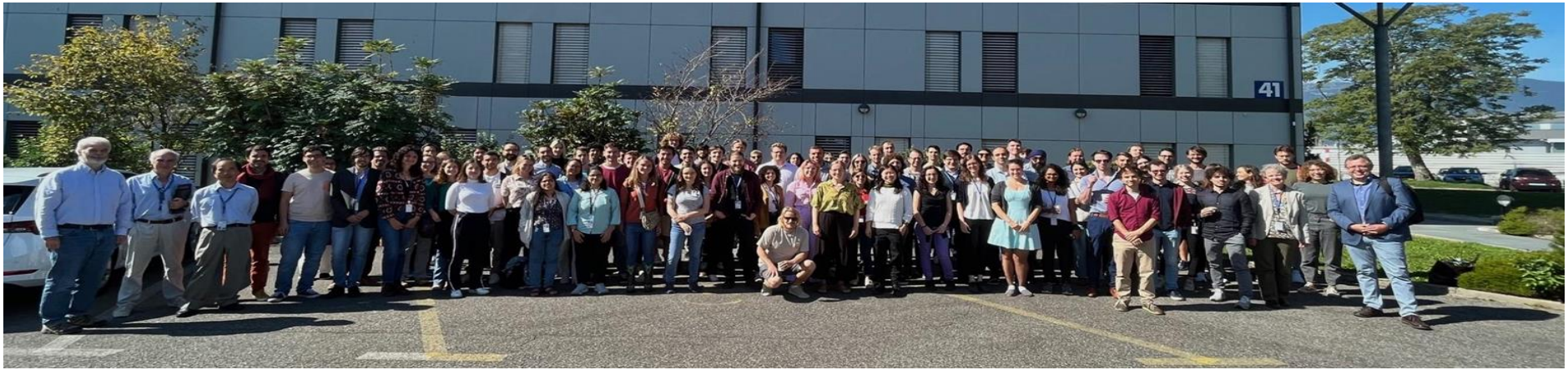
Future colliders for early-career researchers, 27th of September 2023

Short presentations on prospects, lots of time for discussions

→ Almost one hundred in-person participants, > 100 on Zoom

→ Summary of the CERN event: https://arxiv.org/abs/2407.01852



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→ Blueprint for national events on future colliders for ECRs: https://zenodo.org/records/11148009

- Also inspired by UK Future Collider town-hall
- Austria, Czech Republic, Czech Republic+Slovakia, Germany, Italy, Belgium+Netherlands, Sweden+Denmark+Finland!

ECFA ECR letter to March 2024 CERN Council (see also our report)

Dear CERN Council,

In the 70 years since its founding, CERN has not only established itself as the global centre of particle physics research but as a powerful symbol of international collaboration and scientific excellence. This would never have been possible without the unfaltering support offered by the CERN member states.

As a community, we feel immense pride and gratitude that we are part of this journey of scientific exploration and opportunity which CERN has pioneered. While the High-Luminosity LHC constitutes a much-anticipated and necessary advance in the LHC program, a clear path beyond it for our future in the field must be cemented with as little delay as possible. For the field to sustain the population, expertise, and enthusiasm required to overcome the challenges of what CERN's next major project/accelerator will present, the ECR community needs certainty without delay that High Energy Physics has an immediate future beyond HL-LHC, and that funding and positions required to realise our future will grow rapidly.

We, the ECFA Early-Career Researchers Panel, on behalf of the ECR community, would like to strongly urge the Council to make every effort to ensure that the process of evaluating, selecting and implementing potential future projects, which will define this century of High Energy Physics for Europe and the World, proceed with as quick a pace as possible, accelerating its time frame to start the European strategy process as early as possible and conclude by early 2026. This will go some way in helping further secure CERN's unique position in science, technology and international cooperation for the next 70 years and beyond.

Kind regards,

The ECFA Early-Career Researchers panel

European Particle Physics Strategy Update

2020 Update of the European Strategy for Particle Physics (EPPSU)

Year-long process, 20 strategy statements

3.a: An **electron-positron Higgs factory** is the **highest-priority next collider**. For the **longer term**, the European particle physics community has the ambition to operate a **proton-proton collider at the highest achievable energy**. Accomplishing these compelling goals will require innovation and cutting-edge technology:

7.b: Particle physics, with its fundamental questions and technological innovations, attracts bright young minds. Their **education and training** are crucial for the needs of the field and of society at large. For **early-career researchers** to thrive, the particle physics community should place strong emphasis on their **supervision and training**. Additional measures should be taken in large collaborations to **increase the recognition of individuals developing and maintaining experiments, computing and software**. The particle physics community commits to placing the principles of **equality, diversity and inclusion** at the heart of all its activities.

