

# ECFA

European Committee for Future Accelerators



## Report from ECFA

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*NuPECC meeting, October 16<sup>th</sup>, 2020, remote*



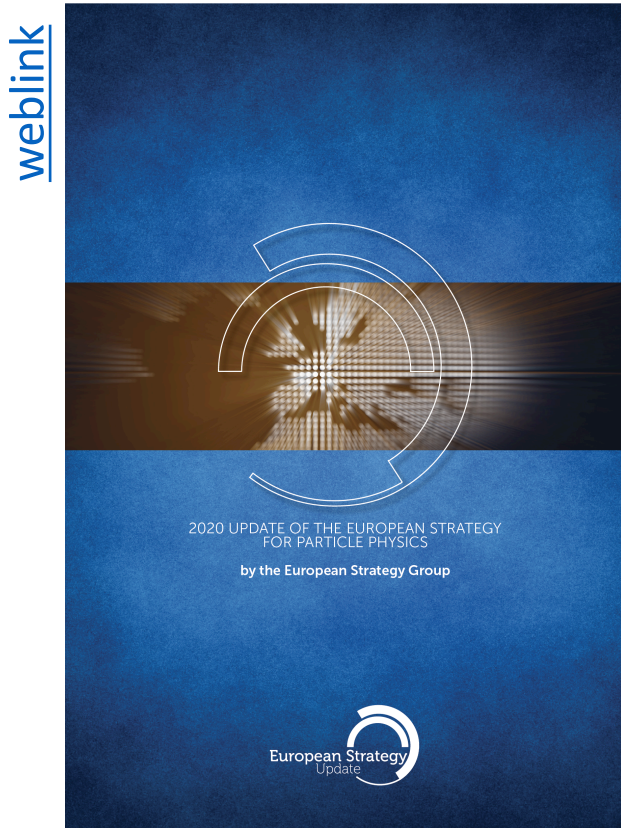


## This report

- 1. Key elements of the updated European Strategy (very brief)**
2. The role of ECFA in the context of the Strategy

# Most recent European Strategies

the small ...



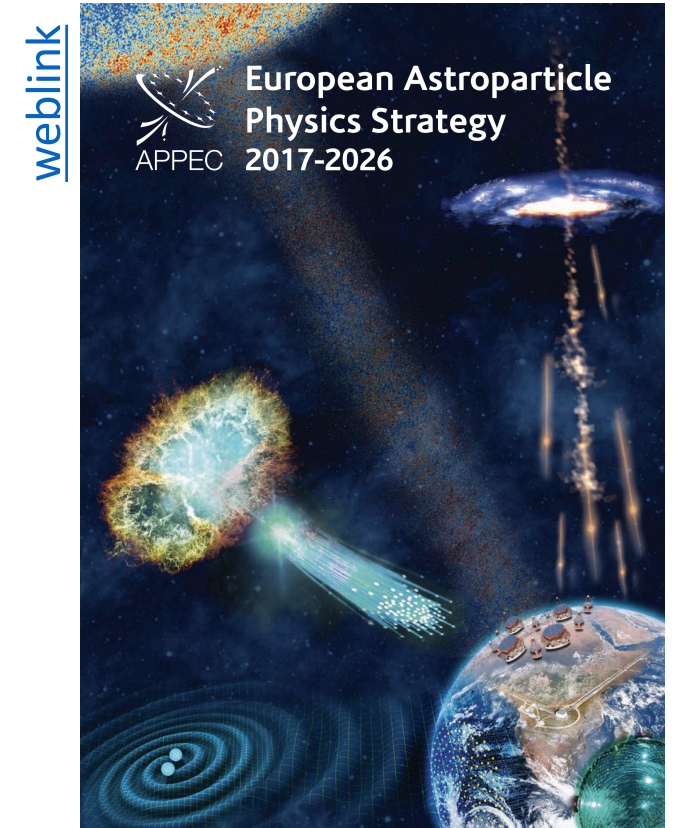
2020 Update of the European Particle Physics Strategy

... the connection ...



Long Range Plan 2017 Perspectives in Nuclear Physics

... the large



2017-2026 European Astroparticle Physics Strategy

[weblink](#)

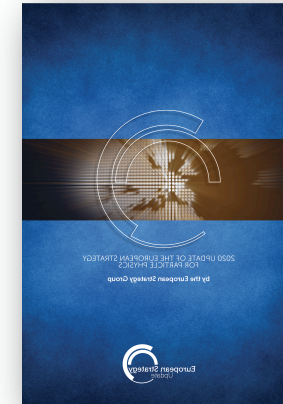
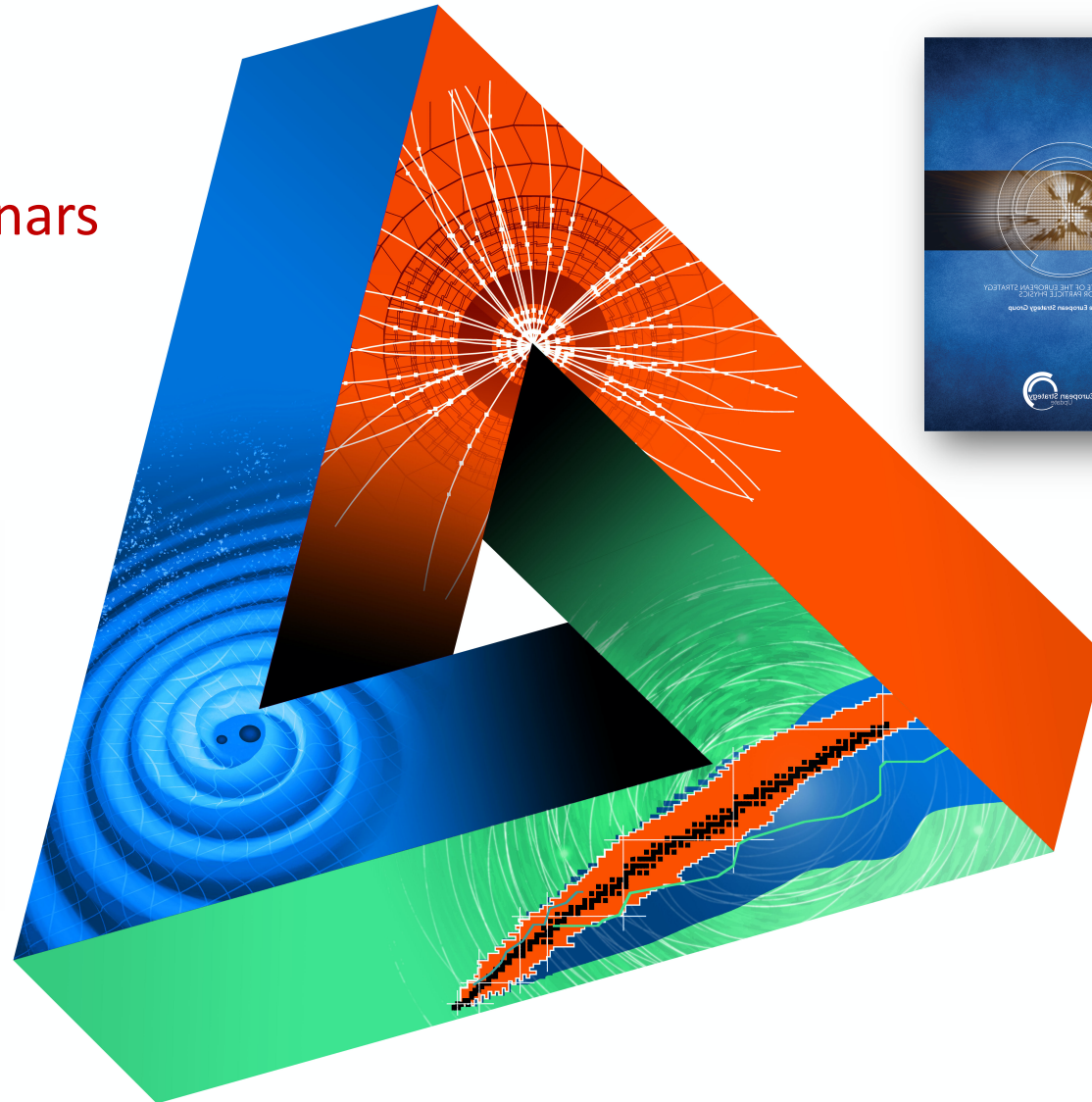
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# Exploring and strengthening synergies

