

Report from ECFA

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CERN Council meeting, September 25th, 2020, remote



ECFA schedule since Sept 2019 (adapted due to COVID-19)

Due to the COVID pandemic the country visits planned for 2020 have been postponed, i.e. Serbia, France, Ukraine, Denmark. Nevertheless, via remote meetings, Restricted ECFA was proactive in preparing initiatives in response to the updated ESPP. During these meetings, we gave priority to those topics that will enhance the readiness of ECFA to help our research community when we emerge from the COVID pandemic.

- RECFA visit to Cyprus, 25-26 Oct 2019 \rightarrow extract from the letter to the Minister in back-up
- RECFA and the 105th Plenary ECFA meeting at CERN, 14-15 Nov 2019
- RECFA meeting, 17 April REMOTE
- RECFA meeting, 15 May REMOTE
- RECFA and the 106th Plenary ECFA meeting, 13 July REMOTE
- RECFA meeting, 9 October REMOTE ← NEXT MEETING
- RECFA and the 107th Plenary ECFA meeting, 19-20 November REMOTE



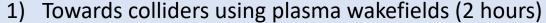


"Advanced Accelerator Technologies"

CERN - Council Chamber

14 Nov 2019 https://indico.cern.ch/event/847002/overview

229 registered participants + remote participation



- 2) Towards a muon collider (2 hours)
- 3) Towards using accelerator HTS magnets in HEP colliders (2 hours)
- 4) Presentation on the Energy Recovery Linear technology for future colliders

Webcasted and webrecorded:

http://cdsweb.cern.ch/search?ln=en&p=105th+Plenary+ECFA+meeting+-+CERN&jrec=1&f=490__a

In the ECFA Newsletter #4:

http://cds.cern.ch/record/2705211/files/English.pdf





This report

- 1. The role of ECFA in the context of the Strategy
- 2. News from ICFA (mainly on the ILC in Japan)



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The role of ECFA in the context of the Strategy

- Detector, Experiment and Physics studies towards a Higgs Factory (aligned with the ECFA initiative to map the potential of Higgs physics at future colliders)
- Organize the development of a Detector R&D Roadmap (additional to the ECFA Detector R&D Panel)
- Synergy efforts with astroparticle and nuclear physics
 (aligned with our JENAS initiatives, Joint APPEC-ECFA-NuPECC Seminar)
- Societal efforts on recognition, diversity and career aspects
 (aligned with our working groups on the topic and the ECFA initiative to organize a Strategy debate among early-career researchers)





Physics, Experiment & Detector studies towards a Higgs Factory

Support for and Acknowledgement of a series of PED@HF workshops

PED@HF – Physics, Experiments and Detector studies at Higgs Factories

ECFA acknowledges the need for the experimental and theoretical communities involved in Physics studies, Experiment designs and Detector technologies at future Higgs Factories to gather. ECFA supports a series of workshops with the aim to share challenges and expertise, to explore synergies in their efforts and to respond coherently to this priority in the European strategy for particle physics.

Such Aix-les-Bains-type workshops would focus on PED studies for a Higgs Factory which would match a previous ECFA initiative mapping the potential of Higgs studies at future colliders. Setting up an International Advisory Committee (IAC) would be the next step, involving some RECFA members and European leaders of the most relevant colliders (e.g. CLIC, FCC, ILC, CEPC, LHeC, muon collider) with a mandate to setup a Program Committee (PC) that would develop an agenda in consultation with the IAC, and embracing the global nature of these projects.





