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**ORGANISATION EUROPÉENNE POUR LA RECHERCHE NUCLÉAIRE**  
**CERN** EUROPEAN ORGANIZATION FOR NUCLEAR RESEARCH

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PLENARY ECFA  
107th meeting  
Videoconference – 19 and 20 November 2020

Draft Minutes



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**LIST OF PARTICIPANTS**

<b>Chair:</b>	J. D'Hondt	Belgium
<b>Secretary:</b>	C. Lacasta Llacer	Spain
<b>Attendees:</b>	H. Abramowicz	Israel
	E. Adli	Norway
	P. Adžić	Serbia
	U. Bassler	CERN
	S. Bentvelsen	Netherlands
	G. Bernardi	France
	J-L. Biarrotte	France
	J. Bielcikova	Czech Republic
	F. Blanc	Switzerland
	A. Blondel	France
	D. Bortoletto	United Kingdom
	F. Bossi	INFN
	J-C. Brient	France
	P. Burrows	United Kingdom
	M. Cobal	Italy
	M. Dam	Denmark
	T. Davidek	Czech Republic
	S. De Curtis	Italy
	N. De Groot	Netherlands
	M. Delmastro	France
	U. Dosselli	FC Chair
	E. Elsen	CERN
	A. Ferrari	Sweden
	R. Forty	CERN
	B. Foster	United Kingdom
	J. Fuster	Spain
	E. Gallo	Germany
	T. Gehrman	EPS-HEPP Chair
	F. Gianotti	CERN
	G. Hamel de Monchenault	France
	U. Husemann	Germany

P. Iaydjiev	Bulgaria
P. Janot	CERN
M. Jeitler	Austria
A. Kaczmarska	Poland
A. Karasu Uysal	Turkey
Y.-K. Kim	USA
A. Knecht	Switzerland
M. Krammer	CERN
E. Laenen	Netherlands
J. Lagoda	Poland
S. Lai	Germany
K. Lassila-Perini	Finland
T. Lesiak	Poland
P. Levai	Hungary
M. Lewitowicz	NuPECC Chair
L. Lista	Italy
F. Maas	Germany
L. Masetti	Germany
I. Melzer-Pellmann	Germany
C. Meroni	Italy
M. Mikuz	Slovenia
D. Milstead	Sweden
J. Mnich	DESY
T. Montaruli	APPEC Chair
E. Nappi	Italy
D. Newbold	STFC
R. Pasechnik	Sweden
N. Pastrone	Italy
P. Razis	Cyprus
L. Rivkin	SPC Chair
P. Schleper	Germany
C. Schwanda	Austria
M. Seidel	Switzerland
B. Spaan	Germany

M. Taševský	Czech Republic
L. Vacavant	France
C. Vallée	France
M. Van Leeuwen	Netherlands
N. Van Remortel	Belgium
M. Voutilainen	Finland
M. Wing	United Kingdom
W. Wislicki	Poland
A. Zarnecki	Poland
M. Zeyrek	Turkey

The meeting, held by videoconference, was called to order at 2.00 p.m. on Thursday, 19 November 2020.

1. OPENING  
(Item 1 of the Agenda)

The CHAIR welcomed the members to the meeting, the second Plenary ECFA meeting to be held via videoconference owing to the COVID19 pandemic.

2. ADOPTION OF THE DRAFT AGENDA  
(Item 2 of the Agenda)

The Agenda<sup>1</sup> was adopted.

3. DRAFT MINUTES OF THE 106TH MEETING  
(Item 3 of the Agenda) (ECFA/RC/20/496/Draft)

The Minutes of the 106th meeting of Plenary ECFA (ECFA/RC/20/496) were approved.

