

FCC-contacts – April 30th

- News
- ECFA strategy on R&D, introduction to microvertex constraint: Didier Contardo
- Discussion R&D
- Tour de Table
- AOB

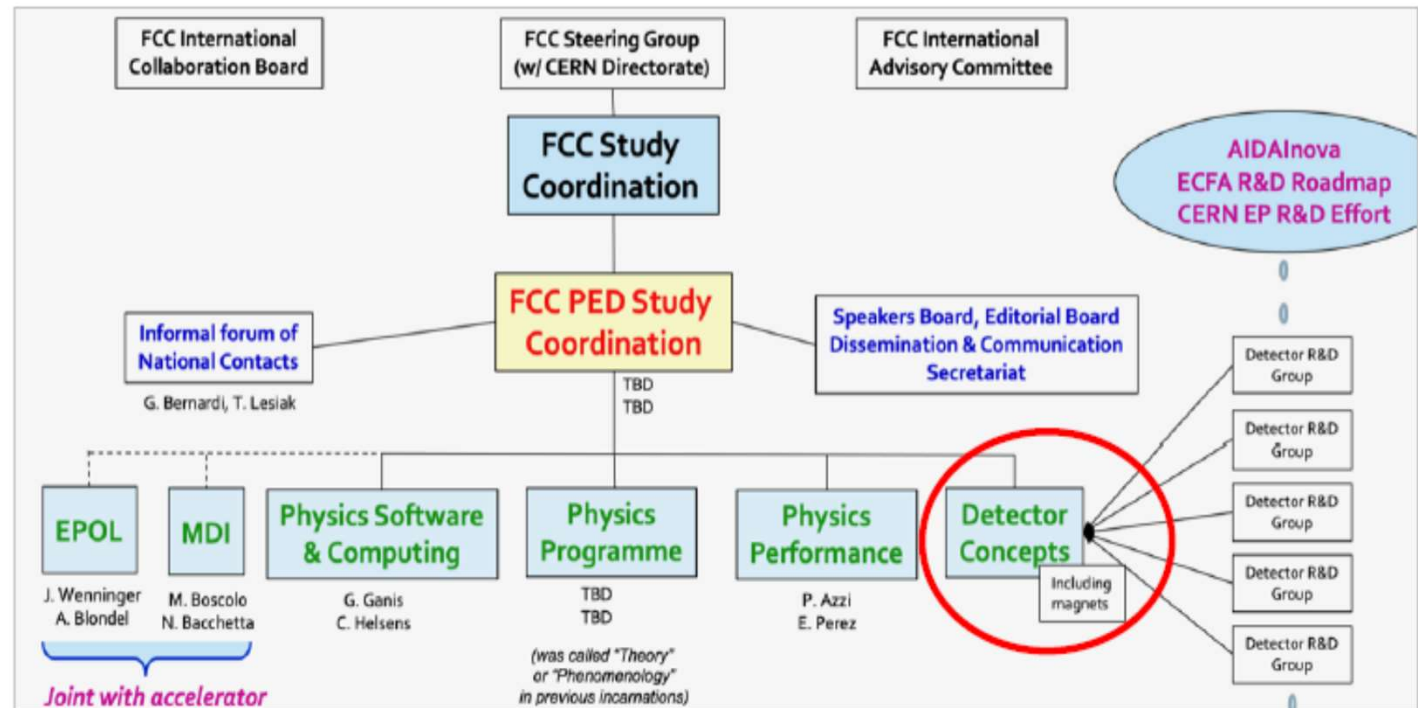
Towards a detector concept working group

Towards an FCC effort on detector concepts

- ◆ Ad-hoc task force to prepare a proposal for the organization and the mandate of an FCC-ee "detector concept" effort, within the FCC PED

- ◆ Members:

- Martin Aleksa
- Nicola Bacchetta
- Alain Blondel
- Paula Collins
- Mogens Dam (chair)
- Gerado Ganis
- Paolo Giacomelli
- Patrick Janot
- Emmanuel Perez
- Werner Riegler (?)
- Frank Simon
- Guy Wilkinson