Organize the development of a Detector R&D Roadmap

"Coordination of R&D activities is critical to maximise the scientific outcomes of these activities and to make the most efficient use of resources; as such, there is a clear need to strengthen existing R&D collaborative structures, and to create new ones, to address future experimental challenges of the field beyond the HL-LHC. Organised by ECFA, a roadmap should be developed by the community to balance the detector R&D efforts in Europe, taking into account progress with emerging technologies in adjacent fields. The roadmap should identify and describe a diversified detector R&D portfolio that has the largest potential to enhance the performance of the particle physics programme in the near and long term. This community roadmap could, for example, identify the grand challenges that will guide the R&D process on the medium- and long-term timescales, and define technology nodes broad enough to be used as the basis for creating R&D platforms. This will allow concerted and efficient actions on the international scale addressing the technological challenges of future experiments while fostering an environment that stimulates innovation and collaboration with industry."

Extract from the 2020 Strategy update



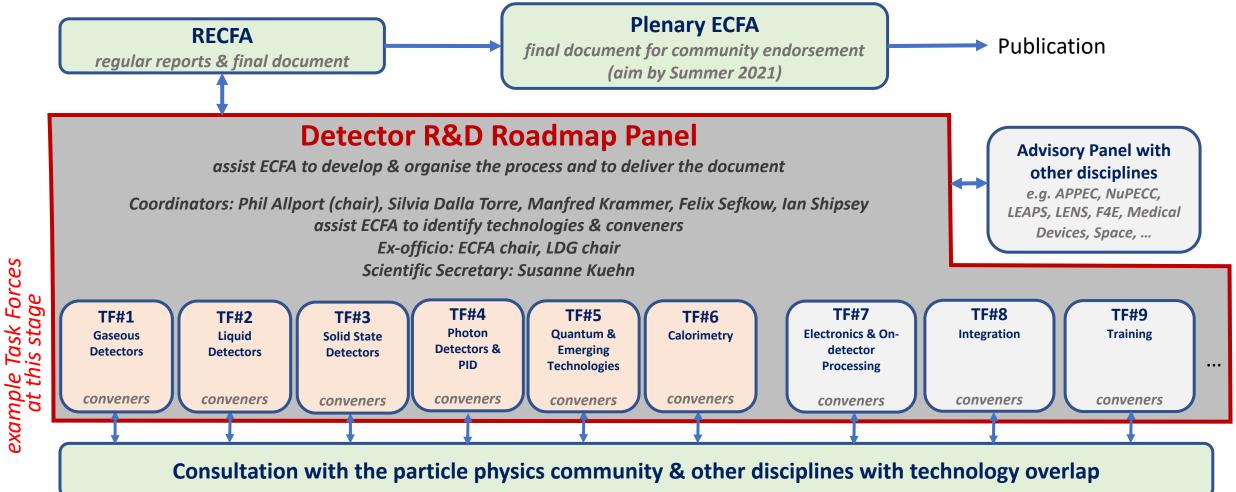
Timeline within ECFA

- The topic was first discussed in Restricted ECFA during its meeting on 17 April
- On the basis of this discussion, and profound consultations with amongst others the ECFA Detector Panel, CERN DG, President of Council and LDG chair, a strawman proposal for the organisational structure was presented for discussion to Restricted ECFA on 10 July
- The above mentioned consultation provided initial names for the membership of the Detector R&D Roadmap Panel that will assist ECFA to develop and organise the process, i.e. the coordinators
- Names were presented as an initial proposal to Restricted ECFA on 10 July, and with few changes both the organisational structure and the coordinators were agreed to be presented to Plenary ECFA
- On 10 July, the organisational structure and the coordinators were presented to Plenary ECFA for discussion after which they were endorsed
- A call for nominations for additional Panel members, i.e. conveners, was mentioned to Plenary ECFA and communicated in written to all ECFA members on 11 August (and a reminder early Sept)
- The list of nominations for conveners is now in the hands of the Panel for further considerations
- In consultation with the CERN EP department head, a scientific secretary was added to assist the Panel

ECFA & Strategy



Organization to structure the consultation with the community







Synergy efforts with astroparticle and nuclear physics

http://nupecc.org/jenaa/

"There are many synergies between particle physics and other fields of research. Clear examples are nuclear and astroparticle physics, which address common fundamental questions and use common tools."