4. REPORT FROM THE CHAIR  
(Item 4 of the Agenda)

The CHAIR presented<sup>2</sup> a report listing the RECFA and PECFA meetings that had taken place in 2020 and the five ECFA Newsletters published to date, with the sixth issue due to be published following the current meeting. His report covered ongoing Joint ECFA-NuPECC-APPEC Activities (JENAA) and a call for concrete proposals relating to the five themes retained from among the expressions of interest submitted earlier in 2020; updates on the work of the JENAA Working Groups on Diversity and Recognition; the selection of Madrid as the venue for the next joint ECFA-NuPECC-APPEC Seminar (JENAS) in late 2021 or early 2022; progress on the Detector R&D Roadmap, which would be presented in more detail the following day (see Item 12 below); the next joint EPS-HEPP and ECFA meeting (in July 2021, to be hosted by DESY and the University of Hamburg but held virtually); concrete efforts to promote synergies in physics, experiments and detectors at Higgs factories, with the next step being to set up an international advisory committee; and the ECFA schedule for

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<sup>1</sup> See Indico: <https://indico.cern.ch/event/966397/>

<sup>2</sup> See Indico:  
<https://indico.cern.ch/event/966397/contributions/4067066/attachments/2146474/3618126/PECFA-from-chair-19Nov2020.pdf>

2021, which would have to be discussed again in January 2021 in the light of the evolving COVID-19 situation.

In reply to a question from VALLÉE (CPPM), the CHAIR confirmed that the workshop and other activities related to physics, experiments and detectors at Higgs factories would focus on the potential synergies for  $e^+e^-$  Higgs factories and would not include hadron colliders.

The CHAIR said that, in response to the call for nominations to the ECFA Early-Career Researchers (ECR) Panel, 67<sup>3</sup> had been received from 25 countries, as well as from major laboratories.

In reply to BLONDEL (University of Geneva/CNRS), who expressed concern about the lack of scientists involved in neutrino research on the Panel, the CHAIR reminded the Committee that the Panel could invite observers to its meetings to ensure adequate diversity and balance.

The Committee unanimously endorsed the composition of the ECFA ECR Panel.

Following the decision at the previous ECFA meeting to revisit the list of laboratories represented in ECFA, the Committee took note of the proposal that had been approved by RECFA that morning to update the composition of RECFA and PECFA, and unanimously endorsed the decision to:

- invite the executive heads of the major ECFA-related laboratories to PECFA meetings;
- invite the Chair of the European Laboratory Directors Group (LDG) to represent the LDG in RECFA (as an ex officio member), meaning that the CERN Director-General would be the only ex officio member of RECFA representing a major laboratory;
- invite the executive heads of the major ECFA-related laboratories to dedicated RECFA meetings with an agenda determined by the ECFA and LDG Chairs.

The CHAIR added that he expected that, in a reciprocal arrangement, the ECFA Chair would also be invited to attend LDG meetings.

The Committee unanimously endorsed the list of outgoing, incoming and renewed ECFA members listed on slide 46 and expressed its thanks to the current Chair and Secretary, both of whose terms would be coming to an end in December 2020.

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<sup>3</sup> See Indico:

<https://indico.cern.ch/event/966397/contributions/4067066/attachments/2146474/3618473/ECFA-ECR-Panel-nominations.pdf>

The Committee further unanimously endorsed the election by RECFA of K. Jakobs (University of Freiburg) as the new ECFA Chair.

The Committee took note of the Chair's report and of the additional information provided during the discussion.

5. REPORT FROM CERN  
(Item 5 of the Agenda)

ELSEN (CERN) presented<sup>4</sup> news from CERN, covering the Long Shutdown 2 (LS2) activities and revised schedule; the medium-term plan for 2021-2025; staff presence on site during the COVID-19 pandemic and lockdowns in the Host States; implementation of the European Strategy for Particle Physics (ESPP) update; the Future Circular Collider Innovation Study Kickoff Meeting earlier that month; scientific diversity initiatives; and site renovation projects.

The Committee took note of the report by Elsen.

6. REPORT FROM DESY  
(Item 6 of the Agenda)

MNICH (DESY) presented a report<sup>5</sup> on DESY, covering the laboratory's reduced operation during the COVID-19 pandemic; the status of the European XFEL facility; the goal to complete the PETRA IV project in 2027; DESY's contribution to the high-luminosity upgrades for ATLAS and CMS; the status of the axion experiments at DESY (ALPS II, BabyIAXO and MADMAX); progress towards the LUXE experiment and towards the future Wolfgang Pauli Centre; the DESY II Testbeam Facility's highlights, improvements and outlook; and the postponement of the 13th International Committee for Future Accelerators (ICFA) Seminar on Future Perspectives in High Energy Physics to October 2020. He then showed a brief video of the HERA tunnel at DESY and invited the PECFA members to visit the facility.

