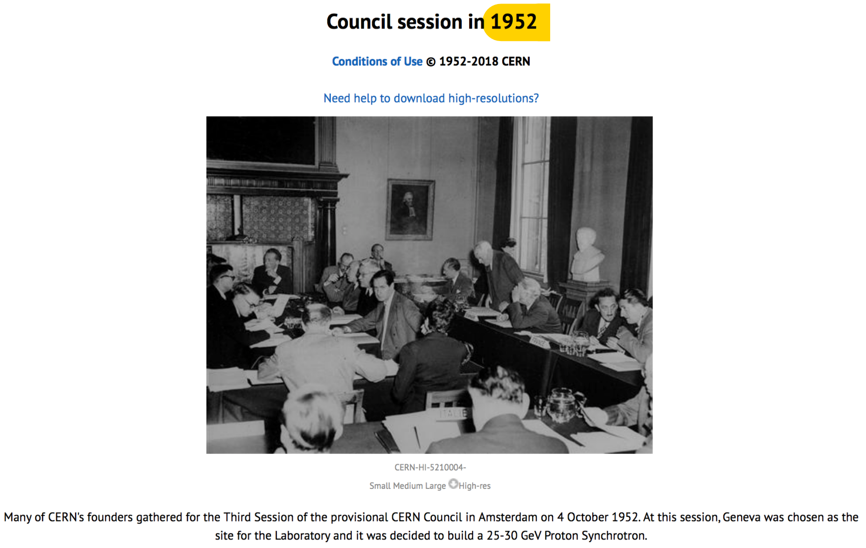
At the end of the Second World War, European science was no longer the *crème de la crème*. Following the example of the now mushrooming international organizations, a handful of visionary scientists imagined creating a European atomic physics laboratory. Raoul Dautry, Pierre Auger and Lew Kowarski in France, Edoardo Amaldi in Italy and Niels Bohr in Denmark were among these pioneers. Such a laboratory would not only unite European scientists but also allow them to share the increasing costs of nuclear physics facilities.

French physicist Louis de Broglie put the first official proposal for the creation of a European laboratory forward at the European Cultural Conference in Lausanne in December 1949. A further push came at the fifth UNESCO General Conference, held in Florence in June 1950, where the American Nobel laureate physicist, Isidor Rabi tabled a resolution authorizing UNESCO to "assist and encourage the formation of regional research laboratories in order to increase international scientific collaboration…" At an intergovernmental meeting of UNESCO in Paris in December 1951, the first resolution concerning the establishment of a European Council for Nuclear Research was adopted. Two months later, 11 countries signed an agreement establishing the provisional Council – the acronym CERN was born. At the provisional Council's third session in October 1952, Geneva was chosen as the site of the future Laboratory. This choice was finally ratified in a referendum organized by the Canton of Geneva in June 1953.

The CERN Convention, established in July 1953, was gradually ratified by the 12 founding Member States: Belgium, Denmark, France, the Federal Republic of Germany, Greece, Italy, the Netherlands, Norway, Sweden, Switzerland, the United Kingdom, and Yugoslavia. On 29 September 1954, following ratification by France and Germany, the European Organization for Nuclear Research officially came into being. The provisional CERN was dissolved but the acronym remained.

Participation of NCSR-D at CERN

- Past, present and future http://cds.cern.ch/record/762699



Council session in 1952

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Many of CERN's founders gathered for the Third Session of the provisional CERN Council in Amsterdam on 4 October 1952. At this session, Geneva was chosen as the site for the Laboratory and it was decided to build a 25-30 GeV Proton Synchrotron.