"Links between accelerator-based particle physics and closely related fields such as astroparticle physics and nuclear physics should be strengthened through the exchange of expertise and technology in areas of common interest and mutual benefit. To further explore and enhance the synergies, a periodic joint seminar organised by APPEC, ECFA and NuPECC was recently established. For example, on the diverse topic of dark matter addressed with complementary experimental approaches, communication and results-sharing across communities is essential."

Extracts from the 2020 Strategy update





Synergy efforts with astroparticle and nuclear physics

http://nupecc.org/jenaa/

CALL FOR VENUES FOR THE JENAS 2021 EVENT "There are many synergies between particle physics and other fields

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Extracts from the 2020 Strategy update







Societal efforts on recognition, diversity and career aspects http://nupecc.org/jenaa/

"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."

Extract from the 2020 Strategy update





Recognition of individuals in large collaborations

http://nupecc.org/jenaa/

"It is important that **recognition for individuals in large collaborations be improved, following the guidelines of the corresponding ECFA study group**. In particular, journals dedicated to technologies and theoretical and experimental methods should be supported."

Extract from the 2020 Strategy update

Working group on recognition together with APPEC and NuPECC (ECFA contacts: Marcel Merk (co-chair), Bogna Kubik, Djamel Boumediene)

Key objective is to create a platform for large collaborations to exchange best practices among them and across disciplines.





Diversity in our scientific collaborations

http://nupecc.org/jenaa/

"For particle physicists, **the principles of equality, diversity and inclusion should be clearly and recognisably present in all of the field's activities**. Training appropriate to this end should be available at CERN and other institutes, and best practices shared among them."

Extract from the 2020 Strategy update

Working group on diversity together with APPEC and NuPECC (ECFA contact: Patricia Conde Muíño, Nadia Pastrone)

A "Diversity Charter" is presented to large collaborations to embrace diversity in all its actions and to monitor the key aspects of diversity in their collaboration.

Direct link: http://nupecc.org/jenaa/docs/Diversity_Charter_of_APPEC__ECFA_NuPECC-8.pdf
Several collaborations replied already very enthusiastically and positive.





Towards an ECFA Early-Career Researchers (ECR) Panel

In Nov 2019 ECFA gathered a group of 180 researchers (balanced demography) to discuss topics related to the European Strategy for Particle Physics.

"Overwhelming consensus was reached on the idea to **establish a permanent ECR committee as part of ECFA**. Such a committee would be able to give a mandate to a few individuals representing the ECRs in various bodies."

Extract from the ECR report (https://inspirehep.net/literature/1779145)

"Many of the topics mentioned above have been discussed amongst early-career researchers, and it is **recommended they form a panel, under the auspices of ECFA**, in which these subjects can be discussed and monitored."

Extract from the 2020 Strategy update





Mandate for the ECFA ECR 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.
- Members are, in general, PhD students and postdocs, either with a non-permanent contract or with up to 8 years after obtaining the PhD. Up to three members can be nominated by each ECFA country and each major laboratory represented in ECFA for a mandate of 2 years, extendable with another 2 years. In general, the delegation from each ECFA country should have at least one PhD student and at least one postdoc. Nominations are to be endorsed by Plenary ECFA. Members are nominated by and assigned to the quota of the country they are hired at the moment they become member of the panel.
- Members act as individuals, but should be able to represent the views of early-career researchers in particle physics in the country from which they were nominated.
- From among the ECFA ECR Panel members, a delegation of up to five members is assigned by the panel as observers to Plenary ECFA meetings, and one member is assigned by the panel as observer to Restricted ECFA meetings.
- The ECFA ECR Panel would normally hold two plenary (tele-)meetings per year among its members.
- The activities of the ECFA ECR Panel are organised by a smaller group selected by the panel itself from among its members. To achieve their aims, the ECFA ECR Panel can proceed among others with regular meetings, topical working groups and studies related to the early-career researchers community in particle physics in ECFA countries.
- The ECFA ECR Panel can invite observers to its meetings, for example to seek adequate diversity among the participants to conduct its business.