The Committee took note of the report by Mnich.

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<sup>4</sup> See Indico:

<https://indico.cern.ch/event/966397/contributions/4067067/attachments/2146469/3618108/CERN%20Report%20Nov%202020.pdf>

<sup>5</sup> See Indico:

<https://indico.cern.ch/event/966397/contributions/4067068/attachments/2146259/3617633/ECFA-DESY-20201120-final.pdf>

7. REPORT FROM LNF  
(Item 5 of the Agenda)

BOSSI (LNF) presented a report<sup>6</sup> on recent activities at the National Laboratory of Frascati (LNF), covering the impact of the COVID-19 crisis; the operations of the Laboratory's two accelerators (DAΦNE and BTF); the positive SPARC result on very low energy spread; preparations for the next big challenge – the EuPRAXIA project, which would be the subject of a detailed presentation the following day; support for other, especially LHC-related, experiments; and undiminished outreach and dissemination work.

The Committee took note of the report by Bossi.

8. BULGARIA MID-TERM REPORT  
(Item 8 of the Agenda)

IAYDJIEV (Bulgarian Academy of Sciences) presented<sup>7</sup> the mid-term report on the status of particle physics in Bulgaria since the last visit of RECFA in 2017, providing details of the principal research centres, relevant human resources statistics, domestic funding levels, the number of Bulgarian nationals at CERN, Bulgaria's financial contribution to CERN and its industrial return. He further outlined the progress made with the recommendations from RECFA following the country visit, highlighted some issues faced by Bulgarian scientists participating in NA62 and PADME, and reported briefly on new projects in which the Bulgarian community had begun participating since 2017.

Noting that limited progress had been made with some of RECFA's recommendations, the CHAIR proposed holding a more in-depth discussion of the related issues at a later date, along with the incoming ECFA Chair and relevant interlocutors from Bulgaria, to establish whether ECFA could assist in finding solutions. He expressed concern at the exclusion of Bulgarian institutions from NA62 due to financial problems, but also recognised that ECFA could not intervene directly in the affairs of the experimental collaborations and that NA62's decision might also have been influenced by other factors.

The Committee took note of the report by Iaydjiev and of the comment by the Chair.

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<sup>6</sup> See Indico:  
<https://indico.cern.ch/event/966397/contributions/4067069/attachments/2146220/3617552/LNF-PECFA-NOV2020.pdf>

<sup>7</sup> See Indico:  
[https://indico.cern.ch/event/966397/contributions/4067070/attachments/2145680/3616601/Midterm\\_Report\\_Bulgaria-2.pdf](https://indico.cern.ch/event/966397/contributions/4067070/attachments/2145680/3616601/Midterm_Report_Bulgaria-2.pdf)

9. SWEDEN MID-TERM REPORT  
(Item 9 of the Agenda)

MILSTEAD (Stockholm University) presented<sup>8</sup> the mid-term report on the status of particle physics in Sweden since the last visit of RECFA in 2016, focusing on the various Swedish institutes conducting particle physics research, topics relating to funding, the composition of the theory community, the involvement of Swedish scientists in the LHC experiments and ISOLDE, accelerator activities, computing activities, links to industry and outreach.

The Committee took note of the report by Milstead.

10. STATUS OF ILC  
(Item 10 of the Agenda)

STAPNES (CERN) presented<sup>9</sup> a report on the status of the International Linear Collider (ILC), giving details of the design and specification of the accelerator, the candidate site in Tohoku, Japan, the recent formation of the International Development Team (IDT), the current overall timeline for the project, and the planned activities of the ILC Pre-Lab, which was expected to be formed by 2022. He also provided an overview of ongoing ILC-related activities in Japan, the Americas and Europe, including the recent conclusion of an agreement between CERN and KEK to facilitate the work of the IDT in transitioning to the Pre-Lab phase.

In reply to a question from EKELOF (Uppsala University) regarding the location and staff numbers of the ILC Pre-Lab, STAPNES said that in all likelihood it would be located at KEK in Japan, with satellites in both Europe and the United States. The core team would probably only comprise 10 people, with around 50 more in Japan and a further 50 worldwide, over a period of four years prior to the construction phase.

