

# A Summary of ECRs input to the European Particle Physics Strategy Update

## US Higgs Factory Planning

20 December, 2024

**Abdelhamid Haddad** (ATLAS@LPCA\*, France)

on behalf of the EPPSU ECR input organisers/Authors

# Shaping the Future of Particle Physics



- ❖ **What a Wonderful Place to Be: CERN!**
- ❖ **CERN Council:** The highest authority of CERN, overseeing its activities and strategic direction.
- ❖ In **March 2024**, the CERN Council launched the process for the 3rd **European Strategy Update**.

## Previous Updates!



# European Particle Physics Strategy Update

<https://europeanstrategy.cern/>

- ❖ **Cornerstone of Decision-Making:** Guides Europe's long-term future in particle physics.
- ❖ **Broad Community Input:** Developed through extensive consultation with the global particle physics community.
- ❖ **Promote Synergies:** Coordination with similar processes in the US and Japan.



# EPPSU, How?

The CERN Council mandates two key bodies as part of the European Strategy Update process:

## European Strategy Group (ESG)

The European Strategy Group (ESG) is a body set up by the CERN Council approximately every five years to establish a proposal for the periodic update of the medium-and long-term priorities of the field which it submits to the CERN Council for approval. The ESG is assisted in this task by a Physics Preparatory Group (PPG) and drafts its update proposal taking into account, inter alia, the scientific input submitted by the PPG. The ESG is composed of all the stakeholders of the European Strategy for Particle Physics:

## Physics Preparatory Group (PPG)

The remit of the Physics Preparatory Group (PPG) is to prepare the scientific contribution to the work of the ESG (the “Briefing Book”), based on the input it gathers from the community. The PPG has the following composition:

## Strategy Secretariat

The Strategy update process is organised by the Strategy Secretariat, which establishes a detailed plan, approved by the CERN Council. The Strategy Secretariat prepares the work of the ESG and the PPG, organises their meetings and produces their documents. The Strategy Secretary submits the Draft Strategy Document elaborated by the ESG to the Council for approval. The Strategy Secretariat has the following composition:

[More about the European Strategy Update!](#)

# Strategy Remit!

The Strategy update should include the preferred option for the next collider at CERN and prioritised alternative options to be pursued if the chosen preferred plan turns out not to be feasible or competitive.

The Strategy update should also indicate areas of priority for exploration complementary to colliders and for other experiments to be considered at CERN and at other laboratories in Europe, as well as for participation in projects outside Europe.

The ESG should review and update the Strategy and add other items identified as relevant to the field, including accelerator, detector and computing R&D, the theory frontier, actions to minimise the environmental impact and to improve the sustainability of accelerator-based particle physics, the **strategy and initiatives to attract, train and retain the young generations**, public engagement and outreach.



# EPPSU, Timeline

## Input Guidelines



### 9 topical 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  
→ **ECFA ECR panel submitted list of nominations**

❖ Anyone can submit input to the strategy (31st of March)

- Future collider communities, **ECFA\*** countries, collaborations, ...
- And **Early Career Researchers (ECRs)** → White Paper
  - Focus on topics relevant to ECRs, not covered in topical WGs

[ECFA Early-Career Researchers response to the 2020 Update of the European Strategy for Particle Physics](#)

\* European Committee for Future Accelerators: <https://ecfa.web.cern.ch/>

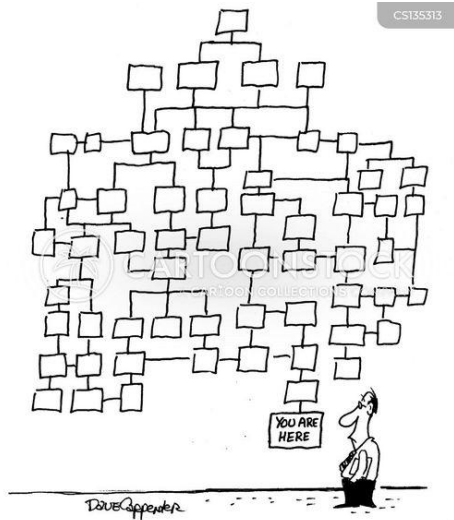
# ECRs White Paper input to the EPPSU

Initiated by ECFA ECR panel, but open to all European\* ECRs†

\*: Focus on ECRs employed in European institutes, but input beyond Europe appreciated

†: Non-permanent position or <10 years after PhD

- ❖ **Highlight ECR Challenges and Positive Aspects:** Document ECR difficulties and ensure they are considered in shaping the future of the field. Proposing recommendations for institutes, senior scientists, and funding agencies.