Initiated a series of  
Joint ECFA-NuPECC-APPEC Seminars  
(JENAS)



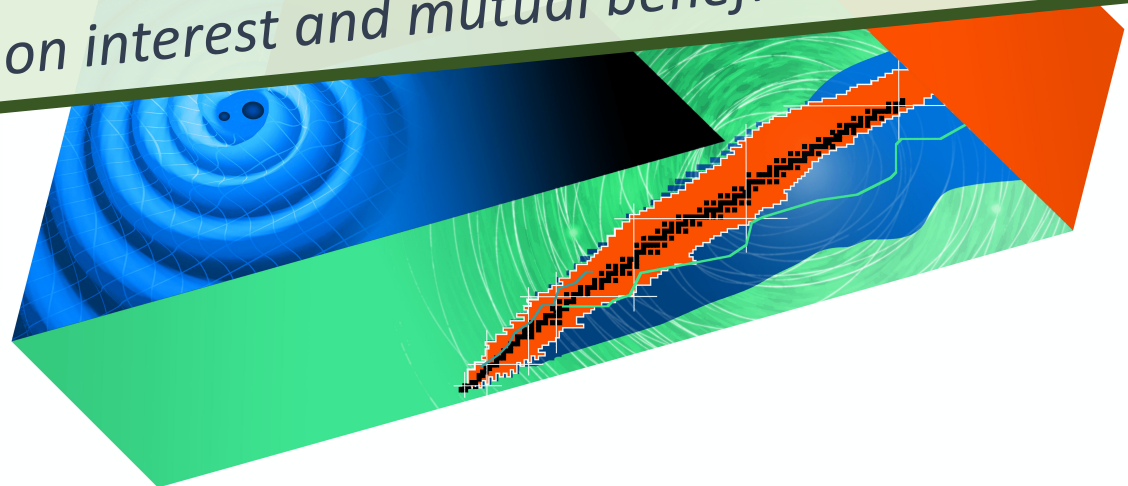
ECFA: European Committee for Future Accelerators  
NuPECC: Nuclear Physics European Collaboration Committee  
APPEC: Astroparticle Physics European Consortium  
First JENAS event at Orsay, 2019: <https://jenas-2019.lal.in2p3.fr>

# Exploring and strengthening synergies

Initiated a series of  
**Joint ECFA-NuPECC APPEC**  
ESPP: European Strategy for Particle Physics

ESPP: “Europe should maintain its capability to perform innovative experiments at the boundary between particle and nuclear physics.”

ESPP: “Synergies between particle and astroparticle physics should be strengthened through scientific exchanges and technological cooperation in areas of common interest and mutual benefit.”

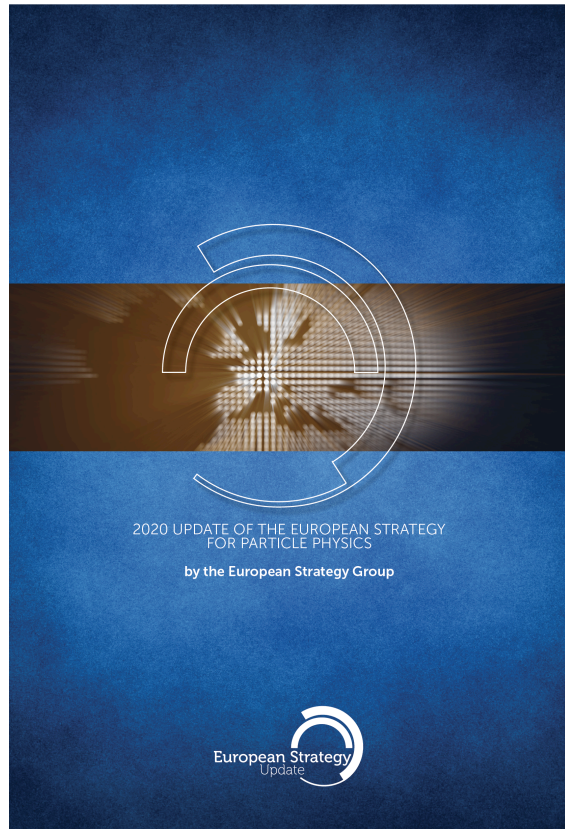




# Most recent European Strategies

the small ...

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2020 Update of the European Particle Physics Strategy

... the connection ...

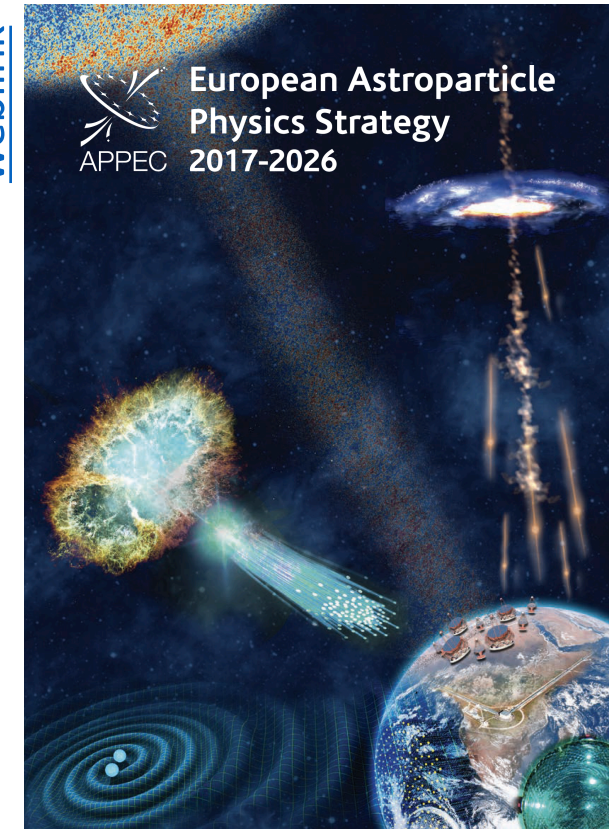
[weblink](#)



Long Range Plan 2017 Perspectives in Nuclear Physics

... the large

[weblink](#)



2017-2026 European Astroparticle Physics Strategy

## Key elements of the updated European Strategy

Two key documents made public:

(main website <http://europeanstrategyupdate.web.cern.ch/welcome> )

1. a document including all recommendation:

<https://home.cern/sites/home.web.cern.ch/files/2020-06/2020%20Update%20European%20Strategy.pdf>

2. a deliberation document elaborating on the recommendations in a context:

<https://home.cern/sites/home.web.cern.ch/files/2020-06/2020%20Deliberation%20Document%20European%20Strategy.pdf>



# Today's Flagship: from LHC to HL-LHC

Current flagship (27km)  
impressive programme up to 2040

### ALICE – Upgrade LS2 – study Quark-Gluon Plasma formed in nuclear collisions

**Monolithic-pixel Inner Tracking System**  
→ x3-5 better tracking precision

**Pixel Muon Forward Tracker**  
→ non-prompt muons from B decays

**GEM-based TPC readout**  
→ x100 readout rate in Pb-Pb

- Low-P<sub>T</sub> heavy-flavour mesons/baryons: characterize QCD with heavy quarks
- Low-P<sub>T</sub> charmonia: c-cbar melting and re-generation in deconfined system
- Low-mass di-electrons: QCD

