Reunion FCC-contacts

Friday Dec 12, 2025, 9:00 AM → 10:30 AM Europe/Paris

9:00 AM → 9:30 AM **News de la stratégie, de FCC / Evolution vers la phase pre-TDR** 30m

Speaker: Gregorio Bernardi (APC Paris CNRS/IN2P3)

9:30 AM → 9:55 AM **Debrief du workshop FCC-France.** 25m

Speakers: Catherine Biscarat (L2I Toulouse, CNRS/IN2P3, Université de Toulouse), Farès Djama (CPPM), Gaelle Boudoul (IP2I/AICP (CNRS/IN2P3)), Giovanni Marchiori (APC Paris), Jean-Baptiste De Vivie De Regie, Luc Poggioli (LPNHE Paris), Marco Delmastro (LAPP), Nicolas Morange (IJCLab), Stephane Monteil (Laboratoire de Physique de Clermont - UCA/IN2P3), Suzanne GASCON-SHOTKIN (IP2I Lyon/Université Claude Bernard Lyon 1), Vincent Boudry (Laboratoire Leprince-Ringuet, CNRS/IN2P3, École polytechnique), Ziad EL BITAR (IPHC)

9:55 AM → 10:05 AM **FCC-France-Italie à Marseille en Novembre 2026** 10m

Speaker: Fares DJAMA (CPPM)

LC@CERN Workshop: Mark Thomson's welcome highlights

- Mark commits to the ESG recommendations about CERN's flagship collider
  - *The output of the ESG is a very strong endorsement of FCC-ee, which I agree with.*
  - *The ESG message is clear: even the alternative is a descoped/staged FCC-ee version.*
  - *Therefore, CERN is now going very hard after the FCC, to convince the Council*
  - *There will be very little resources for other proposals*
- Priorities for CERN (apart from bringing the strategy in a draft form to the Council in March 2026)
  - *HL-LHC for the next 5 years*
  - *Get FCC-ee towards a positive decision in 2028*
- Back-up options (in response to the question "What would it take to get the Council to reject FCC-ee?") [!!]
  - *The only reason for which FCC-ee would not be done would be insufficient funds*
  - *The CERN strategy about back-up options is being discussed*
  - *Back-up must be worked on in a contained way (no specific funds)*
- For linear colliders, this would mean
  - *Understand cost and risks by 2028 – NOT a feasibility study*
  - *Work on aspects synergistic with other projects*
  - *With limited resources* [Resources would have to be found elsewhere, Steinar said]

Linear Collider @ CERN Workshop Statement (v6)

In December 2025, the European Strategy Group (ESG) published recommendations expressing a strong preference for FCC-ee as the next flagship project. The ESG recognized that linear colliders are technologically mature and offer programmes in Higgs and top-quark physics that are competitive to FCC-ee when operated at two energy stages and up to 550 GeV centre-of-mass energy.

- As alternative to the FCC-ee, the linear collider projects have thus been identified as the only mature and technically feasible projects offering a flagship-level physics programme.

As participants of the LinearCollider@CERN Workshop, we re-emphasize that the full exploration of the Higgs and top sectors first at the HL-LHC, and then at an e+e- collider with its qualitatively and quantitatively complementary capabilities, is decisive for shedding light on the mysteries of electroweak symmetry breaking and the early universe. Polarised e+e- collisions at centre-of-mass energies of at least 550 GeV enable measurements of processes with two and more Higgs bosons in the final state, offering access to the trilinear Higgs self-coupling via lowest-order contributions. Together with precision measurements of top quark production and of processes with multiple gauge bosons, they offer discovery potential complementary to that of hadron colliders. A linear collider also has the potential to react to discoveries at HL-LHC or elsewhere. Beyond upgrades of the facility itself, the future options include the later construction of a new proton-proton collider, a muon collider or a collider based on plasma technology to probe the 10-TeV scale.

- A linear collider facility offers a “Higgs Factory” program at significantly lower initial cost, starting from around 7 BCHF, and with an environmental footprint comparable to or smaller than LEP/LHC. It also offers an attractive and flexible upgrade path that reduces financial risks and retains opportunities. Thus, a linear collider facility is a flagship-level alternative, retaining European leadership in accelerator-based particle physics, should the FCC-ee project not be feasible.

Linear Collider @ CERN Workshop Statement (v6)

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  feasible.

The LC community has presented two mature technology options for a first-stage linear collider: superconducting RF niobium cavities (SCRF), driven by klystrons; and normal conducting copper cavities developed for CLIC, powered by a drive-beam or klystrons. Their proponents have been working closely together for more than a decade. The community gathered at this workshop is determined to advance a linear collider facility based on these technologies.

- The linear collider community with all its expertise remains committed to pursuing the possibility of a linear collider project at CERN, with SCRF or CLIC technology, while retaining later upgradability and boosting novel accelerator concepts. The community is ready to collaborate with the future circular collider projects regarding common accelerator, detector and physics challenges.

