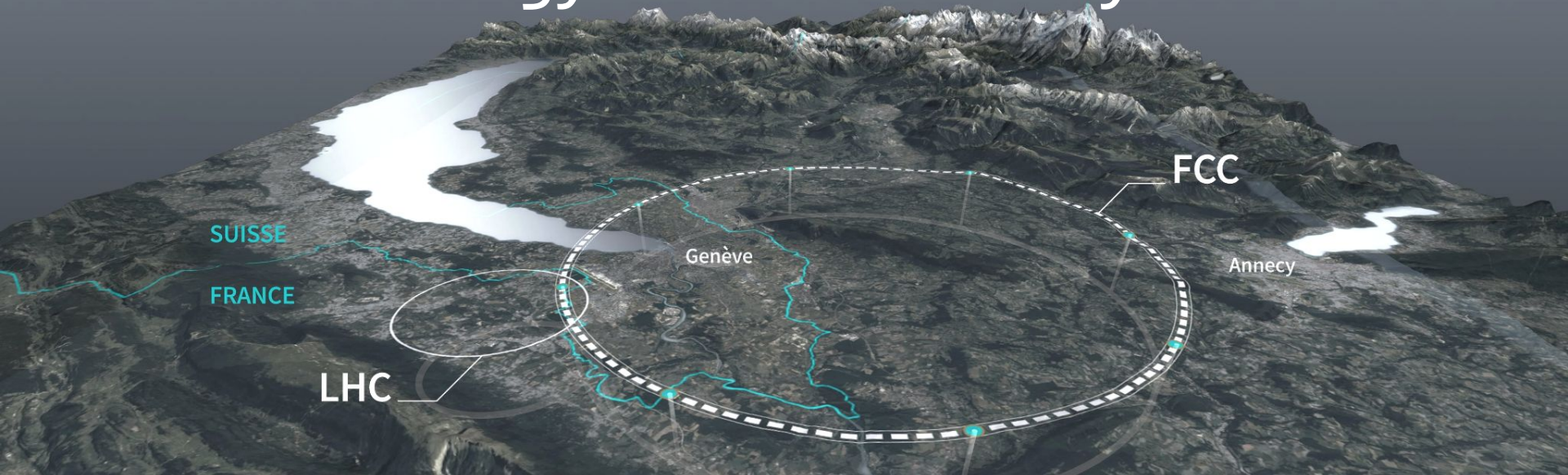


ECR Perspectives on the European Strategy for Particle Physics



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The ECFA-ECR representatives for Sweden

Today's Agenda

- A short presentation about the:
 - The European Strategy for Particle Physics (ESPP)
 - The Swedish "national input" to the ESPP
 - Involvement in the national input from us ECRs
 - Preparing for the January 9 [town-hall meeting](#) in Stockholm
- A round of introductions
- Inspiration: Some discussion topics from "ECFA" and the ECR Whitepaper
- Discussion
 - What future do we want to see?
 - What would we like to bring to the national input?

Summarizing the ESPP

“The [European Strategy for Particle Physics](#) (ESPP) is the cornerstone of Europe’s decision-making process for the long-term future of the field. Mandated by the CERN Council, it is formed through a broad consultation of the **grass-roots particle physics community**, it actively solicits the opinions of physicists from around the world, and it is developed in **close coordination with similar processes in the [US](#) and [Asia](#)** to ensure coordination between regions and optimal use of resources globally.”

- Originally adopted by the CERN council in 2006.
- [First update](#) in 2013, following the Higgs discovery.
- [Second update](#) in 2020, focusing on the importance of the high luminosity LHC, European commitment to neutrino physics, and dreaming about possible (ambitious) post-LHC facilities.

Similar strategy documents from astrophysics’ [APPEC](#) and nuclear physics’ [NuPECC](#).

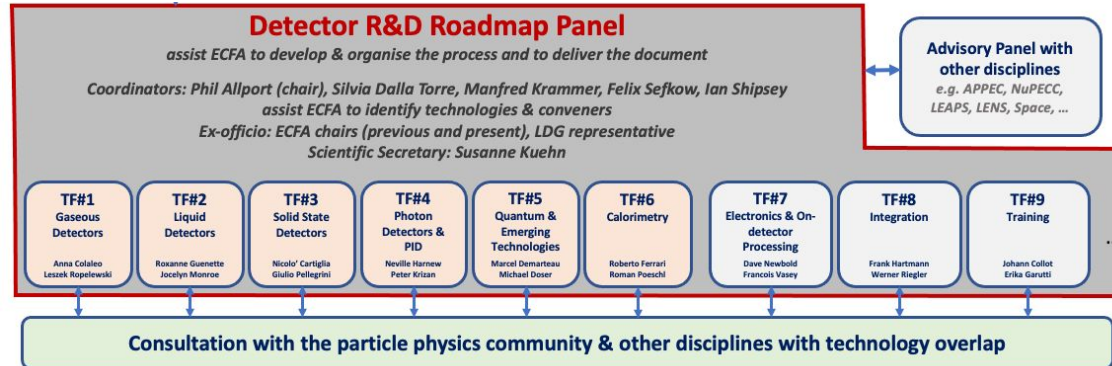


Since the 2020 update

Very serious efforts at designing an electron-positron Higgs factory:

- The future circular collider (FCC) [feasibility study](#) (Report due March 2025)
- [Several](#) linear collider collaborations
- The Circular Electron Positron Collider (CEPC) [proposal](#)

The [Detector R&D Collaborations](#) (DRDs) hosted by CERN have been formed, to produce R&D for both a future collider and for projects on shorter timescales. Similarly, there is the [Accelerator R&D Roadmap](#).



What else is in the ESPP?

- Other essential scientific activities
 - Dark Matter
 - Theory
 - R&D
 - Computing
- Particle physics is broad
 - **Crosses into both nuclear and astroparticle physics**, with many common interests!
- Environmental and societal impact
 - **Energy usage and environmental impact of travel**
 - Greater recognition of ECRs
 - Promote knowledge and technology transfer
 - Inspire the public (fundamental physics is culturally important)

The ESPP Update (ESPPU)

Now the CERN council has [asked](#) for a new update.

Critically: this strategy update will decide whether we start building a new collider at CERN. A life-long project for many of us.

We are in an exciting time if we want to steer the future of fundamental physics.

The steps:

1. Collecting community input (**we are here**)
2. Open symposium 23 - 27 June 2025
3. Drafting of the ESPPU

Timeline for the update of the European Strategy for Particle Physics



Council appointment of the members of the PPG and decision on the venue for the **Open Symposium**

End September 2024



December 2024

Council decision on the venue for the **ESG Strategy Drafting Session**

Deadline for the submission of main input from the community

31 March 2025



26 May 2025

Deadline for the submission of additional national input in advance of the **Open Symposium**

Open - Symposium

23-27 June 2025



End September 2025

Submission of the "Briefing Book" to the ESG

Deadline for the submission of final national input in advance of the **ESG Strategy Drafting Session**

14 November 2025



1-5 December 2025

ESG Strategy Drafting Session

Submission of the draft strategy document to the Council

End January 2026



March and June 2026

Discussion of the draft strategy document by the Council and **updating of the Strategy**

Who makes the decisions here?

First, input is collected from the community:

- The [Physics Preparatory Group](#) (PPG) publishes a physics briefing book
- National inputs from member states
- Anyone that takes grass-roots initiative!
- Biased example: [The ECR Whitepaper](#)

Then, the ESPP is written by the European Strategy Group (ESG), which consists of various representatives from CERN, member states, the Lab Directors Group (LDG) and other invitees.

National inputs

The European Committee for Future Accelerators (ECFA) has drawn up a set of [guidelines](#) for how to gather input from each member state, and recommends having national town-hall meetings to discuss this.

- ▶ A first town-hall meeting to discuss the input from Sweden will be organised in Stockholm on January 9, 2025... **Mark your agendas.**
 - ▶ Organisation committee: R. Brenner (ESG & UU), A. Ferrari (RECFA & UU), S. Stranberg (Stockholm), D. Silvermyr (Lund).
- ▶ **Prior to this town-hall meeting, local meetings at Swedish institutes, as well as among the ECR community, are strongly encouraged in order to gather a first set of inputs!**
- ▶ More meetings should follow:
 - ▶ spring 2025 to discuss EPPS inputs (deadline for comments on May 26),
 - ▶ autumn 2025 after the release of the Briefing Book (deadline for comments on November 14).

ECR perspectives in the national input

Opportunity for us to bring up ECR perspectives!

Both the negative: Shine light on ECR-specific issues.

And the positive: What do we ECRs want to pursue in the future!

We will take minutes in today's meeting, and try to bring up your perspectives on January 9. We will not form some official statement together here.

