FCC/DRD-contacts / October 19th 2023

Reunion FCC/DRD-contacts

vendredi 20 oct. 2023, 14:30 → 16:00 Europe/Paris

Description

14:30 → 15:10 **FCC/DRD-France en 2023 @ IPHC 22-24 November 2023**

Orateurs: Gregorio Bernardi (APC Paris CNRS/IN2P3), Ziad El Bitar (IPHC), jeremy andrea (IPHC)

15:10 → 15:25 **News, FCC, ECFA, IN2P3**

Orateur: Gregorio Bernardi (APC Paris CNRS/IN2P3)

15:25 → 15:55 **Tour de table des activités dans les labos / Demandes Dialog / NSIP/mailing list**

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The mid-term review process

Following the SAC and CRP meeting, 16-18 Oct 2023

Christophe Grojean, Patrick Janot, Michelangelo Mangano

PED Coordination meeting, 19 Oct 2023

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Slide from Michael Benedikt's presentation, FCC Week 2023

Mid-term review deliverables as defined in CERN/3654/Rev.2, September 2022

Infrastructure & placement
- Preferred placement and progress with host states (territorial matters, initial states, dialogue, etc.)
- Updated civil engineering design (layout, cost, excavation)
- Preparations for site investigations

Technical Infrastructure
- Requirements on large technical infrastructure systems
- System designs, layouts, resource needs, cost estimates

Accelerator design FCC-ee and FCC-hh
- FCC-ee overall layout with injector
- Impact of operation sequence: Z, W, ZH, $t\bar{t}$ vs start at ZH
- Comparison of the SPS as pre-booster with 10-20 GeV linac
- Key technologies and status of technology R&D program
- FCC-hh overall layout & injection lines from LHC and SC-SPS

Physics, experiments, detectors:
- Documentation of FCC-ee and FCC-hh physics cases
- Plans for improved theoretical calculations to reduce theoretical uncertainties towards matching FCC-ee statistical precision for the most important measurements.
- First documentation of main detector requirements to fully exploit the FCC-ee physics opportunities

Organisation and financing:
- Overall cost estimate & spending profile for stage 1 project

Environmental impact, socio-economic impact:
- Initial state analysis, carbon footprint, management of excavated materials, etc.
- Socio-economic impact and sustainability studies

Planning

- **FCC Week 2023**: presentations of most technical deliverables, closed SAC meeting on Thursday 8 June 2023 afternoon
- **16 – 17 (18) October 2023**: **SAC mid-term review meeting** with all deliverables, **CRP cost review meeting**
- **End October 2023**: SAC and CRP reports available to SPC and FC
- **20 – 22 November 2023**: **SPC and FC review meetings** on mid-term review
- **2 February 2024**: **Council meeting on mid-term review**

Results of both general mid-term review and the cost review should indicate the areas of attention for the second part of the Feasibility Study

SAC charge and membership

SAC Membership

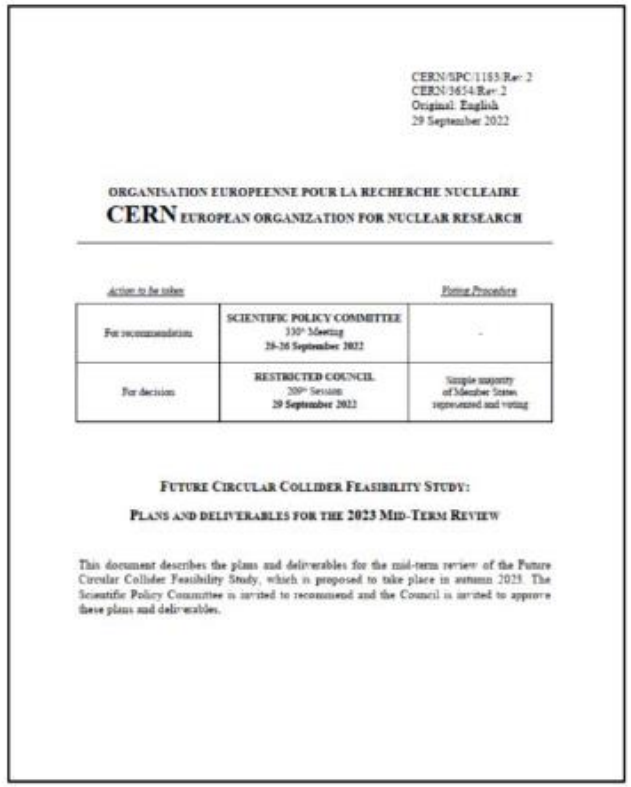
Riccardo Bartolini (DESY)
Heinz Ehbar (Heinz Ehbar Partners)[from 8/2023]
Belen Gavela Legazpi (UAM)
Katri Huiti (Helsinki)[until June 2023]
Peter Krizan (Ljubljana)
Peter McIntosh (STFC)
Andrew Parker (Cambridge)[Chair]
Roberto Tenchini (Pisa)