Over the coming three years, until a definitive decision on the approval of CERN's next flagship collider project has been taken, the remaining technical and cost risks for implementing a linear collider facility at CERN should be studied. The compatibility with upgrades to higher energies or much higher luminosities, embracing novel accelerator concepts, as well as with the option of photon-photon collisions and beyond-collider experiments, are considered essential parts of the study.

- We encourage CERN to conduct a study for the implementation of a linear collider facility hosted at CERN, in close collaboration with the ongoing global community effort in technology R&D (e.g. the ILC Technology Network). A possible workplan has been presented, discussed and further detailed during this workshop.

CEPC developments

Recall, in mid-November Joao Guimaraes da Costa (CEPC Physics Coord) wrote to FCC Physics Coord proposing formal discussions on collaboration, and also suggesting that we attend HKUST IAS meeting this week.

After consultation with Directorate and Council President we replied, thanking him for reaching out but saying that it was too soon for any formal discussions. We did, however, say that we would be happy to talk to him *informally*, and said that he would be welcome at our Munich meeting (and that any institute previously active on CEPC would be welcome to sign an FCC MoU).

Joao has now told us that he will be coming to Munich (albeit, only for the latter part of the meeting), perhaps accompanied by a colleague. Let us make him feel welcome! A CEPC talk will be scheduled, most likely in parallel det session

In other news, Michael, Frank and Paolo Giacomelli are at the HK meeting.

FSR@EPJC

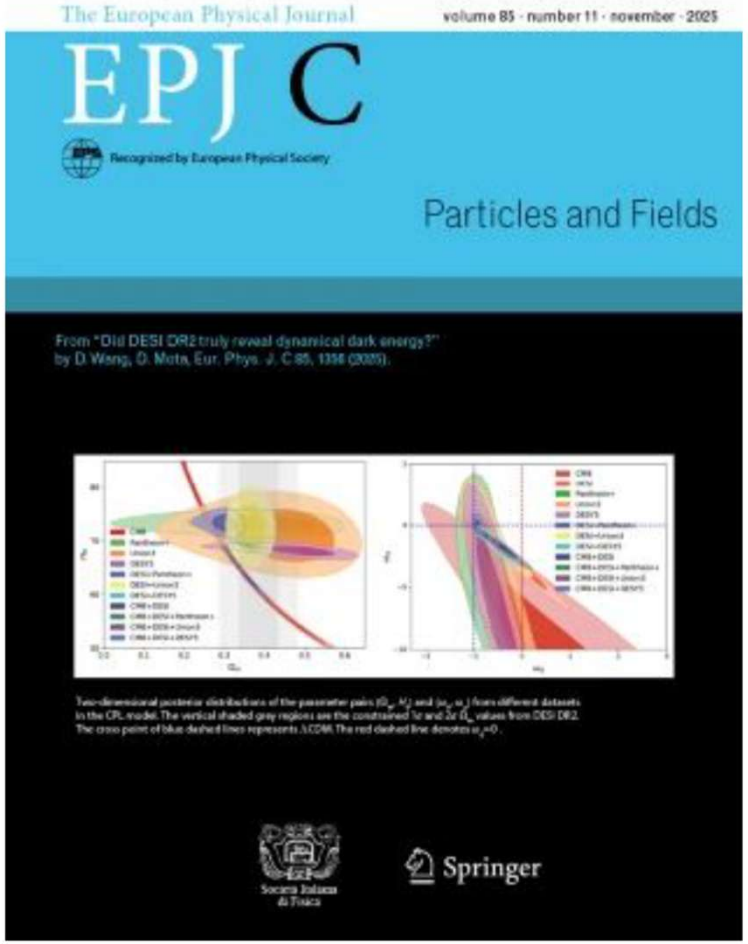
Approved for publication on 14/11/25

Proofs received on 16/12/25

Published on 24/12/25: EPJC85(2025)1468

(information not yet linked on Inspire)

Will also be updated on the arXiv in the coming weeks



Coming PED-related events and workshops

- FCC PED (a.k.a. Physics) Workshop
  - Munich, 26-31 January
  - https://indico.cern.ch/event/1588696/
- FCC Week
  - Helsinki, 8-12 June
- Next ‘in-person’ Flavour Workshop event: CERN, 16-21 June

Communication and dissemination

- New ECOI (Education, Communication, Out/In–reach) group in PED
  - Already announced in fall 2025
  - Led by Claire Adam (Project Associate in CERN/EP-FCC)
  - Another coordinator will be sought – Shall we make a general call ?
- New ECOI e-group: FCC-PED-ECOI@cern.ch
  - As part of FCC-PED-FeasibilityStudy – Shall we change the name ?
- Claire will need input and help from all of us
  - Should you know people interested in working in ECOI, just send them to Claire
  - A technical student is being hired to refurbish our PED web page

Réunion des groupes de travail de préparation des argumentaires FCC/France

Monday Jan 19, 2026, 9:30 AM → 4:00 PM Europe/Paris

IP2I

Description Nous nous retrouvons afin d'échanger sur les avancées des différents groupes de travail pour la définition d'argumentaires nationaux pour la communication autour du futur projet FCC du CERN.