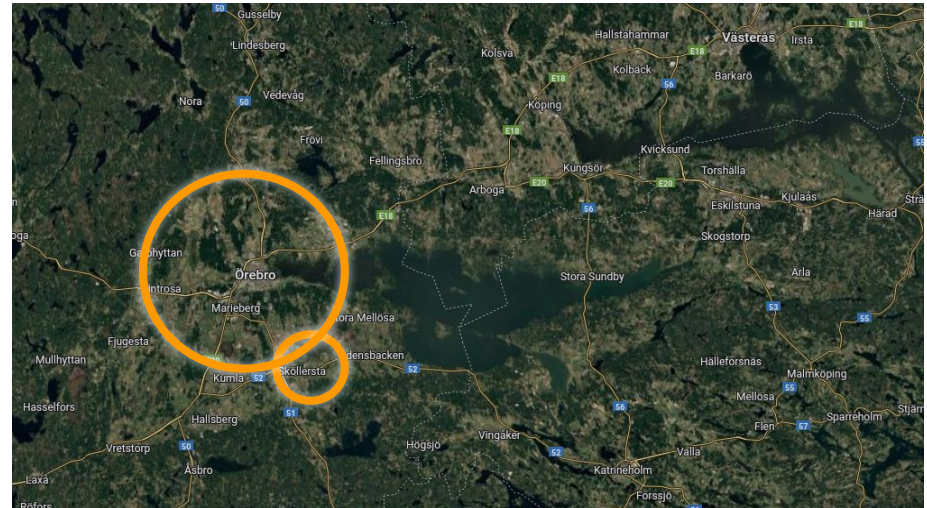
You are also welcome to attend the town-hall meeting yourself. Then we hope that these discussions may serve as some inspiration.

Feel free to reach out to us ECFA-ECR representatives at ecfa-ecr-sweden-admins@cern.ch if you want us to bring up some particular question on January 9!

Round of introductions

Icebreaker questions

- Where are you in your career?
- Which institute are you at?
- What do you work with?
- Optional: Anything particular you'd like to bring up today?



Some concepts have already been dropped from the FCC feasibility study.

Inspirational Questions

ECFA National Input Guidelines

While the ESPP is not only about building the next big collider, it is naturally the most critical question right now.

“It is imperative that the European HEP community should provide explicit feedback on both the preferred and alternative options for this “next collider at CERN”, which will be the Laboratory's next flagship project, and an explanation of any specific prioritisation.”

This will certainly be discussed in length on January 9. While these questions are about very concrete accelerator proposals, they pose an opportunity to think about what our careers will look like with them.

CERN Flagship Prioritization

3a) Which is the preferred next major/flagship collider project for CERN?

3b) What are the most important elements in the response to 3a)?

- i) Physics potential
- ii) Long-term perspective
- iii) Financial and human resources: requirements and effect on other projects
- iv) Timing
- v) Careers and training
- vi) Sustainability

Interpreting these questions

1. How CERN-centered do we want our field to be? (Too collider-centered??)
2. If there's no Higgs factory, but instead we wait a decade before building something new (e.g. a muon collider), are we okay with that time gap?
3. Do we even want to work on this really long time-scale? Can we attract young people to our fields if the end goal is half a century away?
4. The only certainty from a lepton collider is excellent Higgs precision measurements, is that enough to excite you?
5. How strict should the environmental requirements on the FCC be? (Really is a moral question!)
6. In the list of prioritisations 3b), is there anything we should push in the national input?

CERN Flagship Prioritization

3c) Should CERN/Europe proceed with the preferred option set out in 3a) or should alternative options be considered:

- i) if Japan proceeds with the ILC in a timely way?
- ii) if China proceeds with the CEPC on the announced timescale?
- iii) if the US proceeds with a muon collider?
- iv) if there are major new (unexpected) results from the HL-LHC or other HEP experiments?

3d) Beyond the preferred option in 3a), what other accelerator R&D topics (e.g. highfield magnets, RF technology, alternative accelerators/colliders) should be pursued in parallel?

3e) What is the prioritised list of alternative options if the preferred option set out in 3a) is not feasible (due to cost, timing, international developments, or for other reasons)?

3f) What are the most important elements in the response to 3e)? (The set of considerations in 3b should be used).

Interpreting these questions

1. What if CERN loses its main status as the *central hub* for particle physics? Is it important that CERN just does something at all, to keep this field from escaping Europe?
2. On what continent could you see yourself living and working?
3. If we enter a more R&D-heavy period, do you see yourself engaging in that? Does it seem easy to get involved?

Topics from the ECR Whitepaper

In the [ECR whitepaper effort for the ESPP](#), a number of working groups have been formed:

1. Communicating the importance of particle physics
2. Future colliders
3. The future beyond colliders
4. Career prospects and ECR leadership
5. Diversity, inclusion and mental health
6. Interplay of particle physics with neighboring fields

That have posed many thoughtful questions!