TRIBUNE DE GENÈVE
Première édition
GENÈVE

21.Sep.1962

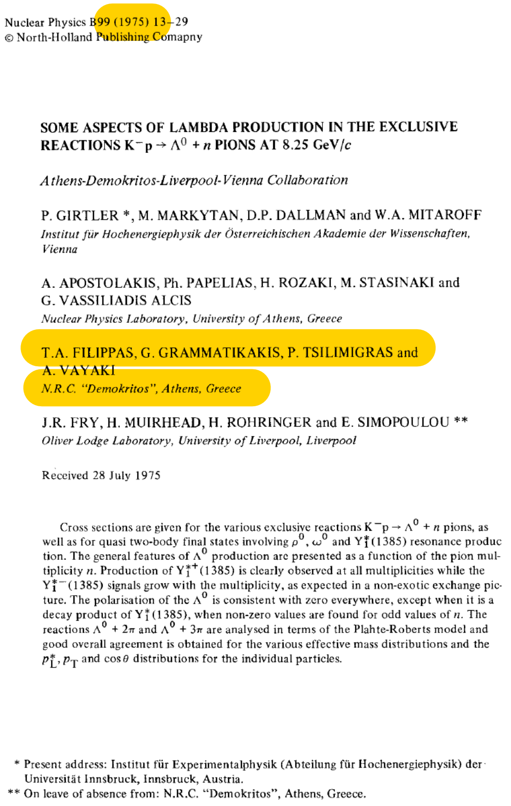
16089

La reine Frédérique de Grèce au Cern

Photo Murat

La reine Frédérique de Grèce a visité jeudi matin l'Organisation européenne pour la recherche nucléaire (Cern). La reine était notamment accompagnée de la princesse Irène et du professeur Th. Kanellopoulos, directeur scientifique de la commission grecque à l'énergie atomique. La reine a été accueillie par M. Jean Willems, président du conseil du Cern, le professeur Victor F. Weisskopf, directeur général du Cern et par des membres du directoire. Elle a visité en détail toutes les installations du laboratoire et a participé à un séminaire de physique, avant de s'entretenir avec les huit membres grecs du personnel M. P. Gottret, conseiller de légation, représentait les autorités fédérales. M. A. Ruffieux, conseiller d'Etat de Genève et M. L. Billy, vice-président du Conseil administratif de Genève ont pris part au déjeuner offert au Cern en l'honneur de la reine.

- More than 40 years of active participation



Nuclear Physics B99 (1975) 13–29
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SOME ASPECTS OF LAMBDA PRODUCTION IN THE EXCLUSIVE REACTIONS $K^-p \rightarrow \Lambda^0 + n$ PIONS AT 8.25 GeV/c

Athens-Demokritos-Liverpool-Vienna Collaboration

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Received 28 July 1975

Cross sections are given for the various exclusive reactions $K^-p \rightarrow \Lambda^0 + n$ pions, as well as for quasi two-body final states involving ρ^0, ω^0 and $Y_1^*(1385)$ resonance production. The general features of Λ^0 production are presented as a function of the pion multiplicity n. Production of $Y_1^{*+}(1385)$ is clearly observed at all multiplicities while the $Y_1^{*-}(1385)$ signals grow with the multiplicity, as expected in a non-exotic exchange picture. The polarisation of the Λ^0 is consistent with zero everywhere, except when it is a decay product of $Y_1^*(1385)$, when non-zero values are found for odd values of n. The reactions $\Lambda^0 + 2\pi$ and $\Lambda^0 + 3\pi$ are analysed in terms of the Plahte-Roberts model and good overall agreement is obtained for the various effective mass distributions and the p_L^*, p_T and $\cos\theta$ distributions for the individual particles.