Chaque groupe aura l'occasion de présenter l'état de ses réflexions. Ce sera l'occasion de partager et d'échanger entre groupes pour converge une vision intégrée des argumentaires.

Il sera possible de suivre la journée en distanciel (lien Zoom à venir)

Le découpage de l'ordre du jour est purement indicatif à ce stade.

9:30 AM → 10:00 AM	Accueil	
10:00 AM → 11:00 AM	**Atelier 1 - argumentaires pour soutenir la recherche fondamentale**	
11:00 AM → 12:00 PM	**Atelier 2 - argumentaires pour la physique des particules**	
12:00 PM → 1:00 PM	**Atelier 3 - argumentaires pour FCC**	
1:00 PM → 2:00 PM	Pause déjeuner	
2:00 PM → 3:00 PM	**Atelier 4 - argumentaires sur le développement durable, l'impact sociétal notamment pour l'état-hôte**	
3:00 PM → 4:00 PM	**Atelier 5 - argumentaires sur les technologies, l'impact économique et industriel**	

Mandate for the FCC Physics Studies Work Package during the FCC pre-TDR phase (2025-2027)

Context

The FCC Physics Studies Work Package forms one of the components of the Physics, Experiments and Detectors (PED) pillar, along with Software and Computing, Detector Concepts, Machine Detector Interface, and Energy Calibration, Polarisation and Monochromatisation Work Packages. Its main role is to support and encourage a community of theorists and experimentalists who can commit resources (mostly human) to the development of the FCC science program in the coming years. It builds on the previous Physics Programme and Physics Performance work packages, now merged into a single unified entity, "Physics Studies", and provides, among other things, "Physics Requirements" to all other Work Packages.

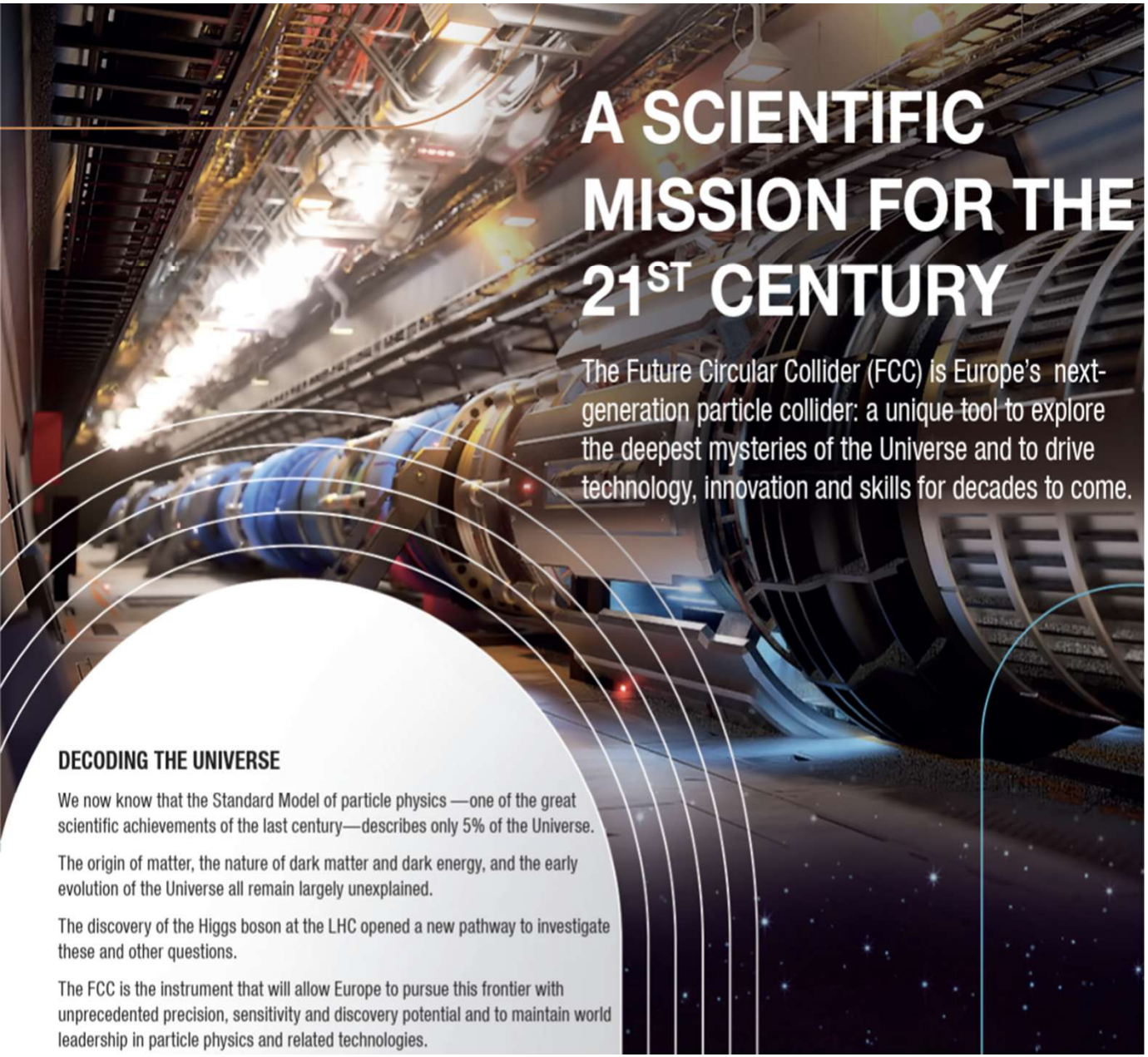
The new structure is still organised around physics groups covering the full FCC physics landscape, including new responsibilities at the physics–software interface (MC event generation, precision calculations, and high-level reconstruction), and on a common mandate. The goals are, in particular, to