ECR Workshop on the European Particle Physics Strategy

14 November 2024
CERN
Europe/Zurich timezone

| |
|--|
| Overview |
| Timetable |
| Contribution List |
| My Conference |
| ↳ My Contributions |
| Registration |
| Participant List |
| Videoconference |
| Event poster |
| Contact |
| epssu-ecr-organisers@cern.ch |

Event for all early-career researchers (ECRs) to get involved into the process of writing an ECR white paper as input for the [European Particle Physics Strategy Update \(EPPSU\)](#). The event is hosted adjacent to the [115th Plenary ECFA Meeting](#) at CERN in hybrid format, remote participants to join via Zoom.

Are you an early-career researcher? According to the ECFA-definition, we ask all with non-permanent positions or holding the PhD for less than 10 years to contribute to the future of particle physics.

You want to stay informed or also contribute more to the white paper initiative? Please subscribe to the mailing list (epssu-ecr@cern.ch) or join our Mattermost channel ([ECRs for EPPSU 2024](#)).

What can you expect from the day? In the first part of the workshop, the individual working groups formed after the last workshop adjacent to the ECFA Paris workshop will introduce themselves and give a report about the first meetings shaping the content and plans for them. After the lunch break, the individual WGs have parallel session to discuss further in the smaller groups. And finally, we will host an informal discussion among ECRs, accessible to everyone with a special focus on all CERN-based ECRs, where the workshop is summed up with a general introduction of the process, the ideas for the future and options to discuss broadly about the field and future colliders. Please check out the detailed [timetable](#).

Curious but having more questions? No problem, first of all, more information about the event and its logistics will follow in the next days. But if you have in the meantime already a question or topic to raise, please send an e-mail to epssu-ecrorganisers@cern.ch. And if you think your fellow has not yet heard of this, please tell him/her and spread the word - the more the merrier!

Looking forward to an interesting, active workshop with a lot of discussions!

Organisers:
Jan-Hendrik Arling, John Alexander Burgman, Axel Gallen, Abdelhamid Haddad, Laura Huhta, Armin Ilg, Krzysztof Mekala, Emanuela Musumeci, Leonhard Reichenbach, Daniel Reichelt, Francesco Pio Ucci

Starts 14 Nov 2024, 09:00
Ends 14 Nov 2024, 19:00
Europe/Zurich

CERN
40/52-001 - Safe Drac
Go to map

[ECR Flyer.pdf](#)

Communicating importance of particle physics

1. Training and outreach
 - a. Should this get attention in the strategy update itself?
 - b. Are we still attracting young bright minds to our field?
2. Mentorship
3. Societal engagement
 - a. Will the general public need more persuasion that a new collider is worthwhile? Maybe this is a tough sell compared to the LHC!

Future colliders

1. Push for open science and CERN's commitment to collaboration?
2. Generally, should the ECR perspective be stronger in the next update?
3. Demand better transparency in the decision making process?

Tangent: Environmental Sustainability

Before the 2020 ESSPU, there was an open letter with three statements, summarized here:

1. As part of their grant-giving process [...] include criteria evaluating the energy efficiency and carbon footprint of particle physics proposals, and should expect to see evidence that...
2. [...] major particle physics experiment should consider plans for **reduction** of energy consumption, increased energy efficiency, energy recovery and carbon offset mechanisms.
3. European laboratories should invest in [...] digital meeting spaces [...] to minimize the need for frequent travelling to the laboratory...

There was a similar [white paper](#) to the latest US "Snowmass" strategy update.

The future beyond colliders

1. Push for more neutrinos, hadrons, strongly interacting matter, dark matter, and all manners of small experiments, in the ESPPU?
2. Utilize smaller European labs and institutes.
3. Concrete plan for particle physics between major collider programmes.
4. Career support for non-collider/smaller scale experiment researchers, that face unique career challenges.
5. Community building for smaller experiments.
6. Urge ESPPU to pose concrete recommendations for non-collider subfields.

Interplay with neighboring fields

1. Career support for researchers that move to/from particle, from/to neighboring scientific fields and industry.
 - a. Unique career challenges from trying to switch sub-fields.
2. Promote communication, networking, cross-disciplinary collaboration.
 - a. Facilitated through [JENAA](#) (Joint-ECFA-NuPECC-APPEC-Activities...)?
3. Enable and strengthen the communication and collaboration with industry partners.
 - a. Direct industry experience.
 - b. "Shared" doctoral students between industry and academia.

Career prospects and ECR leadership

1. Job security and mobility challenges in the ESPPU?
2. Transitioning *into* HEP, or to/from neighbouring fields?
3. Demand more ECR contributions and involvement in ESPPU planning?
4. Dedicated funding for ECR activities

Diversity, inclusion and mental health

1. What makes a healthy career and what to do when it gets unhealthy?
2. Support systems needed for mental health, DEI and career mobility
3. Monitor progress through regular surveys