### LHCb – Upgrade LS2

Will collect 50 fb<sup>-1</sup> at instantaneous lumi of 2x10<sup>33</sup>cm<sup>-2</sup>s<sup>-1</sup>

- Full software trigger
- New tracking detectors
- New RICH photon detectors
- New electronics read out at 40 MHz

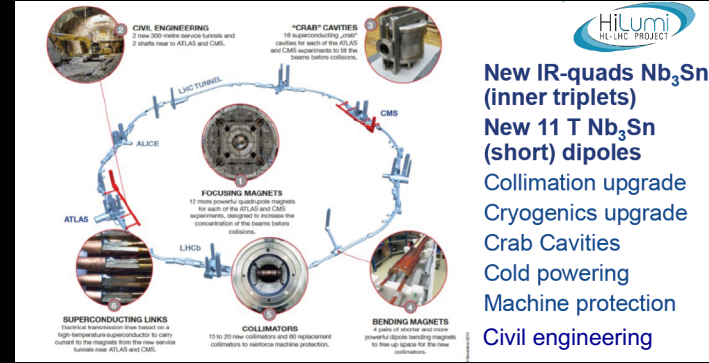
Machining and light scan of the scintillating fiber mats for the fore tracker

Cherenkov ring from a full RICH MAPMT module

Calorimeter front-end board

Muon system readout ASIC

## CERN and the High-Luminosity LHC: 300/fb → 3000/fb



Formal approval by CERN Council (June 2019)  
Cost to Completion

## HL-LHC@CERN

10y @ 14 TeV (3-4ab<sup>-1</sup>)

NbTi 8T

Nb<sub>3</sub>Sn few 11T magnets

### ATLAS – Upgrade Phase II – LS3

NEW ALL-SILICON INNER TRACKER (ITK) WITH ETA COVERAGE UP TO 4

NEW MUON CHAMBERS IN THE INNER BARREL REGION

NEW FORWARD MUON TRACKER (OPTION)

NEW TIMING DETECTOR (HGTD) IN FORWARD REGION (OPTION)

TDQA OFF-DETECTOR ELECTRONICS:

- LO HARDWARE TRIGGER:
  - LO CALORIMETER
  - LO MUON
  - LO GLOBAL
- LI HARDWARE TRIGGER (OPTION):
  - LI GLOBAL
  - LI TRACK TRIGGER
- READOUT SYSTEM
- HLT

### CMS – Upgrade Phase II – LS3

Barrel EM calorimeter

- New FE/BE electronics for full granularity readout at 40 MHz - with improved time resolution
- Lower operating temperature (8°)

Muon systems

- New DT & CSC FE/BE electronics
- New station to complete CSC at 1.6 < η < 2.4
- Extended coverage to η ≈ 3

Beam radiation and luminosity Common systems and infrastructure

MIP precision Timing Detector

- Barrel layer: Crystal + SiPM
- Endcap layer: Low Gain Avalanche Diodes

Trigger/HLT/DAQ

- Track information in trigger at 40 MHz
- 12.5 μs latency
- HLT input/output 750/7.5 kHz

New Endcap Calorimeters

- Rad. tolerant - High granularity transverse and longitudinal
- 4D shower measurement including precise timing capability

New Tracker

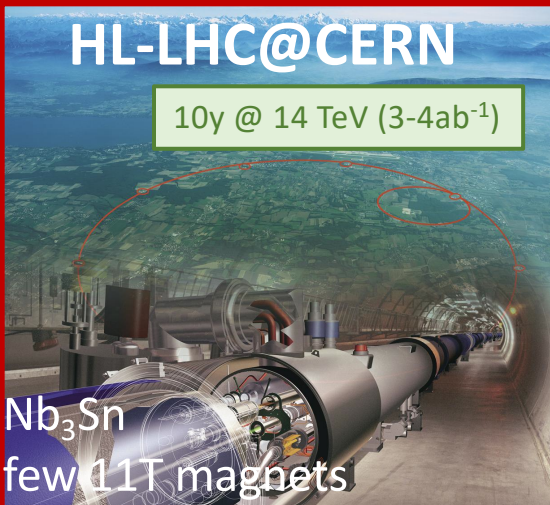
- Rad. tolerant - increased granularity - lighter
- 40 MHz selective readout (strips) for Trigger
- Extended coverage to η ≈ 3.8

# Today's Flagship: from LHC to HL-LHC

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GEM-based TPC  
→ x100 readout Pb-Pb

ΔV = 270 V  
ΔV = 230 V  
ΔV = 288 V  
ΔV = 367 V

### LHCb – Upgrade LS2

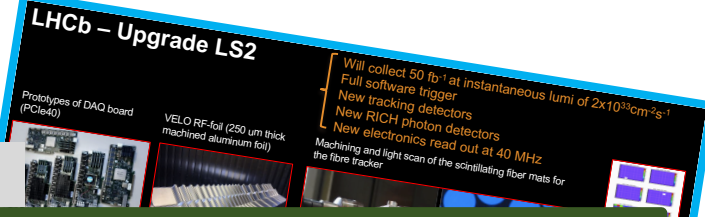
Will collect 50 fb<sup>-1</sup> at instantaneous lumi of 2x10<sup>33</sup>cm<sup>-2</sup>s<sup>-1</sup>

- Full software trigger
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Prototypes of DAQ board (PCIe40)

VELO RF-foil (250 μm thick machined aluminum foil)

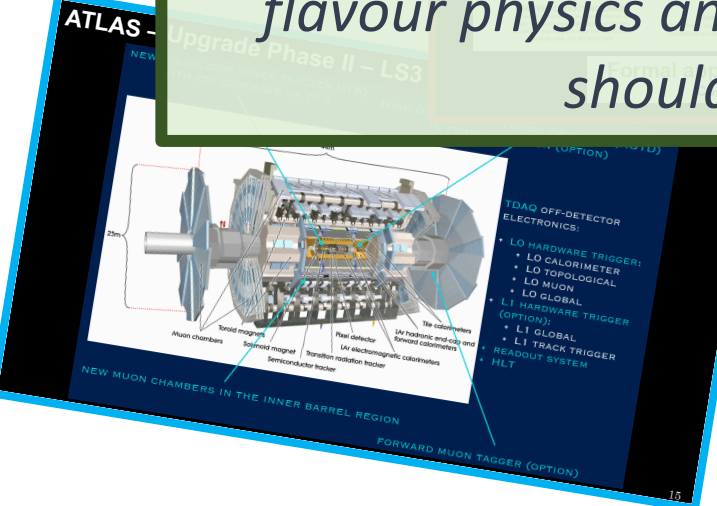
Machining and light scan of the scintillating fiber mats for the fore tracker



ESPP: European Strategy for Particle Physics

*ESPP: “The successful completion of the high-luminosity upgrade of the machine and detectors should remain the focal point of European particle physics, together with continued innovation in experimental techniques. The full physics potential of the LHC and the HL-LHC, including the study of flavour physics and the quark-gluon plasma, should be exploited.”*

### ATLAS – Upgrade Phase II – LS3



TDQA OFF-DETECTOR ELECTRONICS:

- LO HARDWARE TRIGGER:
  - LO CALORIMETER
  - LO TOPOLOGICAL
  - LO MUON
  - LO GLOBAL
- LI HARDWARE TRIGGER (OPTION):
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FORWARD MUON TAGGER (OPTION)