- articulate the physics case, feasibility, and schedule implications of different stages of the project (not limited to the currently proposed stages);
- gather the worldwide theory community to address the theoretical challenges and provide new conceptual solutions to implement and interpret experiment measurements;
- define and implement strategies to match the experimental and theoretical uncertainties to the projected statistical precision;

and to document the findings in a detailed note accompanying the pre-TDR report (to be delivered to the CERN Council in September 2027).

The following groups form the basis of the organisation (existing, already exists NOT formally, new):

- Electroweak physics
- Higgs physics
- Top-quark physics
- Flavour physics
- QCD and photon-photon physics
- BSM physics
- FCC-hh physics
- High-level reconstruction (in close collaboration with the Software group)
- Monte Carlo tools (in close collaboration with the Software group/Precision)
- Analysis Tools (in close collaboration with the Software group)
- Precision calculations
- Global fits and EFT



A SCIENTIFIC MISSION FOR THE 21ST CENTURY

The Future Circular Collider (FCC) is Europe's next-generation particle collider: a unique tool to explore the deepest mysteries of the Universe and to drive technology, innovation and skills for decades to come.

DECODING THE UNIVERSE

We now know that the Standard Model of particle physics —one of the great scientific achievements of the last century—describes only 5% of the Universe.

The origin of matter, the nature of dark matter and dark energy, and the early evolution of the Universe all remain largely unexplained.

The discovery of the Higgs boson at the LHC opened a new pathway to investigate these and other questions.

The FCC is the instrument that will allow Europe to pursue this frontier with unprecedented precision, sensitivity and discovery potential and to maintain world leadership in particle physics and related technologies.

THE FCC WILL

- Measure the Higgs boson and other key particles with unmatched precision.
- Search for new particles, new forces and potential dark-matter candidates.
- Probe the disappearance of antimatter in the early Universe.
- Explore entirely new phenomena through radical gains in energy, precision and sensitivity.

AN ENGINE OF INNOVATION

Building the FCC requires breakthroughs in superconducting materials, efficient radio-frequency systems, advanced vacuum technologies, precision detectors, AI-driven control systems, and sustainable cooling infrastructures. These technologies have direct relevance inter alia to medical imaging and therapy, fusion energy, transport electrification, industrial automation, and large-scale data centres.

AN INVESTMENT THAT PAYS OFF

CERN's high-tech procurement, training mission and industrial partnerships already generate substantial value for Europe. The FCC, through decades of construction and operation, will:

- Train thousands of early-career scientists, engineers and technicians each year,
- Stimulate high-tech industry via long-term procurement and co-development,
- Deliver a positive benefit-cost ratio, even under conservative assumptions.

CERN

Technology & innovation for Europe

The virtuous circle of basic science

CERN's ambitious scientific goals drive innovation across many enabling technologies. Famous examples are the World Wide Web and PET imaging. CERN technologies are transferred to society without financial profit, reinforcing Europe's leadership in strategically important fields.

The FCC will be the most extraordinary instrument ever built to study the fundamental constituents and laws of nature. Its tunnel will first house an electron-positron collider **FCC-ee** capable of extremely precise measurements. This may be followed by a proton-proton collider **FCC-hh** operating at unprecedented energies.

Partnership with industry

CERN spends around **500 MCHF** annually with European high-tech suppliers through competitive contracts and co-development. Past flagship projects such as the LHC mobilised over **6000 companies** across Europe.

As CERN requires many technologies that do not yet exist, it often develops them in-house in collaboration with trail-blazing industries in the respective domain.

Companies place a premium on collaboration with CERN because its demanding specifications **enhance their growth, quality, innovation and reputation**. Competencies gained are then passed down the line to other companies, fields and clients.