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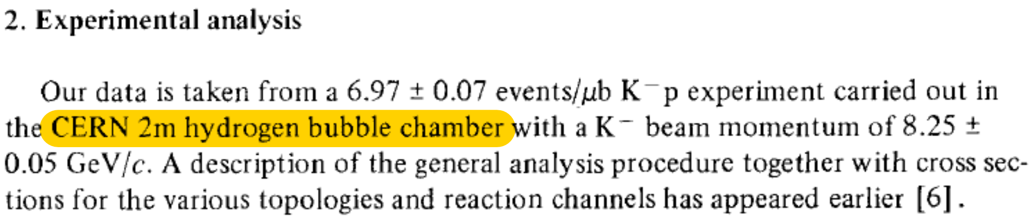
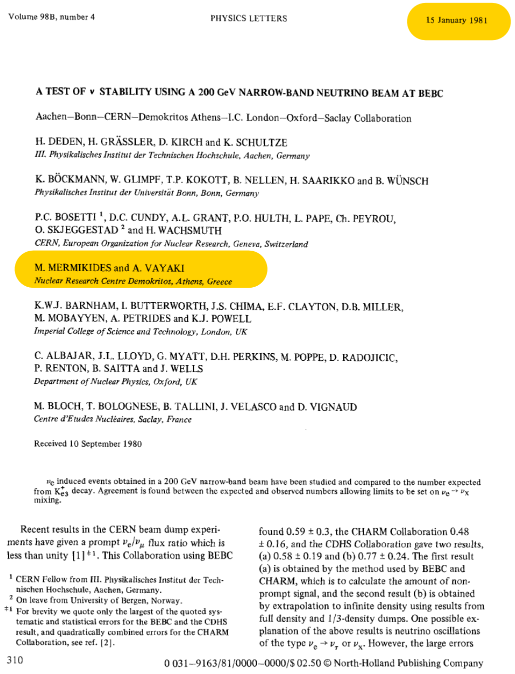


2. Experimental analysis

Our data is taken from a 6.97 ± 0.07 events/μb K^-p experiment carried out in the CERN 2m hydrogen bubble chamber with a K^- beam momentum of 8.25 ± 0.05 GeV/c. A description of the general analysis procedure together with cross sections for the various topologies and reaction channels has appeared earlier [6].



Volume 98B, number 4 PHYSICS LETTERS 15 January 1981

A TEST OF ν STABILITY USING A 200 GeV NARROW-BAND NEUTRINO BEAM AT BEBC

Aachen–Bonn–CERN–Demokritos Athens–I.C. London–Oxford–Saclay Collaboration

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Received 10 September 1980

ν_e induced events obtained in a 200 GeV narrow-band beam have been studied and compared to the number expected from K_{e3}^+ decay. Agreement is found between the expected and observed numbers allowing limits to be set on $\nu_e \rightarrow \nu_x$ mixing.

Recent results in the CERN beam dump experiments have given a prompt ν_e/ν_μ flux ratio which is less than unity [1] [‡1]. This Collaboration using BEBC found 0.59 ± 0.3, the CHARM Collaboration 0.48 ± 0.16, and the CDHS Collaboration gave two results, (a) 0.58 ± 0.19 and (b) 0.77 ± 0.24. The first result (a) is obtained by the method used by BEBC and CHARM, which is to calculate the amount of non-prompt signal, and the second result (b) is obtained by extrapolation to infinite density using results from full density and 1/3-density dumps. One possible explanation of the above results is neutrino oscillations of the type $\nu_e \rightarrow \nu_\tau$ or ν_x. However, the large errors

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[‡1] For brevity we quote only the largest of the quoted systematic and statistical errors for the BEBC and the CDHS result, and quadratically combined errors for the CHARM Collaboration, see ref. [2].

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Nuclear Physics B273 (1986) 253–274
North-Holland, Amsterdam

PROMPT NEUTRINO PRODUCTION IN 400 GeV PROTON COPPER INTERACTIONS

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0550-3213/86/$03.50
(North-Holland Physics Publishing Division)

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The prompt electron neutrino and muon neutrino fluxes from proton copper interactions at 400 GeV/c proton momentum have been measured. The asymmetry between the prompt electron (anti)neutrino and the prompt muon (anti)neutrino event rates above 20 GeV is $A_{e\mu} = (N_e - N_\mu)/(N_e + N_\mu) = 0.07 \pm 0.08$ corresponding to an N_e/N_μ ratio of $1.14^{+0.19}_{-0.16}$. The cross section weighted charge asymmetry for electrons and muons combined is $A_{\nu\bar{\nu}} = 0.15 \pm 0.08$. The number of $\overline{\mathrm{D}}$ decays into $\bar{\nu}_e$ and $\bar{\nu}_\mu$ is $(4.1 \pm 0.9) \times 10^{-4}$ per incident proton. No evidence for ν_τ interactions was found.