# The 3rd ECFA Workshop @ Paris

[Indico Link](#) (10 October 2024)

- ❖ **Bring ECR** community together, **rally people** to contribute to ECR White Paper ✓
  - Hybrid: Number of participants ~ 55 in lunch and evening sessions.
- ❖ **Define topics** to address in ECR White Paper → Form Working Groups and conveners ✓
  - Future colliders (incl. choice, priorities, timeline, sustainability, etc.)
  - Future particle physics experiments beyond colliders
  - Communicating the importance of particle physics
  - Career prospects and ECR leadership
  - Interplay of particle physics with neighbouring fields

**Details Later in this Talk..**



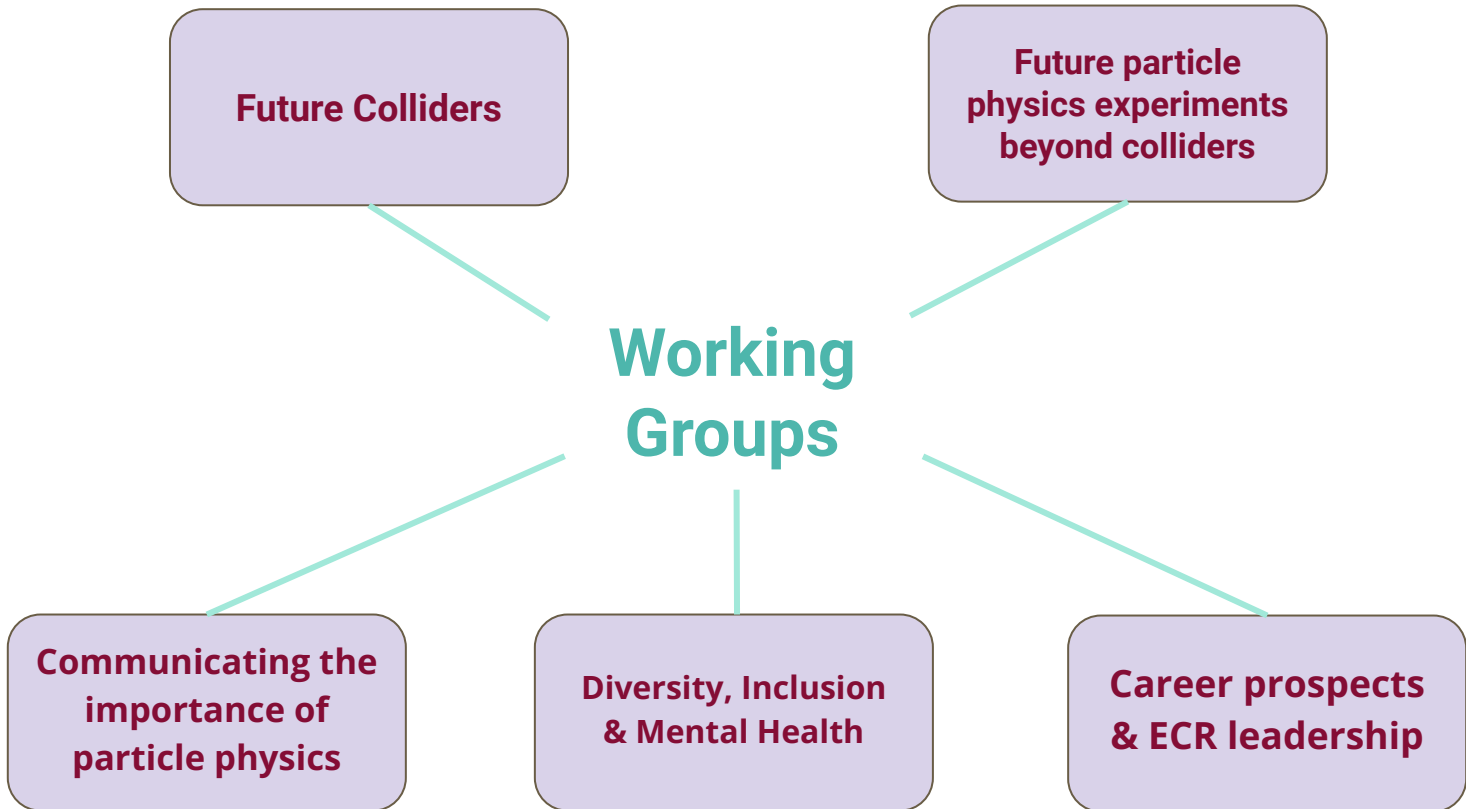