Accelerating science and society

Of the tens of thousands of accelerators in use worldwide, only a few are used for particle physics. The rest support semiconductors, materials processing, radiotherapy, isotope production, imaging, and advanced X-ray light sources that underpin Nobel-prize-winning research. CERN's world-leading expertise in magnets, superconductors, vacuum, cryogenics, instrumentation and other technologies is already applied to gravitational-wave observatories, fusion energy, next-generation X-ray facilities, and medical accelerators.

This challenging project will boost innovation in:

- **Superconductors & magnets:** for fusion reactors, medical imaging and efficient power transport.
- **High-performance materials:** relevant to aerospace, automotive and advanced energy systems.
- **Vacuum and cryogenics:** with applications in hydrogen transport, refrigeration and industrial processes.
- **Advanced AI, electronics and robotics:** enabling safer, more efficient industrial operations.
- **High-efficiency RF systems:** essential for medical and industrial accelerators and for energy-efficient broadcasting.
- **Distributed computing and big data:** with applications in communications and large-scale data-handling.

Over the past 5 years, CERN has established over **250 knowledge transfer partnerships** across healthcare, aerospace, digital innovation, quantum technologies and environmental applications.

Examples include advanced superconducting systems with **Airbus**, computer-vision tasks for automotive applications with Volvo Cars-owned software company **Zenseact**, power-distribution R&D with **Meta**, and identification of energy-saving scenarios through data-driven energy efficiency audits with **ABB Motion**.

€440M of European Union co-funding since 2020 has supported 85 CERN-linked projects involving European industry.

Societal benefits & sustainability

A strong return on investment

Independent socio-economic assessments show that the FCC-ee (civil engineering & operation) yields a **benefit-cost ratio of at least 1.2**, even when only the most conservative benefit pathways are counted.

Economic contribution

The FCC-ee will create an estimated:

- **50 BCHF** direct and indirect economic effects
- **4 BCHF** through added household spending

Public willingness-to-pay studies show that the perceived FCC value **exceeds** the current annual contribution of Member States.

Training and upskilling

At any moment, CERN trains over **5,500 students, technicians and early-career researchers** across a large spectrum of competencies, most of whom move into industry, applied science and public institutions.

The FCC will extend this high-value skills pipeline throughout the 21st century, forming a key pillar of Europe's STEM workforce and innovation ecosystem.

Capacity building across Europe

CERN is the shared laboratory of all its 25 Member and 10 Associate Member States and has around 50 International Cooperation Agreements with additional countries and territories.

CERN's partnerships with universities, institutes and industries build durable **transnational value chains** and foster scientific and technological capacity in all participating countries.

The FCC will be developed under CERN's leadership with coordinated contributions from other large laboratories. Shared technology platforms will enhance **Europe's strategic capabilities** and strengthen its research and technology ecosystem, through:

- the repatriation of skilled personnel,
- long-term R&D programmes,
- cross-disciplinary collaboration and access to a world-leading scientific infrastructure.

Boosting trust in science

The deep questions in particle physics and the vast machinery required to address them inspire and attract young minds to science. The switch-on of the LHC in 2008 is estimated to have reached an audience of more than a billion people.

CERN's broad portfolio of inclusive education, communication and engagement activities is essential to strengthen public trust in science, foster critical thinking, and counter misinformation.

CERN's teacher programmes empower about 1000 high-school teachers per year, while its IdeaSquare platform hosts future entrepreneurs who apply CERN technologies to societal challenges.

The new CERN Science Gateway has increased the number of annual visitors to CERN to 400 000 people from 175 countries.

The value of physics to Europe

Physics-based activities in Europe are estimated to have employed 20M people and generated more than €7T of turnover in 2022 (growing by 47% since 2016), according to a recent report by the Centre for Economics and Business Research that was commissioned by the European Physical Society.

Sustainable by design

The FCC is an exemplar of sustainable research:

- Over **100 site-placement scenarios** for the FCC were evaluated for environmental impact.
- Despite its scale, **FCC-ee will use similar electricity to the LHC**, yet deliver vastly more data per unit of energy.
- The FCC-ee design is **100 000x more energy-efficient** than its predecessor LEP in terms of delivered data.
- The **OpenSkyLab initiative** is pioneering ways to transform excavation materials from the FCC tunnel into functional soils for greening, agriculture and forestry.
- CERN holds **ISO 50001** certification for continuous energy-performance improvement.
- The FCC-ee will be the first large scientific infrastructure to systematically adopt the Reliability, Availability, Maintainability and Safety concept, profiting all future first-of-a-kind projects such as a fusion reactor.

Feasibility, timeline & Europe's decision

Feasibility

The **FCC Feasibility Study** (1500 experts, 162 institutes, 38 countries) confirms that the project is **technically feasible**.

CERN has a strong record of delivering flagship projects **on budget** and with long-term industrial participation.

The estimated **15 BCHF** investment for the first stage, FCC-ee, would be spread over ~12 years.