1. Introduction

For this experiment the 400 GeV fast-extracted proton beam from the CERN SPS, while aimed directly at the neutrino detector (the Big European Bubble Chamber, BEBC), was dumped into a large copper block. The block was located 406 metres from BEBC, directly in front of the West Area neutrino shielding (fig 1). Two other neutrino detectors (the CDHSW and CHARM detectors located 59 and 81 metres behind BEBC, respectively) took data at the same time.

The copper block, or dump (fig 2), was large enough (31 cm × 41 cm × 605 cm long) to contain almost the entire hadronic cascade. Few of the long-lived hadrons (pions, kaons, hyperons), whose decays produce most of the neutrinos in a conventional neutrino beam, had time to decay before being reabsorbed. Thus the "conventional" flux of neutrinos was greatly suppressed (by some three orders of magnitude) compared with a conventional wide band neutrino beam.

The feature of such an experiment is that other processes may, in principle, become recognizable above this greatly suppressed conventional background. Examples are (i) the production and semileptonic decay of heavier hadrons with smaller production cross sections and much shorter lifetimes (e.g. charmed hadrons), (ii) the production in the decay of such hadrons of new neutrinos which may be detected through their interactions or decays in the detector, (iii) the production of axions, or (iv) the production of supersymmetric (SUSY) partners of normal hadrons whose decays give photinos. All these processes lead to a flux through the neutrino detector of neutrinos or neutrino-like objects whose production is little suppressed by reabsorption in the dump material, i.e. to a so-called "prompt" flux of neutrinos or neutrino-like objects. This prompt flux may have quite different characteristics from the conventional flux, when producing either interactions or decays in the

Nuclear Instruments and Methods in Physics Research A303 (1991) 233–276
North-Holland

The DELPHI detector at LEP

DELPHI Collaboration *

Received 9 November 1990

DELPHI is a 4π detector with emphasis on particle identification, three-dimensional information, high granularity and precise vertex determination. The design criteria, the construction of the detector and the performance during the first year of operation at the large electron positron collider (LEP) at CERN are described.

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14. Summary

The DELPHI detector has been in operation since the short pilot run of LEP in August 1989. During the first 8.5 months of LEP operation until end of August 1990, about 135000 hadronic Z^0 events have been recorded. Trigger rates were typically 2.5 Hz at the highest luminosities around 5×10^{30} cm^{-2}s^{-1}, with a lifetime of about 95%. Several detectors have reached their design resolution and globally good performance has already permitted a rich harvest of physics results.

Acknowledgements

This complex detector could only be constructed with the dedicated effort of many technical collaborators at the participating institutes and at CERN. We wish to express our gratitude and appreciation to all of them.

We also thank the funding agencies for the continued support for this project over the past eight years. The members of the LEP Division we wish to congratulate and thank for the speedy commissioning and successful operation of the collider and for the good collaboration with the experiments.