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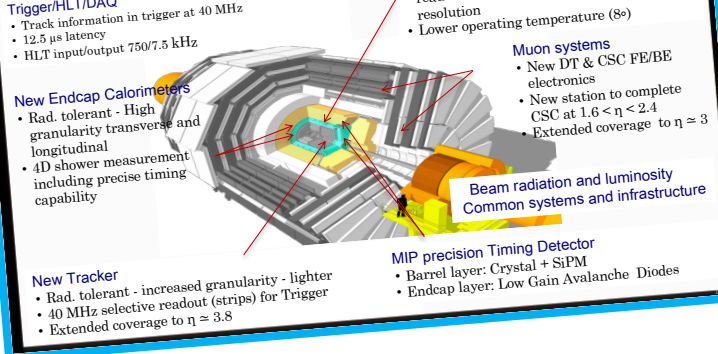
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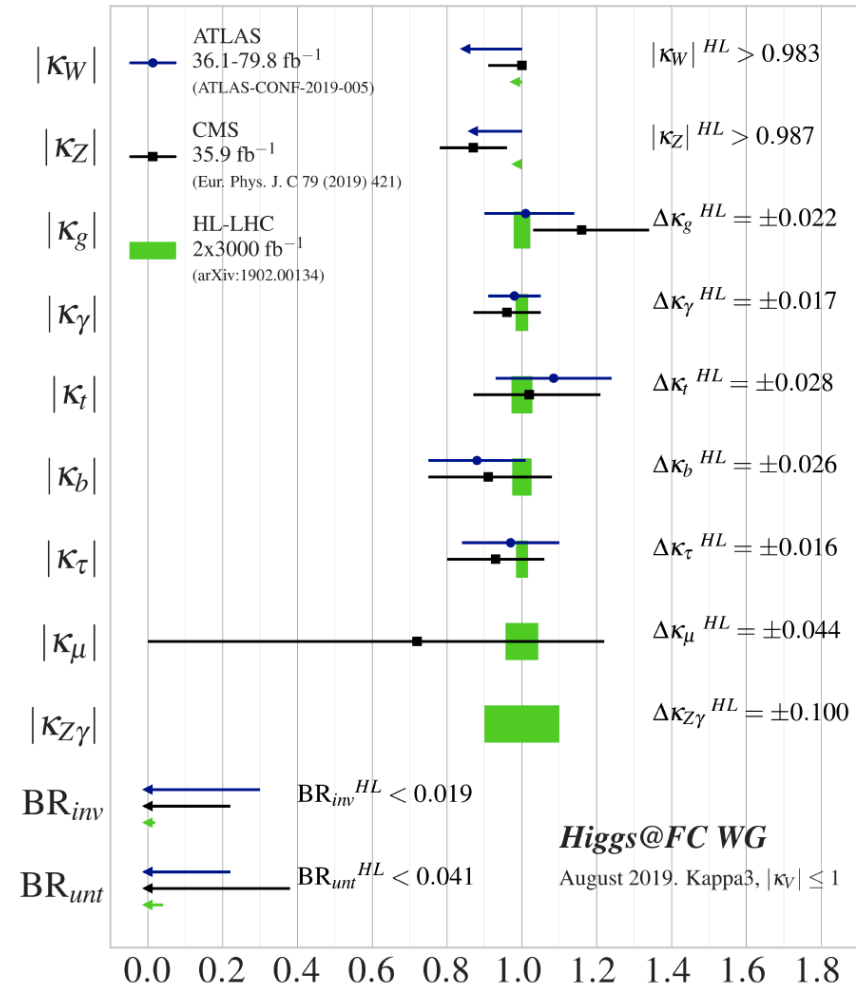
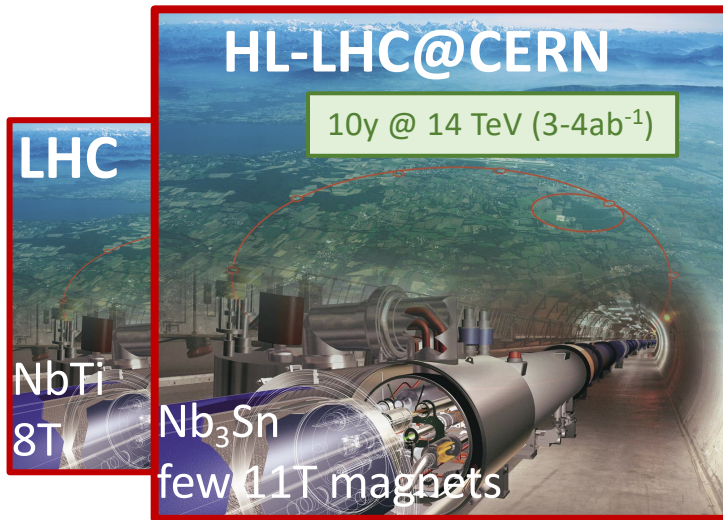




# Today's Flagship: from LHC to HL-LHC

Current flagship (27km)  
impressive programme up to 2040

The Higgs couplings are expected to improve significantly with the HL-LHC data

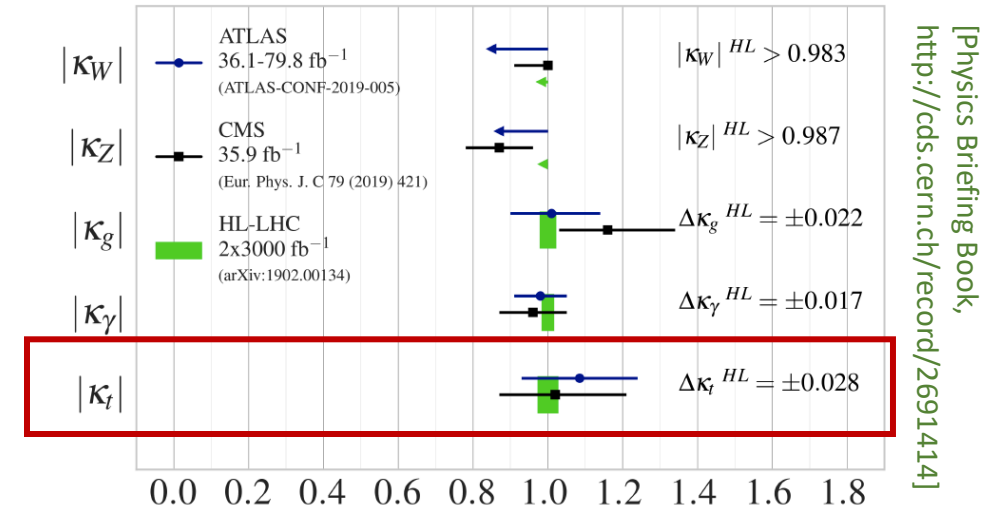
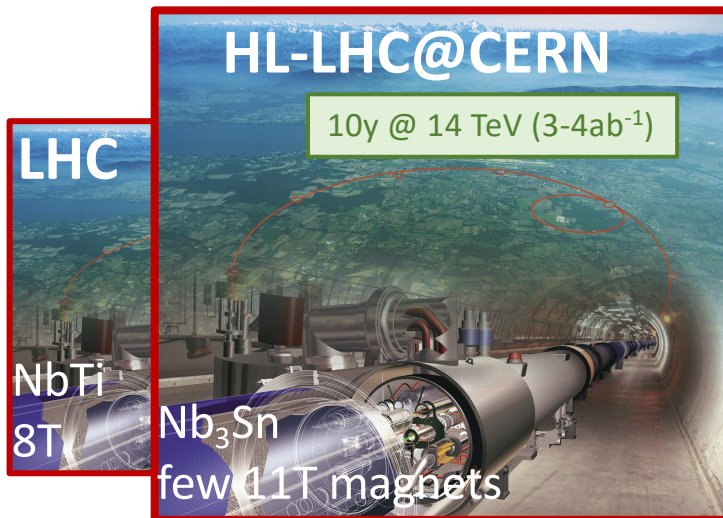


[Physics Briefing Book,  
<http://cds.cern.ch/record/2691414>]

# Today's Flagship: from LHC to HL-LHC

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The Higgs couplings are expected to improve significantly with the HL-LHC data