Importantly, the 9 BCHF **tunnel and technical infrastructure may be reused** for a possible future hadron collider (FCC-hh), maximising sustainability and value.

A solid foundation for success

Europe's investment in CERN over the past 70 years has created unparalleled technical infrastructure and expertise.

The **LHC**, which placed Europe at the forefront of high-energy physics, completes operations in **2041**.

Given the **20–30-year lead time** of major scientific infrastructures, decisions on the next flagship facility must be taken now to ensure continuity, capability and leadership.

A collaborative, global endeavour

CERN brings together some 17 500 researchers from **110+ nationalities,** including countries in conflict and from developing regions.

Its results and data are **openly shared** for the benefit of all, making CERN a global model of scientific cooperation.

The FCC would secure continued world leadership in a critical area of groundbreaking science and technology, thus strengthening **European competitiveness and strategic autonomy**.

At a glance

FCC		CERN	
90.7 km	Circumference	**1.3 BCHF**	Annual budget
200 m	Average depth	**500 MCHF**	Annual spending with European high-tech industry
4	Underground experiments	**12,405**	Users from 110+ countries
€4 B	Local economic impact	**2704**	Staff members
1.2	Benefit-cost ratio	**1181**	Graduates and fellows
		400,000	Visitors annually

Timeline

- **2025** — Completion of the FCC Feasibility Study
- **2026** — Update of the European Strategy for Particle Physics
- **2028** — Decision by the CERN Member States
- **2033** — Start of construction
- **2046** — FCC-ee begins operations
- **2075** — FCC-hh may begin operations

Next FCC-contacts meetings

19/1 Lyon

Wedn 9-10.30	21/1 : Conveners
Friday 9-10.30	13/2 : MP status (1) + Web
Friday 9-10.30	13/3 : MP status (2)
Friday 9-10.30	10/4 : Progress for FCC week (1)
Friday 9-10.30	29/5 : Progress for FCC week (2)
Friday 9-10.30	19/6 : FCC Structure evolution

26- 30/1 Munich

8-12/6 Helsinki

Jamboree: July 6, Monday morning

9th FCC Physics Workshop: Munich, Jan. 26-30, 2026

indico agenda: https://indico.cern.ch/event/1588696/

	Monday 26.01	Tuesday 27.01	Wednesday 28.01	Thursday 29.01	Friday 30.01	
8:30-9:00						8:30-9:00
9:00-9:30	-- Satelite meeting -- ECR meeting	-- Parallel Sessions -- 1. Physics (general) 2. EPOL	-- Parallel Sessions -- 1. Jt Software, Detectors and Physics (local reconstruction) 2. MDI (IR layout and beam dynamics)	-- Parallel Sessions -- Jt SW & Physiscs & Detectors (global reconstruction)	-- Summaries/Highlights --	9:00-9:30
9:30-10:00						9:30-10:00
10:00-10:30						10:00-10:30
10:30-11:00		Coffee break	Coffee break	Coffee break	Coffee break	10:30-11:00
11:00-11:30		-- Parallel Sessions -- 1. Physics. (Higgs/EW) 2. EPOL	-- Parallel Sessions -- 1. Physics (BSM) 2. Detectors (detector concepts, large scale structures and cryostats)	-- Parallel Sessions -- 1. Physics (FCC-hh) 2. Jt MDI & SW & Detectors (detector backgrounds, beam backgrounds)	-- Summaries/Highlights --	11:00-11:30
11:30-12:00						11:30-12:00
12:00-12:30						12:00-12:30
12:30-13:00	Lunch	Lunch	Lunch	Lunch	Lunch	12:30-13:00
13:00-13:30						13:00-13:30
13:30-14:00						13:30-14:00
14:00-14:30	-- General FCC Meeting --	-- Parallel Sessions -- 1. Physics (Higgs/EW) 2. MDI (mechanics and integration)	-- Parallel Sessions -- 1. Physics (QCD+Flavour) 2. Software and Computing (Key4HEP, LEP@E4H, resources)	-- Parallel Sessions -- 1. Jt SW & Physics (analysis) 2. Detectors (calorimetry, magnets)	-- Satelite meeting -- TBC	14:00-14:30
14:30-15:00						
15:00-15:30						14:00-15:30
15:30-16:00						15:30-16:00
16:00-16:30	Coffee break	Coffee break	Coffee break	Coffee break	Coffee break	16:00-16:30
16:30-17:00	-- PED Plenary --	-- Parallel Sessions -- 1. Physics (BSM) 1. Jt Detectors & SW (simulation, digitisation)	-- Parallel Sessions -- 1. Physics (QCD+Flavour) 2. Jt Detectors & MDI (detector integration, beam pipe, and IR)	-- Parallel Sessions -- 1. Detectors (tracking and vertexing) 2. Physics (higher order calculations)	-- Satelite meeting -- TBC	16:30-17:00
17:00-17:30						17:00-17:30
17:30-18:00						17:30-18:00
18:00-18:30						18:00-18:30
18:30-19:00	Welcome reception	IFNC session				18:30-19:00
19:00-19:30						19:00-19:30
19:30-20:00			Workshop Dinner			19:30-20:00
20:00-20:30						20:00-20:30

FCC France

Physics Studies

Présidents de session: Bogdan MALAESCU (LPNHE, Paris, FRANCE), Jean-Baptiste De Vivie De Regie

16:45 **New developments for the FCC-ee Physics program**
Orateur: Michele Selvaggi (CERN)
FCC-France-Physics...