Alain Chabert (SFTRF)
Brigitte Fargevieille (EDF)
Gudrun Hiller (Dortmund)[from 8/2023]
Srinivas Krishnagopal (BARC)
Philippe Lebrun (CERN, ret.)
Michiko Minty (BNL)
Kyo Shibata (KEK)

Members: 16 international experts not directly involved in the Feasibility Study with renowned expertise in one or more scientific and technical domains relevant to the Study (accelerators, technical infrastructure, key technologies, physics, detectors, etc.). Members and Chair appointed by SC.

SAC follows and reviews the implementation of the Feasibility Study, giving scientific and technical advice to FCC SC and to Coordination Group, providing guidance to facilitate major technical decisions.

CRP charge and membership



CERN/SPC/1185/Rev. 2
CERN/3654/Rev. 2
Original: English
29 September 2022

ORGANISATION EUROPEENNE POUR LA RECHERCHE NUCLEAIRE
CERN EUROPEAN ORGANIZATION FOR NUCLEAR RESEARCH

Action to be taken		Voting Procedure
For recommendation	SCIENTIFIC POLICY COMMITTEE 330th Meeting 28-30 September 2022	-
For decision	RESTRICTED COUNCIL 209th Session 29 September 2022	Simple majority of Member States represented and voting

FUTURE CIRCULAR COLLIDER FEASIBILITY STUDY:
PLANS AND DELIVERABLES FOR THE 2023 MID-TERM REVIEW

This document describes the plans and deliverables for the mid-term review of the Future Circular Collider Feasibility Study, which is proposed to take place in autumn 2025. The Scientific Policy Committee is invited to recommend and the Council is invited to approve these plans and deliverables.

The CRP will

- review the methodology and assumptions used in producing the cost estimates,
- identify inaccurate or missing cost information,
- check the consistency of the cost estimates with respect to applicable reference work, e.g., recent large-scale infrastructure and accelerator projects,
- review the uncertainty estimates,
- identify potential areas of savings and cost mitigation for future work, and
- advise the FCC study team on matters of cost estimation in view of preparation of the final Feasibility Study Report for end 2025.

Members: The CRP consists of around 10 international experts, not directly involved in the Feasibility Study, with renowned expertise in costing and project management aspects related to the scientific and technical domains relevant to the Study (accelerators, technical infrastructure, civil engineering, detectors, etc.). Members and Chair appointed by SC.

CRP members:

Carlos Alejaldre (F4E), Austin Ball (CERN, ret.), Umberto Dosselli (INFN), Vincent Gorgues (CEA), Norbert Holtkamp, chair (Stanford U.), Christa Laurila (VTV), Ursula Weyrich (DKFZ), Jim Yeck (BNL), Thomas Zurbuchen (ETH Zürich)

These people have already reviewed projects that sum up over 100 billion CHF

FUTURE CIRCULAR COLLIDER

Disclaimer

- The recommendations from the SAC and the CRP are in the making
- They will be presented for the first time to the Council (via the Finance Committee and the Scientific Policy Committee) during a special Council meeting on 20-22 November 2023

Congratulations!

- Both the SAC and the CRP repeatedly praised the quality and the quantity of work that was presented to them, as well as the impressive status of the feasibility study

- On the basis of this work, we understand that it was confirmed that
  - The FCC will address fundamental scientific questions
  - The FCC will maintain CERN's global leadership in particle physics
  - The FCC-ee cost estimates (including detectors) are fair and robust
  - No (technical or non-technical) immediate showstoppers were identified
    - Even if several aspects that are on the critical path will need to be attended urgently.