# ECR Workshop @ CERN

[Indico Link](#) (14 November)

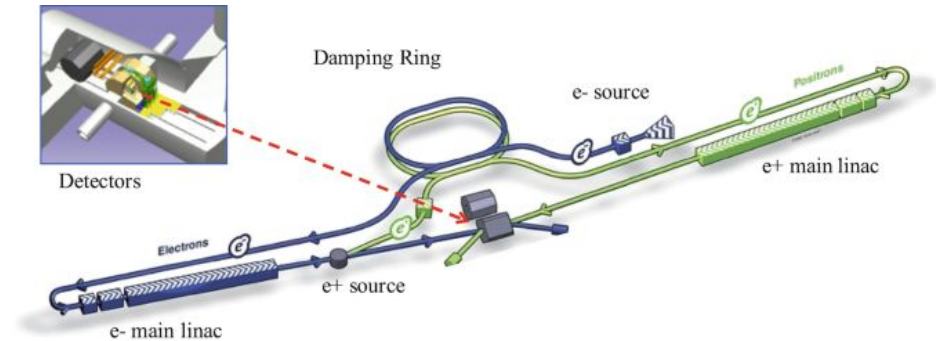
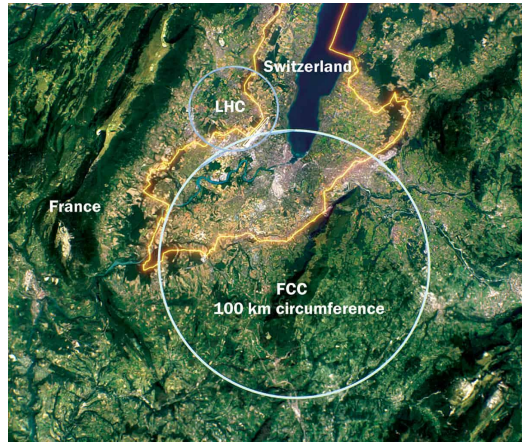
- ❖ We Had **2-3 meetings per WG** since Paris event led by conveners:
  - Discussions were on dedicated mattermost channels.
  - Refining WG scopes and start drafting the white paper.
  - Some organizational meetings between conveners.
    - Actual Plan: ~4-10 pages per WG for a total of 40-50 pages.
  
- ❖ **At this (hybrid) workshop,**
  - Open to all ECRs ~ 60/70 participants.
  - Discuss WGs together and gather more opinions.
  - Questions/Answers, Parallel sessions and a social event.