- The estimate made in 2013 for  $\kappa_t$  was a precision of 7-10% with 3000fb<sup>-1</sup>, while now a value better than 4% seems reachable (for the same integrated luminosity)
- With only 6 years of experimental and theoretical innovations a factor of 2 improvement, and yet 20 years to go into the research program

# Today's Flagship: from LHC to HL-LHC

Current flagship (27km)

*impressive programme up to 2040*

The Higgs couplings are expected to improve significantly with the HL-LHC data

ESPP: "Given the unique nature of the Higgs boson, there are compelling scientific arguments for a new electron-positron collider operating as a "Higgs factory". *The vision is to prepare a Higgs factory, followed by a future hadron collider with sensitivity to energy scales an order of magnitude higher than those of the LHC, while addressing the associated technical and environmental challenges.*"

- With only 6 years of experimental and theoretical innovations a factor of 2 improvement, and yet 20 years to go into the research program



# Colliders in Europe at the energy & precision frontier

**Current flagship (27km)**  
*impressive programme up to 2040*

**Big sister future ambition (100km), beyond 2040**  
*attractive combination of precision & energy frontier*

**LHC**  
 NbTi  
 8T

**HL-LHC@CERN**  
 10y @ 14 TeV ( $3-4ab^{-1}$ )  
 Nb<sub>3</sub>Sn  
 few 11T magnets

*ep-option with HL-LHC: LHeC*  
 10y @ 1.2 TeV ( $1ab^{-1}$ )  
 updated CDR 2007.14491

**FCC-ee**  
**Higgs Factory**  
 EW/Top Factory

4y @  $M_Z$  ( $150ab^{-1}$ )  
 1-2y @  $2xM_W$  ( $10ab^{-1}$ )  
 3y @ 240 GeV ( $5ab^{-1}$ )  
 5y @  $2xm_t$  ( $1.5ab^{-1}$ )

**FCC-eh/hh@CERN [3.5/100 TeV]**  
 SWITZERLAND  
 LHC  
 FRANCE  
 100 KM LONG  
 Nb<sub>3</sub>Sn  
 16T magnets  
 25y @ hh 100 TeV ( $30ab^{-1}$ )  
 @ eh 3.5 TeV ( $2ab^{-1}$ )

*each collider (only one for FCC-eh)*  
*numbers assume 2 IPs for*

*by around 2026, verify if it is feasible to plan for success  
 (techn. & adm. & financially & global governance)  
 potential alternatives pursued @ CERN: CLIC & muon collider*

# Colliders in Europe at the energy & precision frontier

**Current flagship (27km)**  
*impressive programme up to 2040*

**Big sister future ambition (100km), beyond 2040**  
*attractive combination of precision & energy frontier*

ESPP: "Europe, together with its international partners, **should investigate the technical and financial feasibility of a future hadron collider at CERN with a centre-of-mass energy of at least 100 TeV and with an electron-positron Higgs and electroweak factory as a possible first stage.** Such a feasibility study of the colliders and related infrastructure should be established as a global endeavour and be completed on the timescale of the next Strategy update."

ESPP: "**CERN should initiate discussions with potential major partners** as part of the feasibility study for such a project being hosted at CERN."

*ep-option with HL-LHC: LHeC*  
10y @ 1.2 TeV ( $1ab^{-1}$ )  
updated CDR 2007.14491

5y @  $2xm_t$  ( $1.5ab^{-1}$ )

Nb<sub>3</sub>Sn  
16T magnets

25y @ hh 100 TeV ( $30ab^{-1}$ )  
@ eh 3.5 TeV ( $2ab^{-1}$ )

*by around 2026, verify if it is feasible to plan for success  
(techn. & adm. & financially & global governance)*

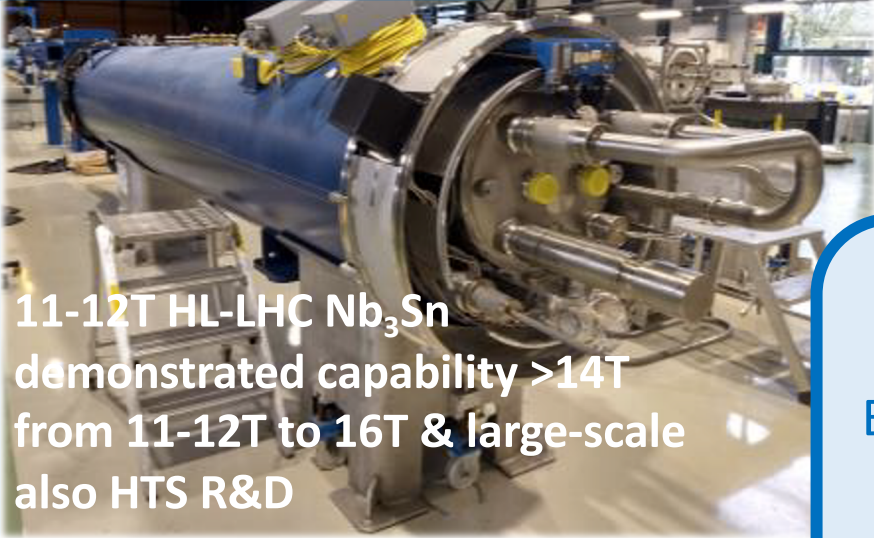
*potential alternatives pursued @ CERN: CLIC & muon collider*

numbers assume 2 Jpa-f  
conversion only one for FCC-e



# Advancing Accelerator Technologies

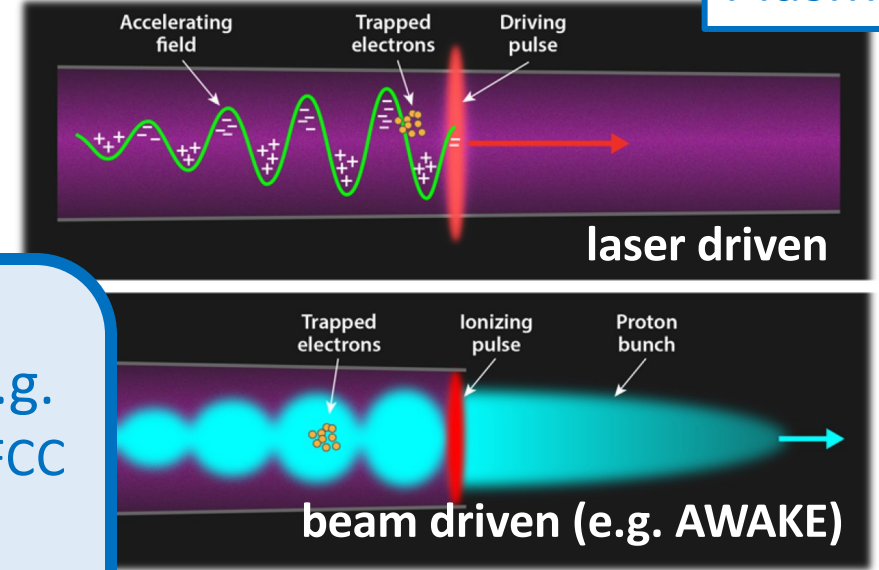
## High-Field Magnets



11-12T HL-LHC Nb<sub>3</sub>Sn demonstrated capability >14T from 11-12T to 16T & large-scale also HTS R&D

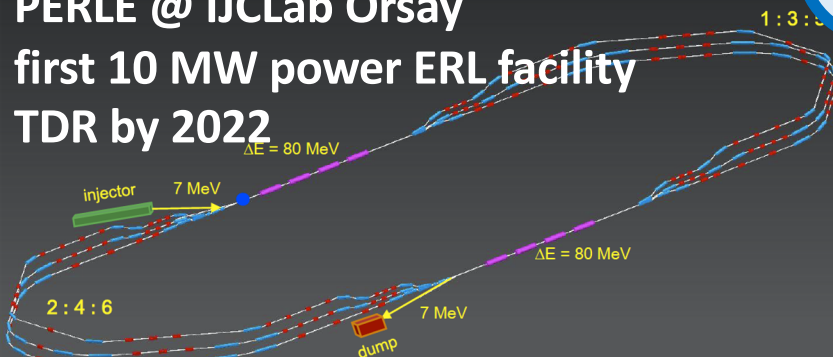
continue the development of CLIC accelerator technology and other high-gradient accelerating structures