Appendix

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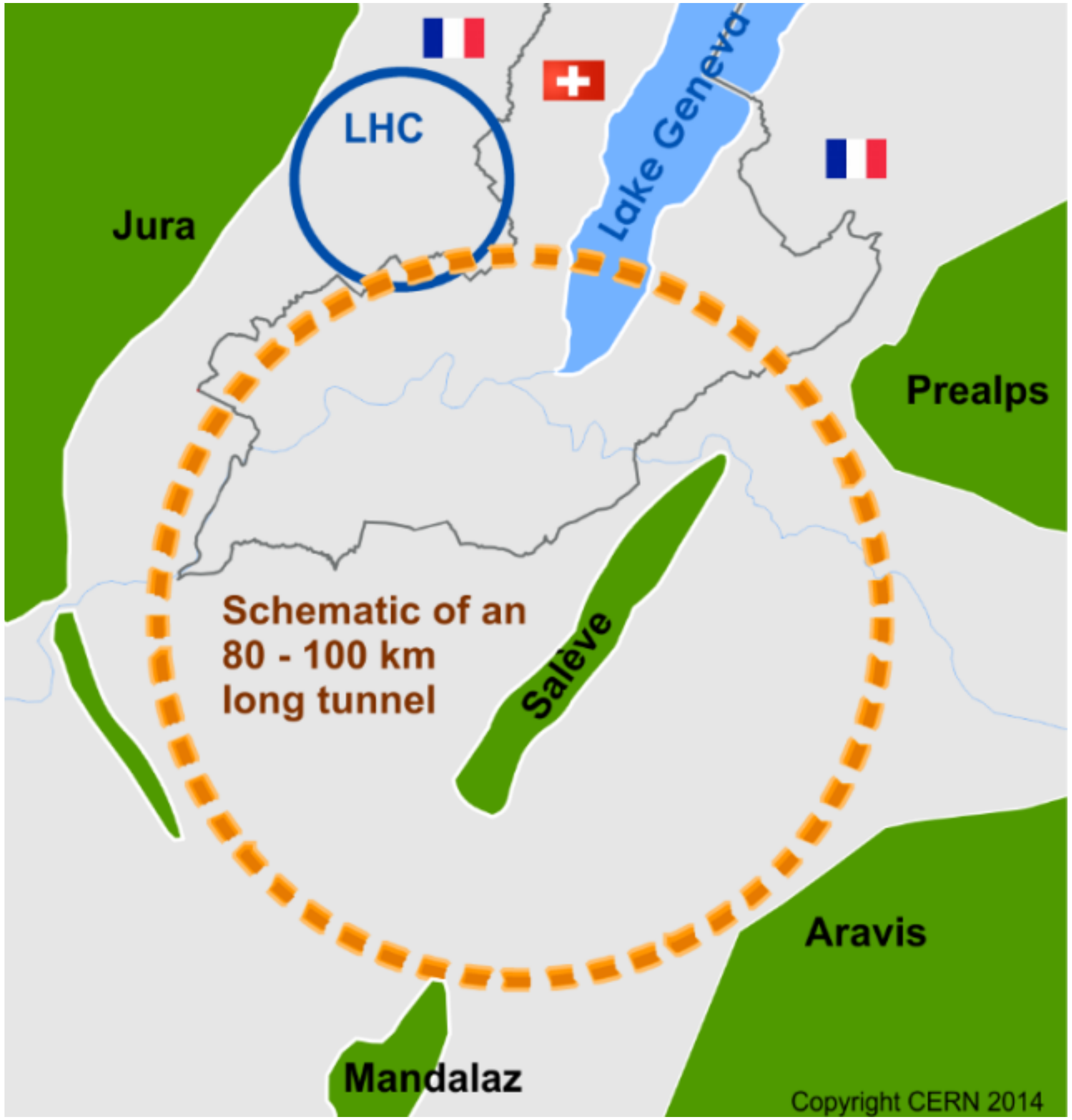
Received 28 February 1990

The design, construction, and performance of a large-mass 4π solid-angle detector with solenoidal magnet is described. The detector serves to study electron–positron annihilation processes at centre-of-mass energies between 80 and 200 GeV at the large electron–positron storage ring (LEP) at CERN.