- The quality of the PED mid-term chapter, and the work that was carried out to produce this chapter (software development, detector requirements, detector concept costing, integration in the interaction region, measurement of beam energy and other beam parameters, physics case, writing of FCC notes, and final chapter edition) have been important elements that led these conclusions

- Congratulations are in order to all of you and your teams, for your commitment and competence!

Specific aspects related (even remotely) to PED

- 2 IPs or 4 IPs
- FCC-ee and FCC-hh
- FCC-ee operation flexibility
- Resources towards final feasibility study deliverables and beyond
- Pre-project team
- Tripartite agreement
- FCC project approval

14:00 → 17:00 **Introduction, Status & Goals**

Bâtiment 25, Amphi Grünewald

Président de session: Gregorio Bernardi (APC Paris CNRS/IN2P3)

14:00 **Welcome** 10m

Orateurs: Ziad El Bitar (IPHC), auguste besson (Institut Pluridisciplinaire Hubert Curien), jeremy andrea (IPHC)

14:10 **The FCC Feasibility Study mid-term report** ¶ 30m

Orateur: Frank Zimmermann (CERN)

14:45 **French Activities in Accelerator R&D for Future Colliders** 25m

Orateur: Dr Angeles Faus-Golfe (IJClab)

15:15 **FCC FS: Physics and Theory** 30m

Orateur: Christophe Grojean (DESY (Hamburg) and Humboldt University (Berlin))

15:50 **FCC FS: Physics Performance and Detector constraints** 25m

Orateur: Emmanuel PEREZ (CERN)

16:20 **Status of foreseen French Activities in Detector's R&D for future colliders** 20m

Orateur: Arnaud Lucotte (IN2P3)

16:45 **Goals of the workshop** 15m

Orateur: Gregorio Bernardi (APC Paris CNRS/IN2P3)

17:30 → 19:30 **Physics Studies and Theory** — Bâtiment 25, Amphi Grünewald

- 17:30 **Higgs Physics at e+e- and pp colliders** — 20m
  Orateur: Nicolas Morange (IJCLab)
- 17:55 **Heavy Flavour at e+e- colliders: Status report in France and ECFA focus studies** — 20m
- 18:20 **Top physics status at e+e- colliders: Status report in France and ECFA focus studies** — 20m
- 18:45 **Electroweak physics at e+e- colliders: Status report in France and ECFA focus studies** — 20m
- 19:10 **BSM and Theory developments for FCC-ee** — 20m
  Orateur: Aldo Deandrea (IP2I - Université Lyon 1)

19:30 → 21:15 **Welcome Cocktail** — 1h 45m — Bâtiment 25, Amphi Grünewald

08:00 → 08:20 **Overview of DRD activities in France** — 20m — Bâtiment 25, Amphi Grünewald

Orateur: Didier Contardo (IN2P3/CNRS)

08:20 → 08:40 **the DRDC and the DRD Review process** — 20m — Bâtiment 25, Amphi Grünewald

Orateur: Laurent Serin (LAL)

08:40 → 09:00 **HL-LHC and DRD's** — 20m — Bâtiment 25, Amphi Grünewald

09:00 → 11:00 **DRD Tracking - 1: DRD Tracking - 1** — Bâtiment 25, Amphi Grünewald

- 09:00 **Introduction: a reminder of the possbile tracking concepts and technologies** — 15m
  Orateur: auguste besson (Institut Pluridisciplinaire Hubert Curien)
- 09:20 **MCMOS TPSco 65nm and electronics** — 20m
  Orateur: auguste besson (Institut Pluridisciplinaire Hubert Curien)
- 09:45 **Timing with MCMOS + potential application to FCC** — 15m
  Orateur: Philippe schwemling (LPNHE-Paris/Universite Paris-7)
- 10:05 **TPC in an FCC environment** — 15m
  Orateur: Daniel Jeans (LLR Ecole Polytechnique)
- 10:25 **Drift Chamber (+ IDEA DC description)** — 10m
  Orateurs: Didier Contardo (IN2P3/CNRS), Didier Contardo, Dr Gabriel Charles (IJCLab)
- 10:40 **picosec-Micromegas** — 15m
  Orateur: Alexandra Kallitsopoulou (CEA-Université Paris-Saclay)