- ◆ From invitation letter (A.Blondel, P.Janot):

- The task force is encouraged to consult outside our group
- A first report will be expected after about a month

Towards a detector concept working group

1. Goals - what do we want to achieve ?

Present community with opportunity to develop and optimize detectors

Need for both geographical (via national contacts / initiatives) and topical growth

Make sure detector concepts are capable of delivering the detector requirements

Steer/inform Detector R&D in the direction of the requirements of FCC-ee

2. Deliverables ?

Define what should appear in the CDR+ at end 2024 – early 2025

Define "what tools and by whom" should be provided as community support

3. Gathering the community around challenges

Invite community and potential leaders to participate in the challenge of implementing detector solutions that satisfy detector requirements using technology that either exists, or can be realistically developed over the next 10-15 years

Some points raised:

Stress double opportunity: i) for detector "inventors" to put into application their technologies

ii) for experiments to benefit from it

Even though main focus should be on ee, hh should not be forgotten / left out

Importance of key4HEP software (FCCSW)

detailed study and optimization of subdetectors

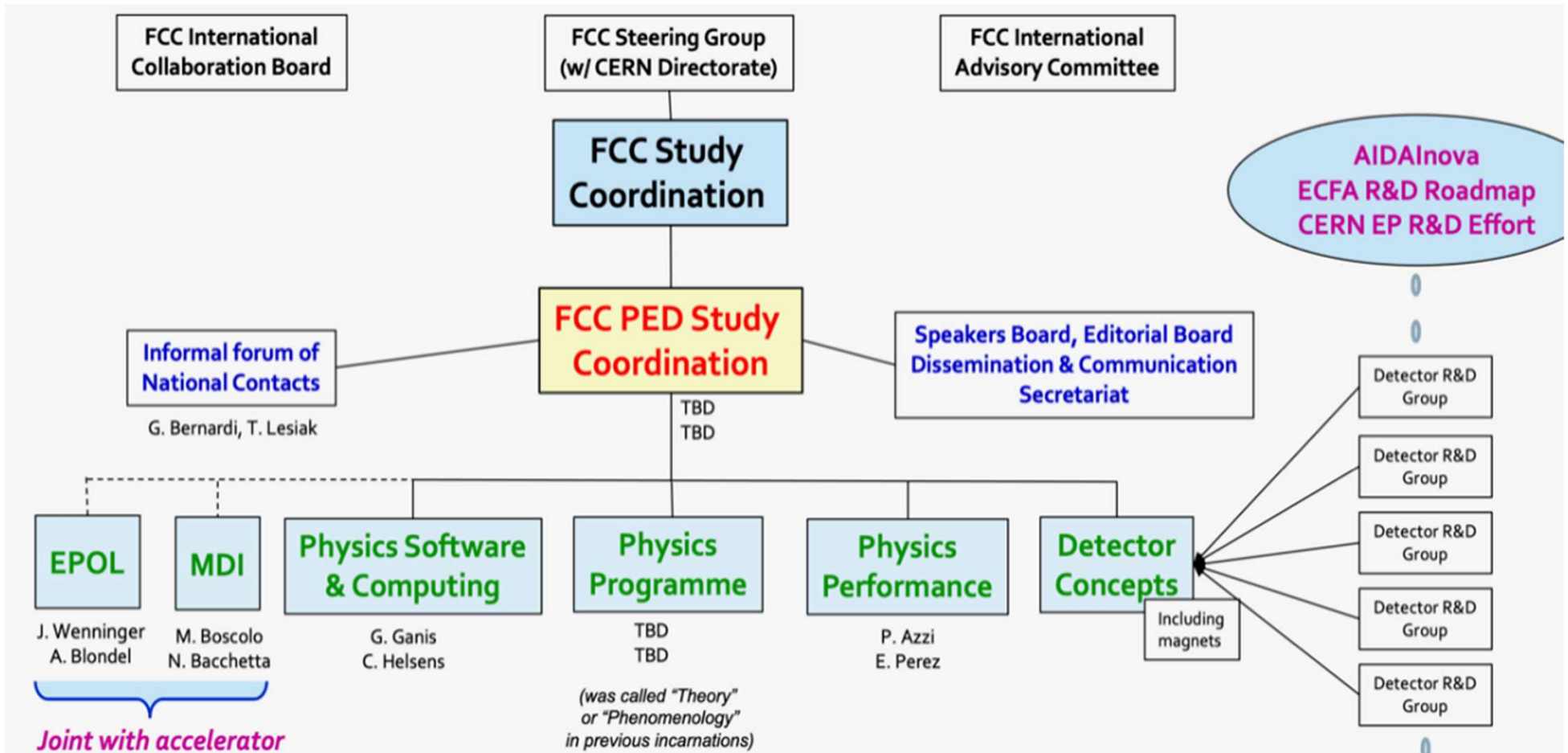
"plug-n-play" assembly of detector concepts from detector components