- Present: LHC and HL-LHC:
    - CMS
    - ATLAS
    - ISOLDE

- Future: FCC


LHC
Jura
Lake Geneva
Prealps
Schematic of an 80 - 100 km long tunnel
Salève
Aravis
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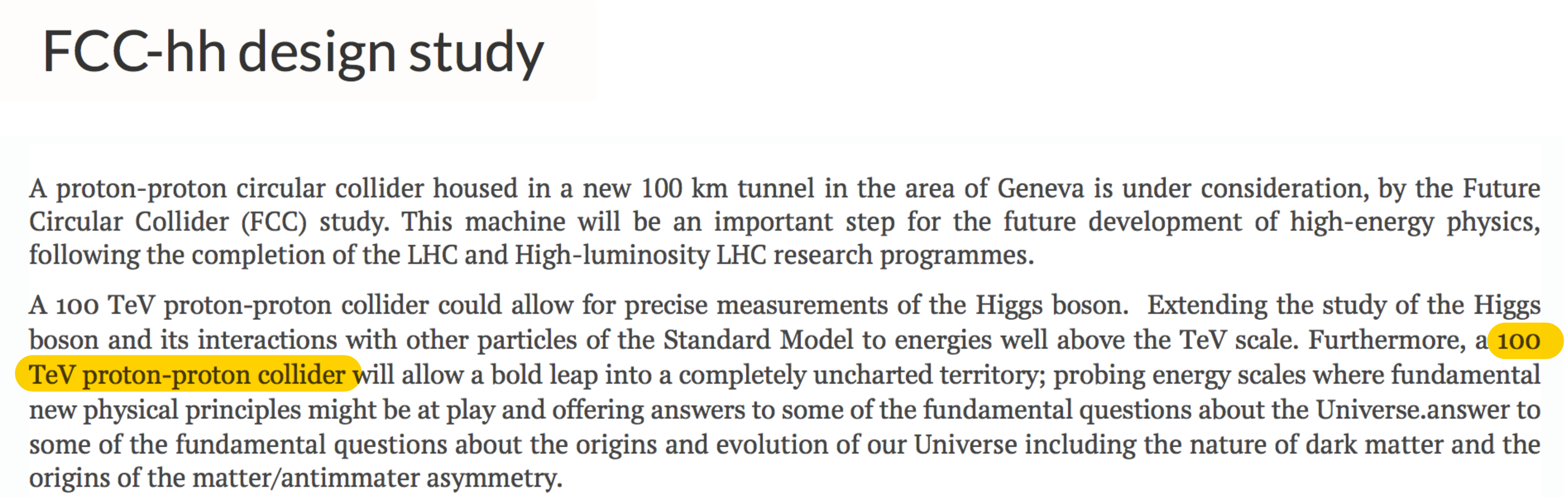
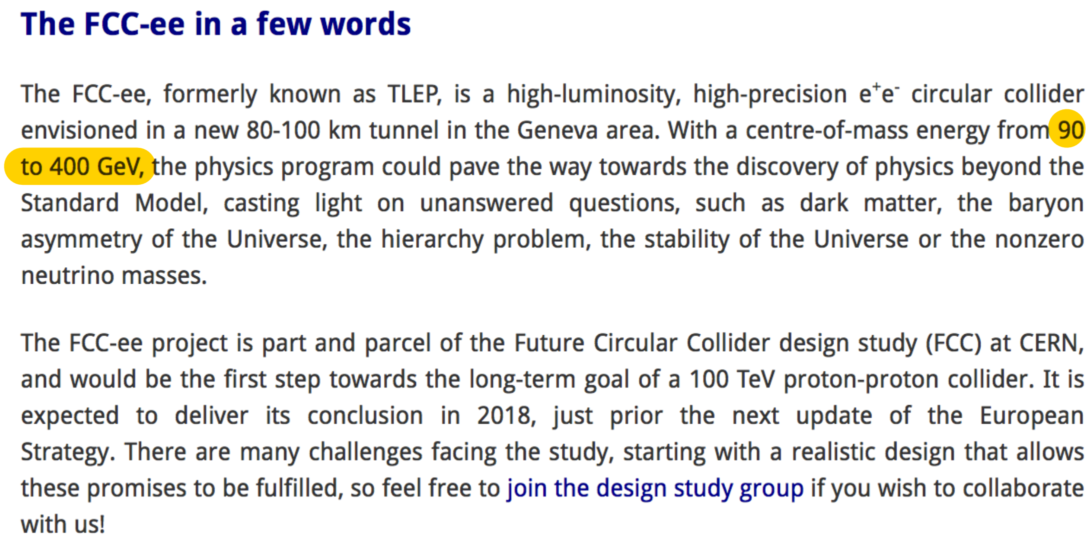


FCC-hh design study

A proton-proton circular collider housed in a new 100 km tunnel in the area of Geneva is under consideration, by the Future Circular Collider (FCC) study. This machine will be an important step for the future development of high-energy physics, following the completion of the LHC and High-luminosity LHC research programmes.