## Plasma



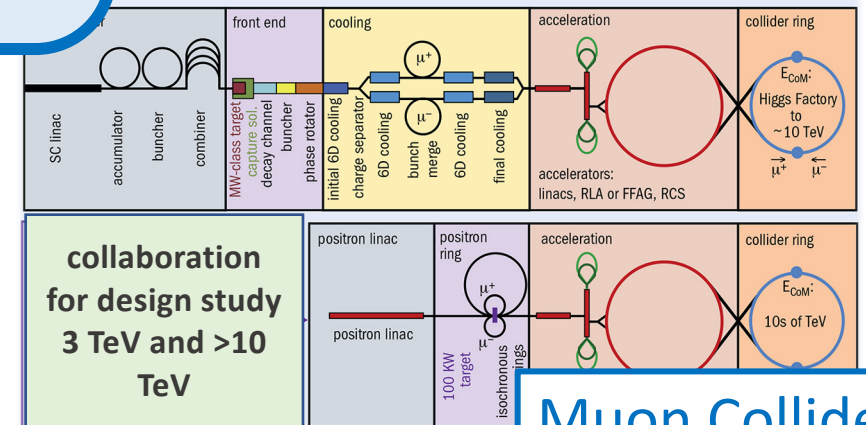
**Strong EU support, e.g.** EuPRAXIA, EuroCircol, FCC IS, ARIES, EuCARD, EASITrain, E-JADE, ...

PERLE @ IJCLab Orsay  
first 10 MW power ERL facility  
TDR by 2022



## Energy Recovery Linac

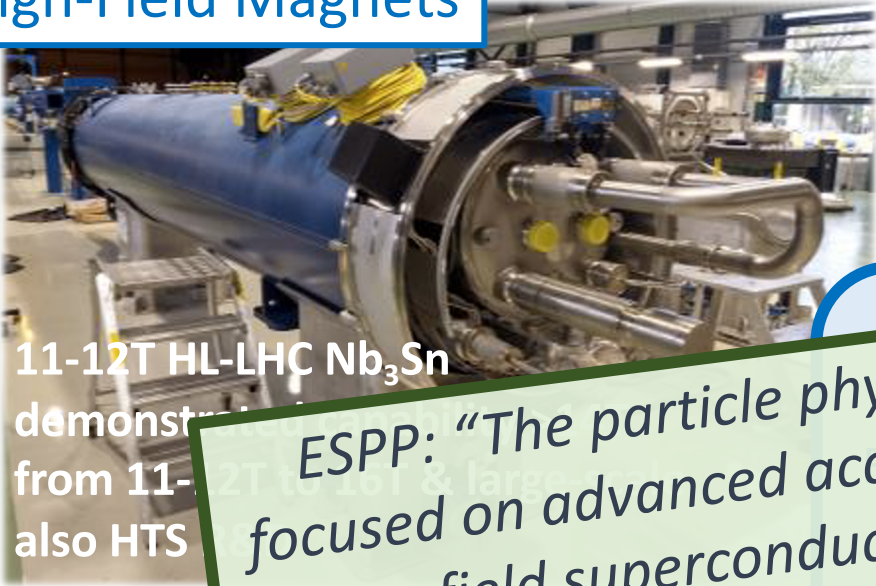
Accelerator and Detector R&D Roadmaps will be developed (2021)



## Muon Collider

# Advancing Accelerator Technologies

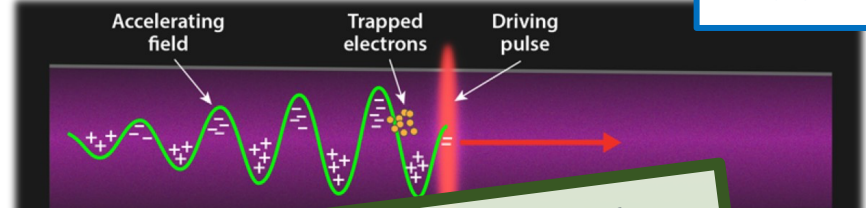
## High-Field Magnets



11-12T HL-LHC Nb<sub>3</sub>Sn demonstrator from 11-12T to 16T & larger also HTS

continue the development of CLIC accelerator technology and other high-gradient accelerating structures

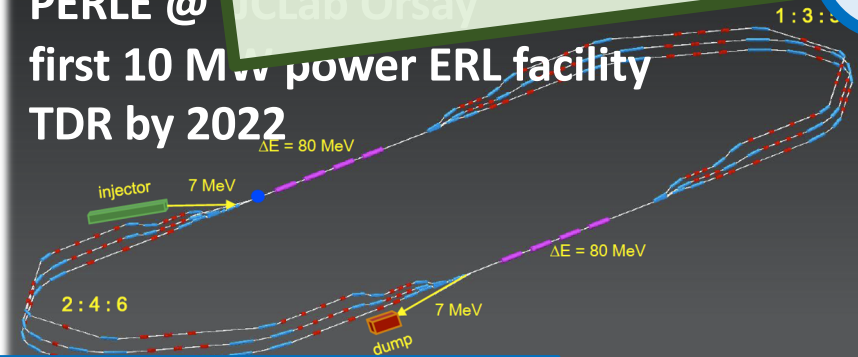
## Plasma



APS/Alan Stonebraker

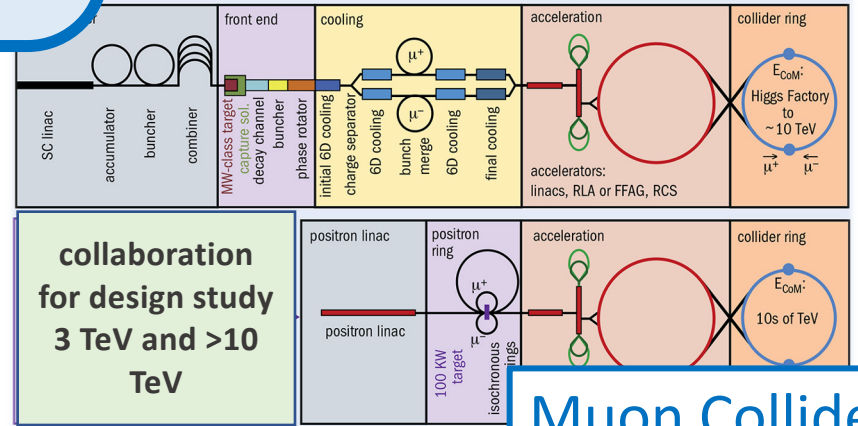
ESPP: "The particle physics community should ramp up its R&D effort focused on advanced accelerator technologies, in particular that for high-field superconducting magnets, including high-temperature superconductors."