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- 2. News from ICFA (mainly on the ILC in Japan)



International Committee for Future Accelerators (http://icfa.fnal.gov)

Current members:

- G. Taylor (Chair, Australia), P. Bhat (Secretary, USA)
- J. D'Hondt, F. Gianotti, J. Mnich (CERN Member States)
- N. Lockyer, Z. Huang, J. Incandela (USA)
- I. Koop, V. Petrov (Russia)
- Y. Wang (China)
- T. Mori, M. Yamauchi (Japan)
- M. Roney (Canada)
- I. Bediaga, D. Das (Other Countries)
- H. Schellman, Chair of the IUPAP Commission on Particles and Fields (ex officio)

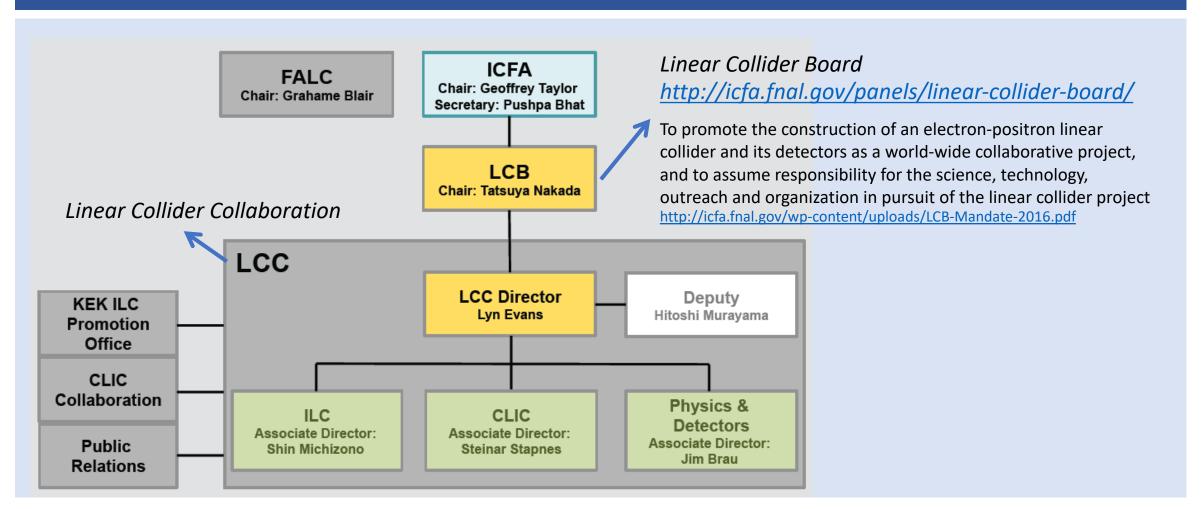


International Committee for Future Accelerators (http://icfa.fnal.gov)

Current panels:

- ICFA Instrumentation Innovation and Development Panel (Chair Ian Shipsey, Oxford)
- ICFA Beam Dynamics Panel (Chair Ingo Hofmann, GSI/TUD)
- ICFA Panel on Advanced and Novel Accelerators (Chair Bruce Carlsten, Los Alamos)
- ICFA Standing Committee on Interregional Connectivity (Chair Harvey Newman, Caltech)
- ICFA Study Group on Data Preservation in High Energy Physics (Chair Cristinel Diaconu, CPPM, Marseille)
- Linear Collider Board (Chair Tatsuya Nakada, EPFL, Lausanne)
- ICFA Panel on Sustainable Accelerators and Colliders (Chair Mike Seidel, PSI)