Short history of ECFA ECR

The ECFA ECR panel was created as a follow-up to the ECFA Early-Career Researchers response to the 2020 Update of the European Strategy for Particle Physics (rather ad-hoc, not a panel)

*The objective of the ECFA Early-Career Researchers (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**. In its advisory role to ECFA, the panel reports to ECFA on a regular basis. An annual report of the ECFA ECR Panel is added as a standing item to the agenda of Plenary ECFA meetings.*

→ The ECFA ECR panel is tightly linked with the Update of the European Strategy → We'll be in the loop from the beginning next time!

European Particle Physics Strategy Update

28th of March, mail by Eliezer Rabinovici, President of CERN Council

On 21 March 2024, the CERN Council decided to launch the process for updating the European Strategy for Particle Physics. I am pleased to announce that the ***deadline for submitting written input*** *has been set for* ***31 March 2025****, with a view to* ***concluding the European Strategy update process in June 2026*** *…*

→ Earlier start and end then what was previously expected!

What's the scope?

… the Strategy should aim to develop a visionary and concrete plan that greatly advances knowledge in fundamental physics **through the realisation of the next flagship project at CERN**. This plan should attract and value international collaboration and allow Europe to continue to play a leading role in the field.

Regarding a future collider project, the Strategy update should include the **preferred option for the next collider at CERN** and **prioritised alternative options** to be pursued if the preferred plan turns out not to be feasible or competitive.

Timeline and structure

- Anyone can submit input to the strategy (31st of March)
  - Future collider communities
  - E.g. ECFA countries, collaborations, ...
  - And **us**!

9 WGs:

- EW/Higgs Physics
- Strong Interaction
- Flavor Physics
- BSM
- Neutrino Physics and Cosmic Messengers
- DM and Dark Sector
- Accelerator Science and Technology
- Instrumentation
- Computing

1 ECR scientific secretary for each WG

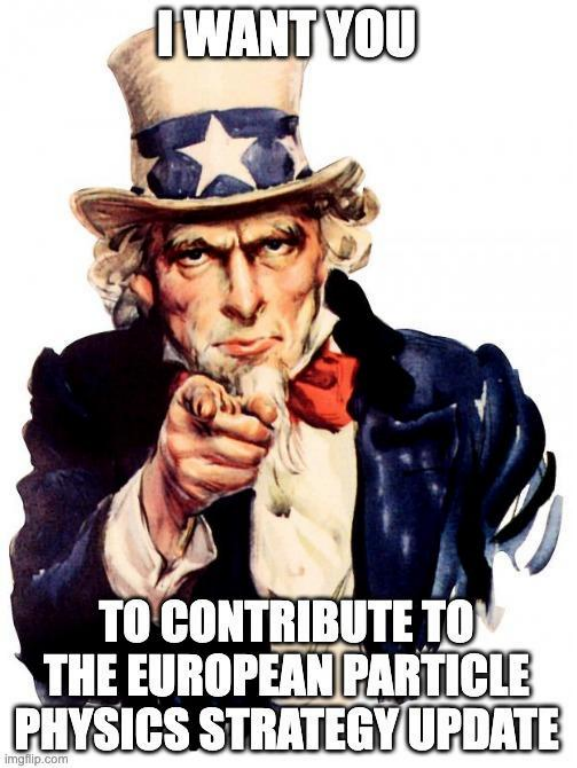
Early-career researcher white paper input

This time we want to give input to the strategy (not respond to its results)

- Open to anyone, beyond our ECFA ECR panel
- First hybrid town-hall meeting at 3rd ECFA Workshop on e^+e^- Higgs/EW/top factories in Paris, 9-11. October 2024
  - Discuss topics to be addressed
  - Work in ad-hoc WGs
- Second hybrid town-hall meeting adjacent to Plenary ECFA meeting 14-15. November 2024 at CERN
- Draft of ECR white paper until ~end of January
  - Endorsement by ECFA ECR panel, upload to arXiv, submission to Strategy

→ “Towards an ECR input to the ESPP update” minutes

→ We circulated an email about this effort → list



Concluding words

Today's ECRs are the leaders of the experiments and theoretical efforts of tomorrow

→ Discuss aspects of future colliders especially relevant to ECRs

- e.g. compatibility with ECR careers

Join us! → Subscribe to eppsu-ecr@cern.ch e-group!

Thanks!

Timeline and structure