PERLE @ ICLab Orsay  
first 10 Mw power ERL facility  
TDR by 2022



## Energy Recovery Linac

Accelerator and Detector R&D Roadmaps will be developed (2021)



collaboration for design study 3 TeV and >10 TeV

## Muon Collider



# Neutrino beams in Japan and in the US

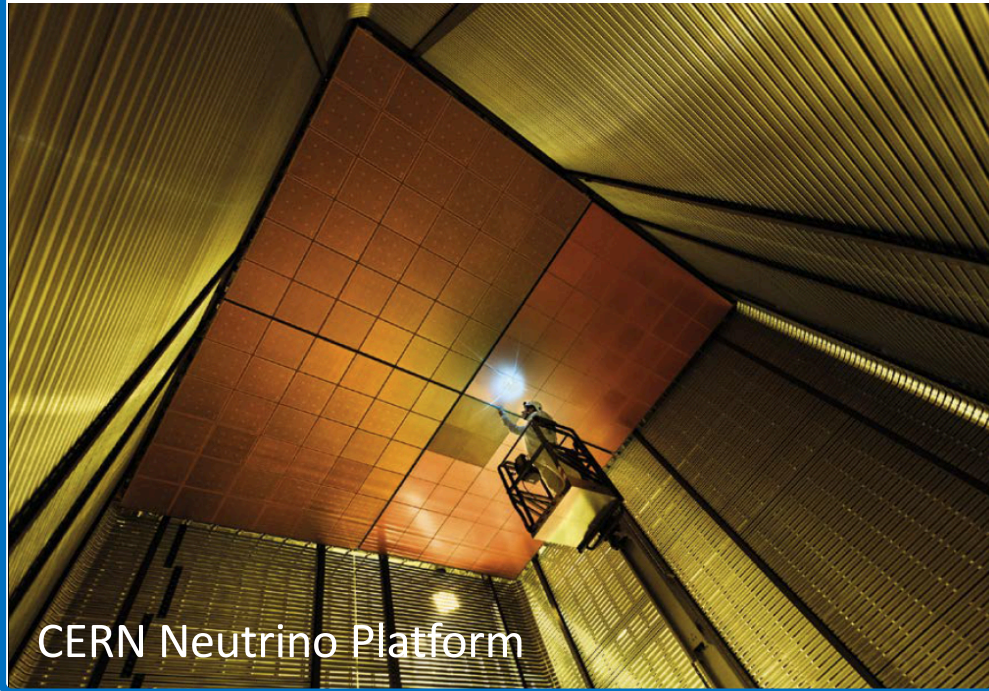
*CERN's Neutrino Platform in LBNF & DUNE, and in T2K*

*Leptonic CP violation, neutrino mass hierarchy, sterile neutrino's, ...*

**DUNE @ LBNF**

also JINR

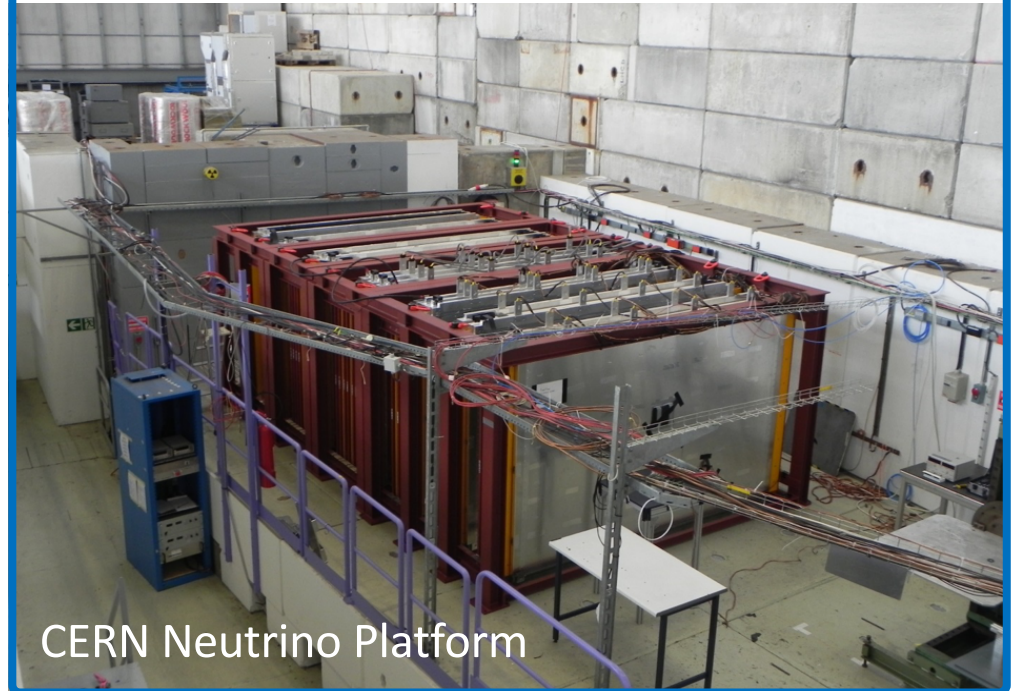
*Prototype dual-phase Liquid-Argon TPC*



CERN Neutrino Platform

**BabyMIND @ T2K** (near detector)

*Prototype for Magnetised Iron Neutrino Detector*



CERN Neutrino Platform

*ESPP: “[...] continue to support long baseline experiments in Japan and the US. In particular [...] towards the successful implementation of LBNF and DUNE.”*



## Key (research facility) aspects of the updated European Strategy

- The full exploitation of the (HL-)LHC potential
- Continuous support for the long-baseline neutrino projects in the US and Japan
- Support for research programmes beyond colliders where they have high impact
- Globally, a Higgs Factory is the highest priority collider beyond the HL-LHC
- Investigate the feasibility of a 100 TeV hadron collider at CERN
- Strengthen the R&D for accelerators, and develop roadmaps for both accelerator and detector R&D in Europe to achieve the above
- Adjust our organisation in order to achieve the above, including societal aspects



## This report

1. Key elements of the updated European Strategy (very brief)
2. **The role of ECFA in the context of the Strategy**

## 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)

1

# 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 RECFAs 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.

2

## Organize the development of a Detector R&D Roadmap

***To guide the Detector R&D process in Europe, defining an inclusive Detector R&D Roadmap would be a major step and a strong ambition for the community at large, both considering focused and transformational R&D and considering emerging technologies also in adjacent fields***

The updated European Strategy for Particle Physics calls upon ECFA to organize the development of a Detector R&D Roadmap

2

## Organize the development of a Detector R&D Roadmap

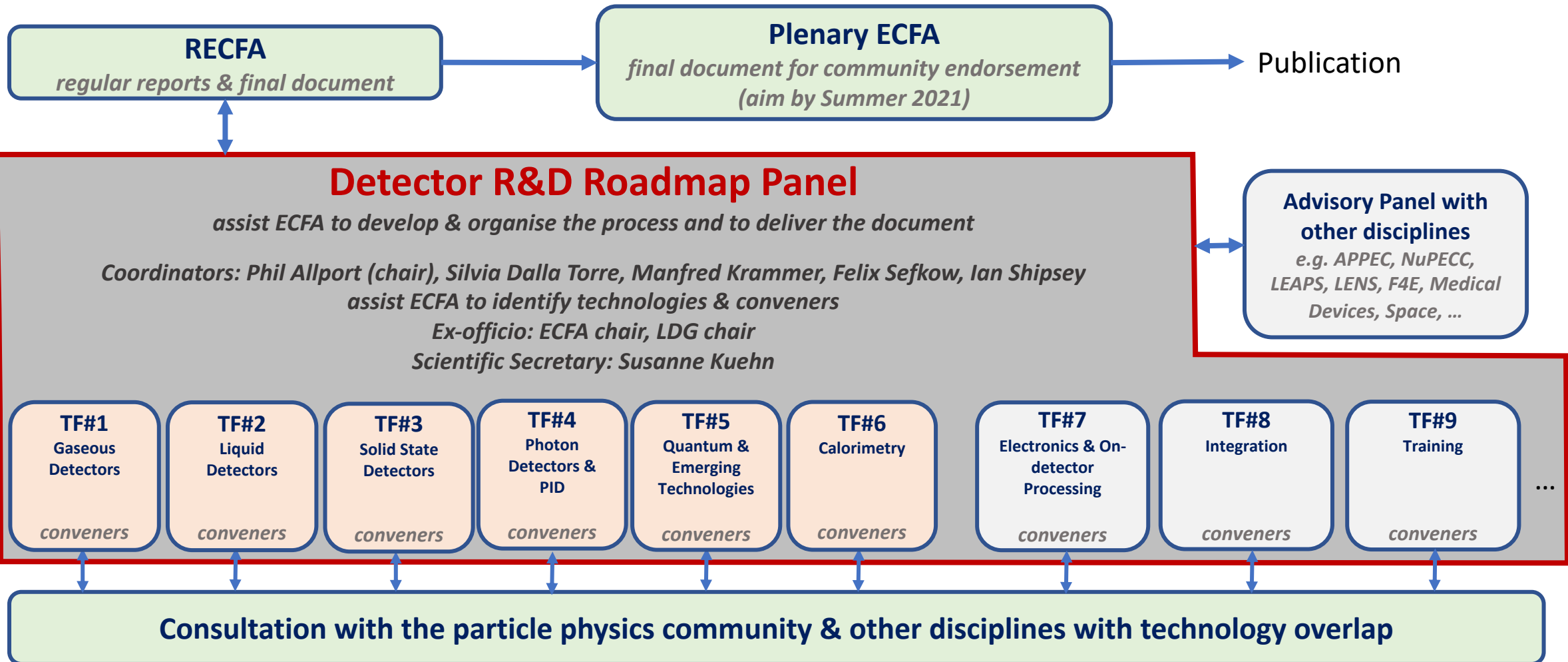
*“Coordination of R&D activities is critical to maximise the scientific outcomes of these activities and to make the most efficient use of resources; as such, there is a clear need to strengthen existing R&D collaborative structures, and to create new ones, to address future experimental challenges of 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