In reply to a question from the CHAIR on the expected timescale for a final commitment from Japan to host the project, STAPNES said that, during the Pre-Lab phase, in parallel to the technical work, a political decision would need to be taken to determine contributions to the project from countries other than Japan, and a green light from Japan could only be expected towards the end of that process, in 2024 or 2025. Such a process mirrored that of the LHC, which had been endorsed in principle by the CERN Council in

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<sup>8</sup> See Indico:

<https://indico.cern.ch/event/966397/contributions/4067071/attachments/2146456/3618634/ECFA-mid-term-Sweden-Nov-2020.pdf>

<sup>9</sup> See Indico:

<https://indico.cern.ch/event/966397/contributions/4067072/attachments/2146587/3618322/ilc-pecfa-stapnes-Nov2020.pdf>

1991 but approved only in 1994 after detailed technical work and international negotiations on how to fund the project.

The Committee took note of the report by Stapnes and of the additional information provided during the discussion.

## 11. STATUS OF FCC (Item 11 of the Agenda)

BENEDIKT (CERN) presented<sup>10</sup> a report on the status of the Future Circular Collider (FCC) study, detailing the two-stage programme of FCC-ee followed by FCC-hh, the latest technical project schedule, the statement in the recently updated ESPP calling for a technical and feasibility study for the project, and the key technology deliverables for the machine. He further reported on the Horizon 2020-backed FCC Innovation Study (FCCIS), the successful FCC week earlier that month, work carried out on optimising the placement of the FCC tunnel and the status of the global FCC collaboration.

In reply to a question from the CHAIR regarding FCC meetings in 2021, BENEDIKT said that the principal events would be the FCC Week in late spring or early summer and a physics and experiment workshop, probably coupled with an FCCIS design study meeting, towards the end of 2021 or in January 2022.

The Committee took note of the report by Benedikt and of the additional information provided during the discussion.

The meeting was adjourned at 6.20 p.m. on Thursday, 19 November, and resumed at 9.00 a.m. on Friday, 20 November.

## 12. DETECTOR R&D ROADMAP (Item 12 of the Agenda)

KUEHN (CERN) presented<sup>11</sup> the Detector R&D Roadmap, whose development had been entrusted to ECFA in the ESPP update. The Detector R&D Panel was making good headway on identifying members for the technology and related task-force areas. The nine task forces were about to become active. An ambitious timeline was envisaged, culminating in the presentation of the European Detector Roadmap at the EPS-HEPP conference in July 2021. The intention of the roadmap would be to give guidance on the detector R&D work

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<sup>10</sup> See Indico:  
[https://indico.cern.ch/event/966397/contributions/4067073/attachments/2146718/3618577/201119\\_FCC-Status\\_ap.pdf](https://indico.cern.ch/event/966397/contributions/4067073/attachments/2146718/3618577/201119_FCC-Status_ap.pdf)

<sup>11</sup> See Indico:  
[https://indico.cern.ch/event/966397/contributions/4067074/attachments/2146995/3619108/EFCA\\_DetRDRoadmap\\_ECFA201120\\_SK.pdf](https://indico.cern.ch/event/966397/contributions/4067074/attachments/2146995/3619108/EFCA_DetRDRoadmap_ECFA201120_SK.pdf)

required and to support proposals at the European and national levels. Input from the community would be gathered in various ways: task-force conveners and members would collect information and input; proponents of future facilities would be invited to present information; RECFA members would give their input; and a one-day task-force symposium would be held in March or April 2021. A dedicated webpage was also being developed.<sup>12</sup>

In reply to a question from TITOV (CEA Saclay IRFU), who drew a comparison with the United States Department of Energy's report on basic research needs for high energy physics detector research & development (BRN) and asked whether it was useful to try to link specific detector R&D and future goals and facilities, KUEHN said that the Roadmap was guided by the ESPP update, which set out future research goals. The aim was to start working already on the R&D needs for both near- and long-term experiments.

The CHAIR added that in the United States the BRN process had come before the Snowmass process, whereas in Europe the ESPP discussions had revolved around specific facilities, within which the physics potential was defined as a function of the detector parameters.

VALLÉE (CPPM) asked a follow-up question about what new contribution the Detector R&D Roadmap would bring to the already very comprehensive BRN document, since the R&D needs were global, and whether a formal collaboration with Snowmass was envisaged as part of the Roadmap preparations.