17:10 **QCD studies with jets for FCC-ee**
Orateur: Line Delagrange (LPNHE, Paris, France)
QCDwithJets@FCC...

17:28 **Improvements in ZH cross section measurements**
Orateur: M. Tom FOURNIER (APC Paris CNRS/IN2P3)
ZH_improvement_F...

17:46 **Precision measurements of Higgs branching ratios**
Orateur: Alexis Maloizel (APC, Paris)
FCC_DRD_France_N...

18:04 **Heavy Flavour recent results**
Orateur: Stephane Monteil (Laboratoire de Physique de Clermont - UCA/IN2P3)
FCC_FlavoursWS_s...

18:22 **Ultra granular calorimeter and flavour physics**
Orateur: Jean-Claude Brient (LLR)
FCC flavor physics ...

18:40 **Physics prospects for FCC-hh**
Orateur: Michele Selvaggi (CERN)
FCChh_fccfrance_v...

5 DRD Tracking

Présidents de session: Didier Contardo, Gaelle Boudoul (IP2I/AICP (CNRS/IN2P3))

09:00 **R&D CMOS (zoom)**
Orateur: auguste besson (Institut Pluridisciplinaire Hubert Curien)
FCCFrance_RD_CM...

09:20 **FCC-Seed concept (zoom)**
Orateur: jeremy andrea (IPHC)
FCC-SEED_FCCFran...

09:40 **Manta Project in DRD3**
Orateurs: Didier Contardo (IN2P3/CNRS), Didier Contardo
FCC_France_MANT...

10:00 **CMOS & timing**
Orateur: Philippe Schwemling (Université Paris Cité and CEA/Irfu/DPhP)
FCC_261125.pdf

10:20 **TPC & Ion Back Flow**
Orateurs: Paul Colas (CEA/DAPNIA Saclay), Serguei Ganjour (CEA/Saclay/IRFU/SPP)
Recent activities on...

0 **coffee break**

5 DRD Calorimetry

Présidents de session: Fares DJAMA (CPPM), Vincent Boudry (Laboratoire Leprince-Ringuet, CNRS/IN2P

11:00 **R&D High Granularity ECal**
Orateur: JEROME NANNI (LLR-CNRS/IN2P3)
FCC_DRD_Worksho...

11:20 **TSDHCAL (Zoom)**
Orateurs: Imad Laktineh ((UNIV CLAUDE BERNARD)UMR5822), imad laktineh (in2p3-ucbl)
Laktineh-FCCeeFra... Laktineh-FCCeeFra...

11:40 **ALLEGRO**
Orateur: Zhibo Wu
FCCFrance2025_AL...

12:05 **Grainita**
Orateurs: Mlle Yingrui Hou, Yingrui Hou (LPC Clermont)
GRAINITA_FCC_DR...

12:30 **MODOP - MaxICC**
Orateur: Suzanne GASCON-SHOTKIN (IP2I Lyon/Université Claude Bernard Lyon 1)
SuzanneMAXIDCM...

5:15 Other DRD's

Président de session: Suzanne GASCON-SHOTKIN (IP2I Lyon/Université Claude Bernard Lyo

14:15 **The CALOROC family**
Orateur: Christophe de LA TAILLE (OMEGA)
CdLT_FCC_27nov20...

14:35 **DRD7 activity overview (zoom)**
Orateur: Marlon BARBERO (CPPM)
DRD7activities.pdf

14:55 **Summary 1st FCC-ee TDAQ Workshop**
Orateur: Vincent Boudry (Laboratoire Leprince-Ringuet, CNRS/IN2P3, École polytechn
2025-11-27@FCC-F...

5:30 FCC Software and Analysis

Président de session: Ziad EL BITAR (IPHC)

15:15 **Progress on particle flow**
Orateur: Giovanni Marchiori (APC Paris)
2025.11.27 - Particl...

15:40 **Combined talk : Digitization for tracker/vertexing full simulation . Background**
Orateurs: Gaelle Boudoul (IP2I/AICP (CNRS/IN2P3)), Jessy DANIEL (IP2I, groupe
FCCFrance_Nov27_...

16:15 **APRIL Particle Flow Algorithm (Zoom)**
Orateur: Tanguy PASQUIER (IP2I, Univ Lyon 1)
FCC_France_2025_...