Proposal for lab-to-lab software initiative (CERN, DESY, Fermilab, ...) covering "Higgs and EW/top factories" and FCC-hh.

Dedicated detector workshop for e+e- possibly arranged via ECFA PED activities "Higgs and EW/top factories"

Organization still under scrutiny in view of June 2021 council

we presented our plans but some comments by delegates remain to be addressed ...



DG insisted that:

Physics performance and detector concepts for FCC-hh must be included.

Output of last Scientific Council

Main conclusions:

Concerning the FCC-hh 'presence' DG's concern is mostly related to 'message' to council. However...

1. FCC-hh is already included in the « Physics program » and can be easily integrated in detector concepts
2. FCCSW is already functional for FCC-hh
3. The FCC-hh detector concept exists and has been documented, but should continue updates to detector technology
4. some performance studies will probably be necessary to e.g. compare to high energy lepton colliders ($\mu\mu$, ee) which are under study as "plan B"

Concerning the roles in the study.

→ DG happy with the proposed structure it is now up to PED to complete the list of conveners, starting with the Physics etc... and to propose/discuss them to/with the management

« 50/50 CERN/non-CERN » principle to be respected across-the board (suggestions from PED SG/CG are still welcome)

NB we are already way above this for all physics groups steering committee etc...

Very important to keep 'FCC-INT' (ee and hh) together.

It is essential for the community and for the funding agencies to realize that they come together

FCC-ee is the only possible first step

Web page

<https://fcc-ee.web.cern.ch/>



functionality has been much improved

the indico thread of all the FCC-lepton meetings



Stay aware

- **The general FCC physics, experiments, detectors** past and upcoming [meetings](#)
- **FCC-ee physics performance** past and upcoming [meetings](#)
- **FCC-ee monthly physics meetings** past and upcoming [meetings](#)
- **FCC conferences and workshops:** Past and upcoming [Events](#)

The FCC-ee in a few words

The idea of a large circular e+e- collider as Higgs Factory came from a conjunction of circumstances: i) the need of a large tunnel for the continuation of the high energy exploration after the LHC; ii) the new 'nano-beam' designs proposed for the 'super' B factories; iii) and of course the discovery of the Higgs boson with a mass that could have been reached (with efforts) at LEP II. The idea of such a machine as a first step toward a 100TeV pp collider was submitted to the ESPP2013/13 and led to the FCC study, launched in 2014. The study concluded in its FCC-int submission to the ESPP2020 that the "The most effective and comprehensive approach to thoroughly explore the open questions in modern particle physics is a staged research programme, integrating in sequence lepton (FCC-ee) and hadron (FCC-hh) collisions".

The ESPP concluded: "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".