11:00 → 11:30 **Coffee break** — 30m — Bâtiment 25, Amphi Grünewald

11:30 → 13:00 **DRD Calorimetry - 1** — Bâtiment 25, Amphi Grünewald

- 11:30 **Introduction à DRD6 / Calorimétrie** — 15m
  Orateur: Roman Poeschl (LAL Orsay)
- 11:50 **Allegro: LAr R&D + design** — 20m
  Orateur: Nicolas Morange (IJCLab)
- 12:15 **Calice: SiW-ECAL status and design** — 20m
  Orateur: Vincent BOUDRY (LLR - CNRS, École polytechnique/IPP Paris)
- 12:40 **Calice: GRPC / T-SDHCAL + design** — 20m
  Orateur: Imad Laktineh ({UNIV CLAUDE BERNARD}UMR5822)

13:00 → 14:30 **Lunch break** — 1h 30m — Bâtiment 25, Amphi Grünewald

14:30 → 16:00 **FCC Software and Analysis** — Bâtiment 25, Amphi Grünewald

- 14:30 **Status of the simulation in the FCCSoftware** — 15m
  Orateur: Ziad El Bitar (IPHC)
- 14:50 **Summary of software development in AIDAINNOVA** — 15m
  Orateur: Gérald Grenier (IPN Lyon/Université Lyon 1)
- 15:10 **A preliminary estimation of the fluxes in calorimeters at the FCC-ee** — 15m
  Orateur: Vincent BOUDRY (LLR - CNRS, École polytechnique/IPP Paris)
- 15:30 **Detailed simulation in LAr Calorimetry** — 12m
  Orateur: Tong LI (APC Paris, CNRS/IN2P3)
- 15:45 **Detailed simulation for Tracking** — 12m
  Orateur: Gaëlle Sadowski (iphc)

18:40
Thursday 19.10.2

15:00 → 16:00 **R&D projects / parallel session (if needed)** — Bâtiment 25, Amphi Grünewald

16:00 → 16:30 **Coffee break** — 30m — Bâtiment 25, Amphi Grünewald

16:30 → 19:00 **Participations Françaises aux futures EoI des detecteurs et sous-détecteurs** — Bâtiment 25, Amphi Grünewald

- 16:30 **ALLEGRO concept (presentation and discussion)** ¶ — 30m
- 17:00 **ILD' and CLD concept (presentation and discussion)** — 30m
- 17:30 **IDEA concept (presentation and discussion)** — 30m
- 18:00 **Possible sub-detectors EoI (presentations and discussions)** — 30m
- 18:30 **Global discussion** — 30m

19:30 → 22:00 **Banquet in town - Maison Kammerzell - 16 Place de la Cathédrale** — 2h 30m — Maison Kammerzell

08:00 → 09:00 **EAP - FCC (restricted to the FCC-Contacts)** — Bâtiment 25, Amphi Grünewald

Présidents de session: Gregorio Bernardi (APC Paris CNRS/IN2P3), Laurent Vacavant (IN2P3)

09:00 → 10:00 **Calorimetry DRD / session 2** — Bâtiment 25, Amphi Grünewald

- 09:00 **GRAINITA** — 15m
  Orateur: Marie-Hélène Schune (IJCLab)
- 09:20 **Crystal Calorimeters** — 15m
  Orateur: Suzanne GASCON-SHOTKIN (IPN Lyon)
- 09:40 **ASICs and DAQ** — 15m
  Orateur: Christophe de LA TAILLE (OMEGA)

10:00 → 11:00 **Tracking DRD - session 2** — Bâtiment 25, Amphi Grünewald

- 10:00 **MPGD** — 15m
  Orateur: Fabien Jeanneau (CEA Saclay)
- 10:20 **WADAPT** — 15m
  Orateurs: Dr Fairouz MALEK (LPSC-Grenoble, CNRS-IN2P3, UGA), Fatah Ellah RARBI (LPSC Grenoble)
- 10:40 **Discussion: Next steps in Tracking** — 20m
  Orateur: Didier Contardo (IN2P3/CNRS)

11:00 → 11:30 **Coffee break** — 30m — Bâtiment 25, Amphi Grünewald

11:30 → 13:00 **Conclusions / Prospects from IN2P3** — Bâtiment 25, Amphi Grünewald

- 11:30 **Prospects for DRD and e+e- factories as seen from INP23 and IRFU** — 1h
  Orateurs: Laurent Vacavant (IN2P3), Nathalie BESSON (Dapnia/SPP)

18:43
Thursday 19.10.2