A 100 TeV proton-proton collider could allow for precise measurements of the Higgs boson. Extending the study of the Higgs boson and its interactions with other particles of the Standard Model to energies well above the TeV scale. Furthermore, a 100 TeV proton-proton collider will allow a bold leap into a completely uncharted territory; probing energy scales where fundamental new physical principles might be at play and offering answers to some of the fundamental questions about the Universe.answer to some of the fundamental questions about the origins and evolution of our Universe including the nature of dark matter and the origins of the matter/antimmater asymmetry.



The FCC-ee in a few words

The FCC-ee, formerly known as TLEP, is a high-luminosity, high-precision e^+e^- circular collider envisioned in a new 80-100 km tunnel in the Geneva area. With a centre-of-mass energy from 90 to 400 GeV, the physics program could pave the way towards the discovery of physics beyond the Standard Model, casting light on unanswered questions, such as dark matter, the baryon asymmetry of the Universe, the hierarchy problem, the stability of the Universe or the nonzero neutrino masses.

The FCC-ee project is part and parcel of the Future Circular Collider design study (FCC) at CERN, and would be the first step towards the long-term goal of a 100 TeV proton-proton collider. It is expected to deliver its conclusion in 2018, just prior the next update of the European Strategy. There are many challenges facing the study, starting with a realistic design that allows these promises to be fulfilled, so feel free to join the design study group if you wish to collaborate with us!

- Improving NCSR-D participation
  - Involving more researchers of NCSR-D to CERN activities
    - Common projects with INPP
    - Information: Forum, Exhibitions, Summer School
    - Targeted events: ex. Deep Learning with IIT
    - Industrial return, ΤΕΠΑ
  - Direct access
    - NCSR-D Researchers to visit CERN and accommodated by CERN-DEMOKRITOS office
    - Direct contacts, bottom-up approach