# Working Groups



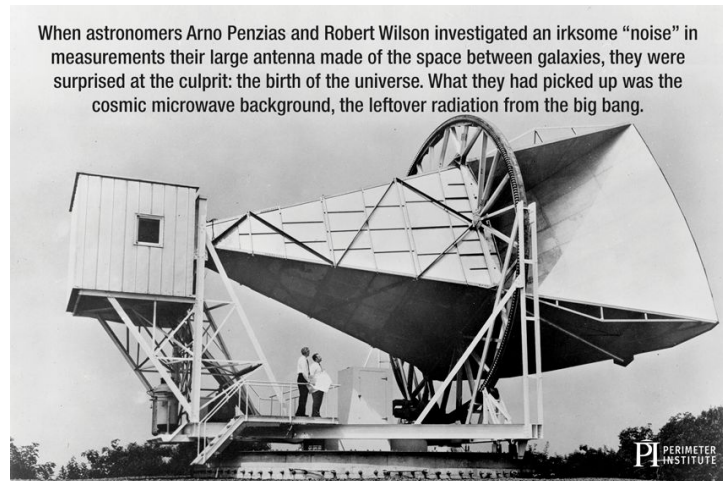
# 1. Future Colliders

- ❖ **Input on Selection Criteria:** Define essential criteria for selecting a future collider.
- ❖ **Proposal ranking:** Query preference of collider proposals and related questions.
- ❖ **Significance:** Emphasise the importance of a future collider, especially for ECRs.
- ❖ **Process transparency:** Advocate for a transparent selection and decision-making process.



## 2. Particle Physics Experiments Beyond Colliders

- ❖ **Promotes non-collider experiments:** It's research, and we can't predict where new physics will emerge from !
- ❖ **Supports career development** for researchers in smaller experiments and address their unique challenges.
- ❖ **Fosters collaboration** between collider/non-collider research and other fields, networking and career opportunities.
- ❖ **Advocates for non-collider research** by pushing for concrete recommendations to support these subfields.



# 3. Communicating The Importance of Particle Physics



- ❖ **Convincing Society of Our Impact:** Communicate the importance of particle physics projects to the public and decision-makers, showcasing how our work benefits society and advances knowledge.
- ❖ **Training and Outreach:** Develop science communication training, encourage outreach beyond academia, and promote partnerships with local entities for community engagement.
- ❖ **ECR Visibility and Societal Impact:** Increase ECR visibility through newsletters, encourage outreach, and emphasize the societal relevance of particle physics.
- ❖ **Foster Collaboration and Communication:** Improve intra-field communication, promote networking between ECRs, and strengthen cross-disciplinary and industry collaborations.



# 4. Career Prospects and ECR Leadership

- ❖ **Supports Sustainable Careers:** Identifies career barriers and proposes solutions to improve ECRs' careers.
  - Address job security, mobility challenges.
  - Encourage skills training for academia and industry and ease transition to/from neighboring fields.
  - Promote mentorship by senior academics and allocate dedicated time for ECRs' non-core activities.
- ❖ **ECR Leadership:**
  - Engage ECRs in decision-making and major events, acknowledging their contributions.
  - Advocate for dedicated funding to support ECR activities.



# 5. Diversity, Inclusion and Mental Health



- ❖ **Healthy Research Career:** Focus on work-life balance, mental health, inclusion, and supportive supervision.
- ❖ **Career Support Needs:** Push for centralized mental health services, family and “Diversity, Equity, and Inclusion” support centers.
- ❖ **Monitoring Progress:** Encourage periodic surveys to assess mental health and diversity/inclusion issues, ensuring institutions address them.

# ECR White Paper, RoadMap

- ❖ **Oct - Dec 2024:** Topical WG meetings, drafting of the White Paper by WGs conveners.
  - The 3rd ECFA Workshop @ Paris: [Indico Link](#)
  - ECR Workshop @ CERN: [Indico Link](#)
  - A **survey** have been created to gather important statistics
    - [LimeSurvey Link](#) (up to mid-January)
- ❖ **Jan - Feb 2025:** Internally reviewing and discussing the draft.
  - Consolidation of the draft by all WGs, with feedback from other ECRs and seniors.
  - One-day symposium open to all ECRs (20th February, CERN, Hybrid !). [Link](#)
    - You are welcome to attend and give us feedbacks.
- ❖ **March 2025:** Endorsement of the White Paper by the ECFA ECR panel and submission to EPPSU.
  - Consolidation of the draft by all WGs, with feedback from other ECRs and seniors.
  - Feedbacks from some selected seniors and people involved in snowmass.
    - We would greatly appreciate if some of you are interested :)



[esppu-ecr-organisers@cern.ch](mailto:esppu-ecr-organisers@cern.ch)



**Thanks for your attention!**