Next events

FCC-ee Physics, Experiments, and Detectors General Meetings
FCC-ee physics zoom meeting -
Mon, 04/26/2021 - 15:00

WG8: Machine-Detector Interface
FCC-ee MDI meeting #32 and FCCIS WP2.3 meeting #3
Tue, 04/27/2021 - 09:30

General Software Meetings
FCC Software Meeting

Fri, 04/30/2021 - 09:30 - CERN - 4078

Web page



CONTACT/JOIN US

- › WG1: Z pole
- › WG2: Dibosons
- › WG3: Higgs
- › WG4: Top quark
- › WG5: QCD
- › WG6: Flavours
- › WG7: New physics
- › WG8: Environment
- › WG9: Offline
- › WG10: Online
- › WG11: Detectors
- › FCC software
- › Physics Performance

- › Accelerator studies
- › Experimental studies
- › Phenomenology studies
- › (former) TLEP Steering Group

Physics and experiments

Stay aware

- The general FCC physics, experiments, detectors past and upcoming meetings

DEVELOPMENT website

<https://fcc-ee.web.cern.ch/content/experimental-studies>

The new words

The idea of a Future Circular Collider (FCC) Factory came from a conjunction of circumstances: i) the need of a large tunnel for the continuation of the high energy exploration after the LHC; ii) the new 'nano-beam' designs proposed for the 'super' B factories, iii) and of course the discovery of the Higgs boson with a mass that could have been reached (with efforts) at LEP/IL. The idea of such a machine as a first step toward a 100TeV pp collider was submitted to the ESPP2013/13 and led to the FCC study.

Next events

FCC-ee Physics, Experiments, and Detectors General Meetings
FCC-ee physics zoom meeting -
Mon, 04/26/2021 - 15:00

CLOSE



FCCeePhysicsPerformance

Welcome to the FCC-ee Physics Performance Documentation

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 6. [Software](#)
-

FCC Speaker Büro

Markus Klute
Alain Blondel
Daniela Bortoletto
Susanne Gascon
Paolo Giacomelli

Upcoming Conferences

→ Conferences and workshops in 2021. Currently working on

- WIN 2021
 - focus on physics; deadline for abstracts today; still adding topics
- LISHEP 2021
 - invited plenary talk; looking for speaker
- EPS 2021
 - broad list of topics; physics talks similar to WIN; looking for detector and accelerator contributions; deadline for abstracts May 8th
- NUFACT 2021
 - interest for accelerator talk; deadline for abstracts April 30th

EPS 2021



European Physical Society
Conference on High Energy Physics

Hamburg, Germany

Category: International Conference
Presentations: 6

July 26, 2021 to July 30, 2021

Information

The deadline for abstract submission is May 7th, 2021

Status

Collecting proposals for abstracts and speakers.

Coordinator

[Tile Multiple Readout and Beyond for FCC](#) July 26, 2021

By:

Abstract: Dual-Readout Compensated Calorimetry with Tile Sensors
Friday, March 19, 2021 2:40 PM (20 minutes) We discuss techniques and materials to develop optimize the energy resolution in the long-term performance of calorimeters as required by the challenging environment of future colliders and high inten... [read more.](#)

[Very Forward Calorimetry at the FCC](#) July 26, 2021

By:

Abstract: The success of any particle detector at a collider experiment depends on its ability to measure both the trajectories and energies of particles exiting the interaction point. Especially important and difficult is measuring the trajectories and energies of particles in the very forward region - par... [read more.](#)

[New radiation-hard scintillators for FCC Detectors](#) July 26, 2021

By:

Abstract: Future circular and linear colliders, as well as the Large Hadron Collider in the High-Luminosity era, have been imposing unprecedented challenges on the radiation hardness of particle

[The dual-readout calorimeter module R&D using innovative 3D metal printing for future e+e- colliders](#) July 26, 2021

By:

Abstract: Innovative 3D metal printing technology has been recently improved and used widely in various fields for both basic science and high technology. The next generation methodology of the novel calorimeter, dual-readout calorimeter, is one of the candidates to achieve very high energy resolutions for b... [read more.](#)

[The tracking system of the IDEA detector concept for a future e+e- collider](#) July 26, 2021