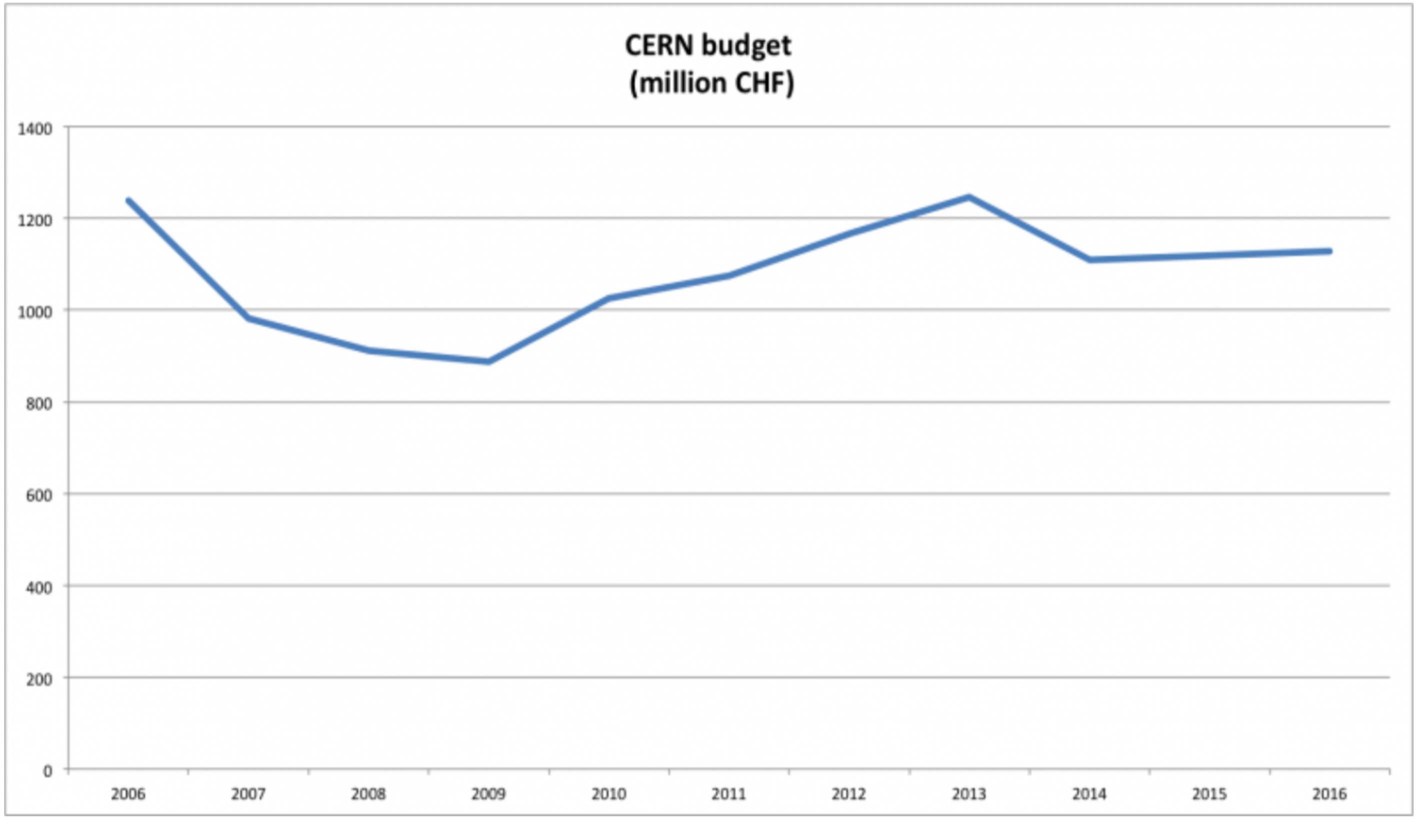
- Establish the CERN-DEMOKRITOS office, under the Director and President of the Board:
  - Informing: web page with CERN activities
  - Accommodate NCSR-D researchers at CERN
  - Resolve access issues
  - Train new personnel
  - Collaborating with other offices, like ΤΕΠΑ, Education, etc.

➡ CERN activities integrated in the scientific strategy, Institutes, ΕΣΙ, Δ/ντες

- Outreach Activities
  - Masterclass, education

  - Media, social media

Budget overview



Κατηγορία	**Αριθμός 2016**	**Κόστος 2016**	**Αριθμός 2017**	**Κόστος 2017**
CERN FELLOWS	43	3.72 MCHF	53	4.59 MCHF
TECH. STUDENTS	36	1.53 MCHF	27	1.15 MCHF
PH.D STUDENTS	13	0.62 MCHF	15	0.71 MCHF
CERN STAFF	30	3.60 MCHF	38	4.56 MCHF
ΣΥΝΟΛΟ		**9.47 MCHF**		**11.01 MCHF**

Πίνακας 1: Η συνεισφορά του CERN προς Έλληνες ερευνητές στις κατηγορίες, CERN FELLOW, TECHINCAL STUDENTS, PH.D STUDETNS, STAFF το 2016 και 2017.

Χώρα	Ποσοστό Βιομηχανικής Επιστροφής
Γερμανία	18,5%
Ολλανδία	17,14%
Αγγλία	15,8%
Φιλανδία	11,7%
Ελβετία	196,0%
Γαλλία	87,0%
Αυστρία	15,3%
Ισπανία	35,8%
Ιταλία	36,3%
Πορτογαλία	15,2%
Τσεχία	27,6%
Ελλάδα	10,0%
Τουρκία	6,8%

Πίνακας 1: *Η βιομηχανική επιστροφή από το CERN σε διάφορες χώρες. Στον υπολογισμό της επιστροφής συμπεριλαμβάνεται μόνο η εισφορά της κάθε χώρας στο CERN. Οί εισφορές των χωρών για τα πειράματα είναι πολύ μικρότερες από τις εισφορές στο CERN και δεν αναμένεται να αλλάξουν σημαντικά τα πιο πάνω νούμερα.*