Timeline of recent actions revolving around the ILC in Japan

- March 2019: the Japanese Ministry of Education, Culture, Sports, Science and Technology (MEXT)
 mentions the ILC project is to be considered by the Science Council of Japan (SCJ)
- <u>Throughout 2019</u>: the SCJ develops its Master Plan for Large-Scale Research Projects (all scientific disciplines)
- <u>January 2020</u>: in total 59 projects invited for the interview (including ILC) and among them 31 project listed as highest priority projects (not including ILC)
- MEXT to develop its resource-loaded Roadmap based on the SCJ Master Plan including all 59 projects invited for the interview
- <u>ICFA meeting</u>: status report from MEXT by Hiroshi Masuko (Deputy Director-General, MEXT Research Promotion Bureau) and by Takeo Kawamura (Chair, Federation of Diet Members for ILC)
- <u>Additionally</u>: support for an <u>ILC Pre-Lab</u> expressed by the US in letters from the Deputy State
 Secretary and the Secretary of Energy to their Japanese equivalent, and reported at the ICFA
 meeting by Chris Fall (Director, DOE Office of Science)



Report from International Working Group on the ILC Project

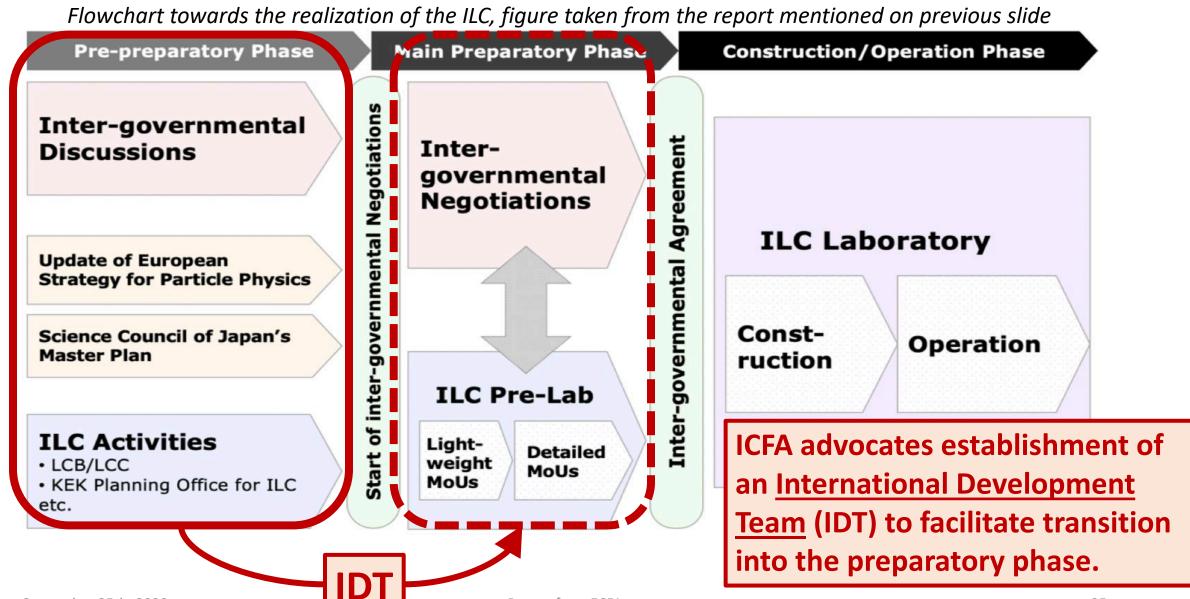
(initiated by KEK Director-General in May 2019 to study the international aspects)

https://www2.kek.jp/ilc/en/docs/Recommendations_on_ILC_Project_Implementation.pdf

- <u>ILC pre-preparatory phase</u>: currently the project is in a pre-preparatory phase
- <u>ILC preparatory phase</u> (~4 years of Pre-Lab): A positive signal by the Japanese government expressing its intent to host the ILC will trigger the project transition into the main preparatory phase. The key activities will be the technical preparations for ILC construction and the intergovernmental negotiations expected to culminate in an inter-governmental agreement, signaling the official launch of the ILC project.
- <u>ILC construction phase</u>: The above agreement will trigger the transition of the Pre-Lab structure into a full ILC Laboratory, which will mark the start of the construction phase of the ILC project.