KUEHN explained that ECFA's mandate was to prepare a roadmap for the European and national levels. Nevertheless, some scientists from the United States had been selected to be task-force conveners.

The CHAIR said that Ian Shipsey, co-Chair of the BRN Workshop, was involved, providing a strong natural link between the two processes.

TITOV pointed out that it would be important to synchronise with the Snowmass process in relation to detector requirements for long-lived particles, as an extension of the BRN report was expected to cover that topic.

BLONDEL (University of Geneva/CNRS) remarked that the detector optimisation requirements for a Z factory were considerably beyond ILC detector requirements and were not covered in the BRN document; they should therefore be included in the ECFA Detector R&D Roadmap.

In reply to a comment from BRIENT (CNRS), who expressed unease that new technology was never given enough prominence in mainstream R&D documents, KUEHN

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<sup>12</sup> <https://indico.cern.ch/e/ECFADetectorRDRoadmap>

said that the hope was to gather as wide input as possible through the Task Force on Quantum and Emerging Technologies.

The CHAIR added that the process would include not only focused R&D but also transformational or blue-sky R&D.

DALLA TORRE (INFN) stated that, while there had been a lot of focus on the needs of specific programmes, the overarching purpose of the Detector R&D Roadmap exercise was to understand how to move European R&D activity in the right direction overall.

ABRAMOWICZ (Tel Aviv University) added that the process had been planned based on the recognition that blue-sky development should be taking place; it was important to reach out to other fields of science, as success would be measured by how much of what was achieved enriched other fields and vice versa. High-energy physics should contribute to wider science.

The Committee took note of the report and of the additional information provided during the discussion.

### 13. ACCELERATOR R&D ROADMAP (Item 13 of the Agenda)

RIVKIN (PSI/EPFL, LDG Chair) presented<sup>13</sup> the Accelerator R&D Roadmap, whose development had been entrusted by the CERN Council to the LDG following the ESPP update. The aim was to define and maintain a prioritised accelerator R&D roadmap towards future large-scale facilities for particle physics. The Roadmap aimed to harness the R&D capabilities of CERN as well as those of large national laboratories and other institutes with a view to the construction and operation of demonstrators. A Roadmap Panel, composed of the LDG, invited experts and the chairs of various expert panels, would supervise the process and interact with the CERN Scientific Policy Committee and Council. The presentation covered the purpose and scope of the Roadmap, the role of the expert panels, and a rough timeline through to the finalisation of the Roadmap in September 2021.

In reply to a request for clarification from VALLÉE, RIVKIN said that the Accelerator R&D Roadmap would strive for good coordination and communication globally, such as with the work for the ILC pre-laboratory phase, because of the timeline and subject matter overlap. The expert panels would be the main means of coordination.

In reply to a question from BLONDEL, RIVKIN confirmed that improving accelerators' energy efficiency would also be an integral part of the Roadmap.

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<sup>13</sup> See Indico:

[https://indico.cern.ch/event/966397/contributions/4067075/attachments/2147034/3619166/AccRoadMap\\_LRivkin\\_PECFA.pdf](https://indico.cern.ch/event/966397/contributions/4067075/attachments/2147034/3619166/AccRoadMap_LRivkin_PECFA.pdf)

The CHAIR said that broad consultation within Europe was a must. The previous day a decision had been taken to update the composition of ECFA to create strong links with laboratories and to give the LDG Chair a seat in RECFA. Consultation and information opportunities would therefore be created on both sides as part of the Accelerator R&D Roadmap process.

RIVKIN said that he welcomed the inclusion of the LDG Chair in RECFA, which would facilitate discussions on the Roadmap. Although complete synchronicity of the roadmaps would not be possible, it was important that demonstrators, facilities and test beams were available to serve and answer the needs of detector R&D.

The Committee took note of the report by Rivkin and of the additional information provided during the discussion.

The meeting was adjourned at 9.50 a.m. and resumed at 10.30 a.m. for a dedicated session on gamma factories, followed by a further session that afternoon covering the following topics:

- the EuPRAXIA project;
- the Snowmass process in the United States;
- the African Strategy for Fundamental Physics and Applications (ASFAP);
- the Muon Collider Collaboration;
- storage rings for charged-particle EDMs;
- the EU ESCAPE project.