7:00 **Coffee break**

8:45 Participations Françaises aux futurs detector concepts

Présidents de session: Didier Contardo (IN2P3/CNRS), Gregorio Bernardi (APC Paris CNRS

17:00 **Introduction**
Orateurs: Gregorio BERNARDI (APC Paris, CNRS/IN2P3), Gregorio Bernardi (A

17:20 **ALLEGRO**
Orateur: Fares DJAMA (CPPM)
ALLEGRO_Djama.pdf

17:30 **CLD**
Orateur: jeremy andrea (IPHC)
CLD_FCCFrance25...

17:40 **IDEA**
Orateur: Suzanne GASCON-SHOTKIN (IP2I Lyon/Université Claude Bernard Lyon 1
SuzanneIDEA_FCC_...

17:50 **ILD**
Orateur: Vincent Boudry (Laboratoire Leprince-Ringuet, CNRS/IN2P3, École polytechn
2025-11-27@FCC-...

18:00 **Discussion**
Orateurs: Didier Contardo (IN2P3/CNRS), Didier Contardo

PED priority items for the pre-approval phase

1. Lay the foundations for the conceptual design studies of four (or more) **detectors**
2. Consolidate **IR** layout, detector integration, and related background mitigation
3. Collaborate with **IT** to develop a computing architecture model for experiments
4. Complete the **software & analysis toolkit** to ease detector performance comparison
5. Confirm, with full analyses, the current uncertainty estimates on **EWPOs** (Z and W)
6. Gather the worldwide **theory community** to address the theoretical challenges
7. Streamline and optimise the procedure for **centre-of-mass energy calibration**
8. Develop an efficient PED **Education/Communication/OutReach/InReach** strategy
9. Ascertain the **detector cost estimate**
10. Articulate the physics case, feasibility, and schedule implications of **other √s stages**
11. Anticipate FCC-PED **structure and management** in the project phase (2027-2033)

Planning scenario towards 4 experiments at FCC-ee

french interests associated with an R&D program in red

- 2023 DRD formation, French contribution w/ ongoing R&D related to FCC-ee systems:
  - DRD1 TPC, DRD3 VD-Tracking/PID layers; DRD6 HG-E(H)Calo, LNG-ECalo, CrystalShashlik-ECal (GRAiNITA)

- 2025 French EoI contributions to ESPP 2025
  - subystems :Si/W-ALLEGRO-GRAiNITA-DRCrystal E-Calo, TSDHCAL; VD/Seed, Tracking/PID layers
  - Detector Concepts : ALLEGRO, CLD, IDEA, ILD ←

- 2028-2029 after FCC approval $\gtrsim$ 4 collaborations forming…:

- 2031-2032 CDR - selection of 4 detector concepts (FCC-Committee)
  - cost considerations, merging of collaborations, possibly systems/technology variants remaining…
- 2035-2036 TDR - final selection of subsytems and technologies

Current institute interests

By subsystems (based on ongoing R&D)

- Tracking (DRD1, DRD3)
  - TPC : IRFU
  - VD - Tracking/PiD : APC, CPPM, IPHC, IP2I, IRFU, IJCLab, LPNHE
- Calorimetry (DRD6)
  - HG-E(H)Calo : IJCLab, LLR, LPNHE, (IP2I)
  - LNG-ECalo : APC, CPPM, IJClab, LAPP, LPSC
  - CS-ECalo: IJCLab, LPCA

By detector concepts (based on ongoing R&D)

Calorimetry driven

- CLD/ILD : IJCLab, LLR, LPNHE, IP2I (if RPCs)
- ALLEGRO : APC, CPPM, IJCLab, LAPP, LPSC
- CSDC : IJCLab, LPCA
- IDEA : ?

VD, Tracking/PID driven

IPHC, IP2I,1 of any concept
IRFU, 1 of any concept (CLD/ILD if TPC)

By Physics areas

- Higgs : APC, CPPM, IJCLab, IP2I, IRFU, LAPP, LLR, LPSC, L2IT
- ElectroWeak : IJCLab, IRFU, LAPP, LPNHE, LPCA LPSC
- Top : IPHC, IP2I, LPCA
- BSM : CPPM IJCLab, IPHC, IP2I, IRFU, LLR
- HFL : IJCLab, IRFU, LLR, LPCA
- QCD : LPNHE

Considerations for preparation of detector concept choices (2026-2027)

- Contributions to at least 3 detector concepts appear plausible
  - process/leadership for collaboration formation not yet defined
  - need to think how we will contribute to this process in France
- 2026-2027 French community should prepare decisions
  - ➢ teams should increase/reach critical mass, contribution wishes of HL-LHC teams should be identified now, even if they can only join around CDR time $\gtrsim$ 2030
  - institutes can formulate their current preferences for calorimetry & tracking association
    - to assess in common global detector concepts performance (PED framework see C. Grojean)
  - institutes can prioritise contributions to subsystem(s) at an early stage (if involved in several)
- IRFU/IN2P3 management can provide guidance on process and calendar to approve contributions

- Plenty of work in front of us !

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