European Committee for Future Accelerators





ICFA Statement on the ILC project – SLAC 22 February 2020

https://icfa.fnal.gov/wp-content/uploads/ICFA_Statement_22Feb2020.pdf

ICFA was encouraged by the reports from Mr. H. Masuko, Deputy-Director General, MEXT Research Promotion Bureau and Hon. T. Kawamura, Chairperson of the Federation of Diet Members for the ILC, at the ICFA meeting held at the SLAC National Accelerator Laboratory, Stanford, USA, on the 20th February 2020.

Based on these reports:

- ICFA reconfirms the international consensus for a Higgs factory and wishes to see the timely construction of the ILC in Japan.
- ICFA acknowledges and welcomes the inter-governmental discussion between Japan, the United States and European nations, to advance international collaborative activities for the ILC.
- ICFA notes the need for a preparatory phase ahead of the establishment of the ILC laboratory and the construction of the ILC in Japan.
- ICFA advocates establishment of an International Development Team to facilitate transition into the preparatory phase.
 - The development team should be hosted by KEK, with leadership chosen with the help of ICFA.
 - The team would develop a plan for the preparatory phase for the construction of the ILC, including technical, organizational and governance issues. It also would be tasked with understanding the activities and resources required in the preparatory phase. The process of developing the plan should involve the interested laboratories and community.
 - ICFA anticipates that these development activities could be completed in approximately one year, at which point it would be
 possible to launch the preparatory phase for the ILC, provided Japan expresses intent to do so together with international
 partners.
- In view of progress towards realisation of the ILC in Japan, ICFA encourages the interested members of the high energy physics community, laboratories, and nations, to support and participate in these preparations aimed at the successful establishment of the ILC.



ICFA Statement on the ILC project – SLAC 22 February 2020

https://icfa.fnal.gov/wp-content/uploads/ICFA_Statement_22Feb2020.pdf

ICFA instructed the LCB to propose the mandate, the activities and the composition of the IDT which is to replace the LCB structure, i.e. the mandate of the LCB itself ends in June 2020. The new focus will be on the ILC project.

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ICFA Statement on the ILC project – 2 August 2020 (remote)

https://icfa.fnal.gov/wp-content/uploads/ICFA_IDT_Structure.pdf

ICFA approved the formation of the ILC International Development Team with a mandate to make preparations for the ILC Pre-Lab in Japan. IDT has commenced its work and is expected to complete its mandate by the end of 2021.



- Developing the function and organisational structure for the Pre-Lab.
- Prepare the work and deliverables of the Pre-Lab and workout a scenario for contributions with national and regional partners through MoUs.
- Understand what is needed to get the Pre-Lab started.
- Start of Pre-lab does not require full approval of the entire project.



Thank you for your attention

ECFA Newsletters #1 - #2 - #3 - #4 - #5 available on the ECFA website:

https://ecfa.web.cern.ch





Additional slides





RECFA visit to Cyprus – October 2019 – extract from our letter to the Minister

(https://indico.cern.ch/event/839488/overview)

- The Committee is impressed by the **high quality** that the Cypriot particle physics community has established over the last 25 years, as illustrated by its achievements in the CMS experiment at CERN.
- The Cypriot talent pipeline is well established in the context of CERN, and the recently renewed tenured positions in the particle physics group offer the potential to train more students if additional resources are provided.
- The Committee recommends that the **low salary level of Cypriot scholarships** be addressed in order to attract and nurture the best students.
- Consolidating the investment in activities revolving around experiments at CERN should be high on the agenda for Cyprus, with a view to pursuing full Membership of the Organization. Sustaining the annual budget provided by the RIF to cover operational aspects in the CMS experiment is vital.
- Extending the annual budget to also accommodate the local technical equipment would be an important step towards attracting researchers and providing them with technical training, which is crucial in the field of particle physics.
- The Committee recommends that the National Board for Research and Innovation consider creating a long-term strategic research programme revolving around the development of a high-granularity calorimeter for the CMS experiment.
- The Industrial Liaison Officer has deployed an excellent system to seek adequate industrial return from CERN and is well prepared for full CERN Membership for Cyprus.