By:

Abstract: The IDEA detector concept for future e+e- colliders proposes a tracking system composed by a Si based inner system, an ultra-low mass Drift Chamber central system with Particle Identification capabilities and a Si based outer layer surrounding the drift chamber. The designed tracking system allo... [read more.](#)

[Search for additional scalar bosons at the FCC-ee](#) July 26, 2021

By:

Abstract: As a proposed Higgs factory, the cornerstone of the FCC-ee physics program is the exploration of the Higgs boson at center-of-mass energies of 240 to 365 GeV. Direct and model-independent measurement of its coupling to the Z boson through the study of the Z boson recoil mass spectrum. The recoil ma... [read more.](#)

➡ Looking for software, detector, machine, and theory contributions

➡ Adding WIN abstracts

Conference DB

➔ Conference database

- <https://fcc-ee-conference.web.cern.ch/>
- Login with CERN SSO to create account
- Feedback is welcome

➔ Currently populating database with 2021 conferences and improving appearance

➔ Next, adding information from 2020 and before

➔ Link from FCC webpages and publicizing.

Some recent or upcoming events

FCC-nordic (March 22)
<https://indico.uu.se/e/fccnordic>

Future collider forum / Germany (April 16)
<https://indico.desy.de/event/29446/>

1. next FCC week 28 June – 2 July
Only plenary sessions with PED sessions in the afternoon
2. next FCC-France workshop
Annecy (30 Novembre to 2 Decembre)
3. next FCC-PED workshop (all FCC flavours)
Liverpool February 2022

ECFA Detectors Experiments and Physics Workshops

Three working groups defined and conveners agreed for WG 1 and 2.

Group 1, Physics Potential: Juan Alcaraz, Jenny List, Fabio Maltoni and James Wells

Group 2, Physics Analysis Methods : Patrizia Azzi, Dirk Zerwas, Fulvio Piccinini

Group 3 Detectors (pending ECFA road map completion)

This was agreed by r-ECFA on 12 March.

Meeting WG1 and WG2 conveners with K. Jakobs, C. Grojean, P. Janot, A. Robson, A. Wulzer on 9 April

All have now officially accepted their convenership roles. They also support to have a short "(informational) kick-off meeting" where the status quo and a first workplan will be discussed. They will discuss among themselves details and how to structure this.

Possible date: meeting before end of June is favored, the most likely date is Friday, 18th June, afternoon.

Official announcement soon.

ECFA detector R&D road map

All relevant information is located on this indico site <https://indico.cern.ch/event/957057/>

Symposia

Task Force 7: Electronics and On-detector Processing

Symposium date: Thursday 25.3.2021 [Indico link to agenda](#)

Task Force 8: Integration

Symposium date: Wednesday 31.3.2021 [Indico link to agenda](#)

Task Force 2: Liquid Detectors

Symposium date: Friday 9.4.2021 [Indico link to agenda](#)

Task Force 5: Quantum and Emerging Technologies

Symposium date: Monday 12.4.2021 [Indico link to agenda](#)

Task Force 3: Solid State Detectors

Symposium date: Friday 23.4.2021 [Indico link to agenda](#)

Task Force 1: Gaseous Detectors

Symposium date: Thursday 29.4.2021 [Indico link to agenda](#)

Task Force 9: Training

Symposium date: Friday 30.4.2021 [Indico link to agenda](#)

Task Force 4: Photon Detectors and Particle Identification Detectors

Symposium date: Thursday 6.5.2021 [Indico link to agenda](#)

Task Force 6: Calorimetry

Symposium date: Friday 7.5.2021 [Indico link to agenda](#)

ECFA det R&D Will start drafting report early May.

→ first draft before summer conferences

→ final document by fall 2021.

Hopefully this will be a live document, follow up and updates still to be defined.

- Discussion on Calorimetry postponed to next meeting
- More on ECFA roadmap, Introduction to microvertex constraints
- Detailed Presentations on microvertex R&D next meeting