## Organization to structure the consultation with the community



example Task Forces at this stage

3

## 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/>



“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 have overlapping experimental approaches.”

“Links between accelerators and other fields of research, such as astroparticle and nuclear physics, have been strengthened in areas of common interest. To further explore and enhance the synergies, a seminar organised by APPEC, ECFA and NuPECC was recently held. For example, on the diverse topic of dark matter addressed with complementary experimental approaches, communication and results-sharing across communities is essential.”

**CALL FOR VENUES FOR THE JENAS 2021 EVENT**  
**DEADLINE 21 SEPT**

Extracts from the 2020 Strategy update



3

## CALL FOR VENUES FOR THE JENAS 2021 EVENT

Following the successful first Joint APPEC-ECFA-NuPECC Seminar in Orsay (<https://jenas-2019.lal.in2p3.fr>), the chairs of APPEC, ECFA and NuPECC issue a call for venues for the second JENAS event to be organized in the autumn of 2021. The Joint Seminar is to inform our communities about each other's scientific, technological and organizational challenges and opportunities.

At this stage we launch an open call to receive proposals for venues for this 3-day meeting. **Proposals should be communicated to the three chairs of APPEC, ECFA & NuPECC, and reach us the latest on 21 September 2020.**

Shortly after, the organising board of JENAS2019 will proceed to select the venue for JENAS2021 (<https://jenas-2019.lal.in2p3.fr/organisingboard/>).

A proposal should contain information about the venue, the available dates in October-November 2021, the plenary meeting room to host 300 participants, a few additional rooms with 20 to 40 seats, the initial composition of the local organizing team, options for accommodation and potential transport, and the initial estimate of the participation fee.



# Applications for the venue for the next JENAS event

*Joint ECFA-NuPECC-APPEC Seminar - <http://www.nupecc.org/jenaa/>*

- Applications received from Madrid and JINR.
- Next step is for the organizing board of JENAS 2019 to make the selection:
  - ECFA: Manfred Krammer, Carlos Lacasta, Jorgen D'Hondt
  - NuPECC: Angela Bracco, Eberhard Widmann, Marek Lewitowicz
  - APPEC: Teresa Montaruli, Stan Bentvelsen, ~~Antonio Masiero~~ Marco Pallavicini
- Flexibility to organize the next JENAS event in the Fall of 2021 or early 2022.

## Expressions-of-Interest (EoI) from JENAS

<http://nupecc.org/jenaa/>

3

Following JENAS 2019 and a call for Eols in the communities, in total 5 themes have been selected to be strengthened through further synergies between APPEC, ECFA and NuPECC:

- **Machine-Learning Optimized Design of Experiments – MODE** (T. Dorigo et al.)
- **Initiative for Dark Matter in Europe and beyond: towards facilitating communication and result sharing in the Dark Matter community (iDMEu)** (G. Lanfranchi et al.)
- **Gravitational Wave Probes of Fundamental Physics** (T. Galatyuk, P. Pani et al.)
- **Nuclear Physics at the LHC** (L. Fabbietti, A. Kalweit et al.)
- **Storage Rings for the Search of Charged-Particle EDMs** (C. Carli, P. Lenisa, J. Pretz for the JEDI and CPEDM collaborations)

In general, these themes have been noted in the updated Strategy for particle physics. In dialogue with the proponents, we will explore how the three committees can strengthen them.



## Expressions-of-Interest (Eol) from JENAS

<http://nupecc.org/jenaa/>

3

In general, these topics have been noted in the updated Strategy for particle physics. What can APPEC, ECFA and NuPECC offer to strengthen the synergies for an Eol topic:

- Supporting the **organization** of (tele-)gatherings across communities on the Eol topic (workshops, town meetings, platforms for continuous discussions, ...)
- Make **announcements** related to the Eol topic through our channels across the three disciplines
- Help with the **dissemination** of the activities and potential reports of the Eol topic (reports at APPEC, ECFA and/or NuPECC meetings, articles in our newsletters, ...)
- Link the project specific **website** on the APPEC, ECFA and/or NuPECC websites
- Help with **community wide calls** to seek collaborators, with calls for venues for specific events and with funding applications for the Eol topic
- Raise the **awareness** of the Eol topic in our scientific communities and to policy-making bodies
- Organize **dedicated sessions at the JENAS events** on the Eol topic

## Expressions-of-Interest (Eol) from JENAS

3

The path towards the APPEC, ECFA and NuPECC help concrete, chronologically:

1. For the collection of Eol topics we have a **joint APPEC-ECFA-NuPECC task force**, and with all task force members together, we aim to obtain coverage for all Eol topics
2. The chairs of APPEC, ECFA and NuPECC will organize a **kick-off gathering** with the Eol proponents and the identified APPEC, ECFA and NuPECC task force members
3. The proponents will be asked to create (if not yet done) a **dedicated website for their project**, indicating the JENAS logo and the link to APPEC, ECFA and NuPECC
4. The Eols coordinators and the task force members connected to a topic will be invited to organise **follow-up topical meetings** with the objectives to come to a concrete plan
5. Report to our committees/consortia the **concrete plan** for consideration and endorsement
6. A dedicated APPEC-ECFA-NuPECC **JENAS website** will be created indicating past and future JENAS events and the weblinks to the Eol websites
7. Agree on a **communication line** between APPEC, ECFA and NuPECC for each of the Eol topics, e.g. initially through the members of the task forces

## 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/>

4

*“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](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

4

- 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.

## Mandate for the ECFA ECR Panel

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- Members are, in general, **PhD students and postdocs**, either with or without a position in ECFA countries after obtaining the PhD. Up to **three members can be nominated by ECFA for a mandate of 2 years**, extendable with a further year. Each member should have at least one PhD student and at least one postdoc in their research group. Members are nominated by and assigned to the ECFA ECR Panel by the ECFA Plenary.
- Members from each ECFA country should have at least one member of the panel.
- Members should represent the views of early-career researchers in particle physics in the country.
- From among its 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**.
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**CALL FOR MEMBERS WAS ANNOUNCED WITHIN ECFA  
DEADLINE 16 NOV**

## Thank you for your attention

**ECFA Newsletters #1 - #2 - #3 - #4 - #5**  
available on the ECFA website:  
<https://ecfa.web.cern.ch>