Recognition of individuals in large collaborations

http://nupecc.org/jenaa/

Due to COVID-19 the WG decided to postpone activities earlier this year but resumed since May when invitation letters on behalf of APPEC-ECFA-NuPECC were send to initially the following collaborations (large collaboration, with >40 authors). First meetings organized during the Summer period.

APPEC (34)

AMS, Antares, Auger, Baikal GVD, Borexino, CALET, CTA, CUORE, DAMIC, DarkSide, Darwin, DEAP, Edelweiss, ET, EUCLID, Fermi-LAT, Gerda, IceCube, Juno, Katrin, Km3NeT, Legend, LIGO, LISA, LSST, MAGIC, Pamela, SNO+, Virgo, XENON, HESS, HAWC, JEM-EUSO, LHAASO

ECFA (14)

ATLAS, Belle II, CALICE, Cast, Cloud, DUNE, CMS, Compass, Dirac, LHCb, NA61/SHINE, NA62, Solid, T2K

NuPECC (33)

A2, ACTAR/TPC, AD, AEGIS, AGATHA, ALICE, ALPHA, BM@N, CBM, CLAS, COLLAPS, CRIS, DESIR, Galileo, Ganil, Gbar, HADES, HISPEC/DESPEC, IDS, INDRA, Isolde, JEDI, MATS, Miniball, MPD, nTOF, NFS, NUSTAR, PANDA, PARIS, R3B, S3, SuperFRS



Additional

ECFA Organisational topics



Extract from the ECFA Terms of Reference (ECFA/81/52/Rev.5, 16 November 2017)

6.2 RESTRICTED ECFA

Restricted ECFA is composed of one member per participating country, confirmed every three years and generally appointed for at most two three-year periods. The <u>Director-General of CERN</u>, the <u>Director of the Frascati National Laboratory</u> and the <u>Director for Particle Physics at DESY</u> are ex-officio members. The CERN Director responsible for research is invited, and representatives of national or international laboratories or organizations which are of importance for ECFA's activities can also be invited.



The slot for the three laboratories (CERN, DESY, Frascati) appeared in 2009. Before that time only CERN and DESY were represented in RECFA. Probably because there were running particle physics experiments in these labs at that time.

These laboratories report during regular RECFA and Plenary ECFA meetings.

Surely today there might be additional major laboratories to consider for ECFA.

ECFA opted to revisit the list.



Concrete proposal for benchmarks to be used as gauges in our deliberations:

- Hosted by (at least) one of the ECFA countries;
- The European research community collaborates in particle physics experiments at accelerators, or accelerator structures, which are operational today at the laboratory, or are being constructed;
- Leading accelerator R&D towards colliders for particle physics is present today at the laboratory, or the infrastructure is being constructed;
- An extensive and demonstrated European user community at the laboratory such that the labto-community communication, provided by ECFA, is essential for the well functioning of the laboratory (lab-to-lab communication remains a purview of the Laboratories Director Group).

Plenary ECFA is to endorse these benchmarks and accordingly a call for proposals would follow to be submitted to the ECFA Chair and Scientific Secretary aiming for a first RECFA discussion in October.



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ECFA chair election (2021-2023)

- The organisation of the election of the next ECFA chair is mandated to an election committee within RECFA
- The election will take place on 9 Oct during the RECFA meeting, and the result will be presented for endorsement to Plenary ECFA on 19 Nov