Swiss Institute of Particle Physics

CHIPP Plenary meeting 2024

June 20, 2024

Ben Kilminster (CHIPP chair)

Agenda

Time of the meeting: 20 June 2023 at 14h00
Indico link https://indico.cern.ch/event/1395037/

1. **Welcome, news from CHIPP Board and Executive Board**
   Kilminster
2. **CHIPP Elections**
   - **two Plenary-ECFA representative**
   - **ACCU Swiss representative**

Agenda approved ?

REPORTS:

ACCU
APPEC
Computing
NuPECC
ECT*
Outreach
ECFA
ECFA-ECR
CERN Council
IPPOG
CHAPS
Gravitational Waves

Swiss Institute of Particle Physics

Minutes of the last meeting

Material/Minutes of the CHIPP Plenary 2023 have been made available on www.chipp.ch

Agenda item 2: election of the Restricted ECFA member

The election of the Swiss representatives in the European Committee for Future Accelerators (ECFA) belongs to the CHIPP Plenary, based on a recommendation by the Board.

- The present Swiss representatives in ECFA are:

  Rainer Wallny (ETHZ) Restricted ECFA and Plenary ECFA member until Dec 2026, 1st term

  Sergio Gonzalez Sevilla (U.Ge) Plenary ECFA member until Dec 2027, 1st term

  Philipp S. Wellenbug (PSI), Plenary ECFA member until Dec 2027, 2nd term

  Annapaola De Cosa (ETHZ), Plenary ECFA member until Dec 2025, 1st term

Election of a a Restricted and Plenary ECFA member

The Plenary Board is invited to:

elect: Sergio Gonzalez Sevilla (UGe)

Plenary ECFA for a 1st three-year term (Jan. 2025 – Dec. 2027)

re-elect: Philipp S. Wellenburg (PSI)

Plenary ECFA for a 2nd three-year term (Jan. 2025 – Dec. 2027)

Agenda item 2:
Election of the Swiss representative to ACCU

ACCU: Advisory Committee of CERN Users

The election of the Swiss representatives in ACCU belongs to the CHIPP Plenary, based on a recommendation by the Board. (Article 19, litt. e)

The plenary board is invited to re-elect:

Sergio Gonzales Sevilla (UniGE)

for a third two-year term from January 2025 to December 2026 as ACCU representative.

Required majority: simple

NEW CHIPP
Executive Board composition

The present composition of the CHIPP EB is the following:

Ben Kilminster CHAIR (Jan 2023 - Dec 2025)
Paolo Crivelli (Jan 2025 - Dec 2026)
Michael Spira (Jan 2025 - Dec 2026)
Tobias Golling (Jan 2024 - Dec 2025)

CHIPP Functions & Tasks elections

- CHIPP EB: Kilminster, Crivelli and Spira extended
- CHIPP Account Auditors S. Schramm extended
- Outreach/Education: K. Müller extended
- Plenary ECFA: Sergio Gonzalez Sevilla and Philipp S. Wellenburg
- ACCU: Sergio Gonzalez Sevilla
- ECT*: Gilberto Colangelo
- Computing Chair: Mauro Donegà
- CHAPS observer: Martin Kunz
- **ERC-ECFA:** P. Kontaxakis (UGe), E. Niel (EPFL) & M. Pesut (UZH) & G. Lospalluto (PSI) extended
- CHIPP Winter School: B. Penning, L. Schutska

CHIPP board meeting summary

CHIPP is producing a 4-year roadmap for 2029-2032

- To be printed in December 2024

CHIPP is expected to provide input to the European strategy update for March 2025

- Will be based on roadmap

Board discussion items

- Feedback from Swiss RECFA visit (March)
- SNF long-term research infrastructures white paper
- CHEF (CH High-Energy physics for the FCC) proposed program
- Tier-2 computing report

CHIPP has discussed today (and approved?)

- new CHIPP postdoc prize starting 2025
- code of conduct for CHIPP web page

CHIPP Prize 2024

Gabriela Rodrigues Araujo

The CHIPP Prize jury honours Gabriela Rodrigues Araujo for her significant and novel contributions to a wide range of experimental techniques for the GERDA, LEGEND, MONUMENT and PALEOCCENE experiments in the field of neutrino physics and related measurements that enabled to set record-limits on the neurinoless double beta decay and initiated innovative developments of experimental techniques.

Agenda 3:
Updates from the representatives in committees

CERN Council

ECFA

ACCU

APPEC

Gravitational Waves WG

CHIPP Computing

CHIPP Outreach & Education

CHIPP/CHAPS

ECT*

Asked to prepare 1 slide each as summary. Please ask questions if needed. More details in reports.

Swiss Institute of Particle Physics

CERN Council updates

Florencia Canelli

Swiss Institute of Particle Physics

CERN Council Report – *brief and most recent news*

- ***FCC feasibility study:*** MidTerm report released in Feb 2023 ➔ Final report to be completed in March 2025 (including financial funding planning)
- ***Update of European strategy for Particle Physics***: Input from community by March 31, 2025, Summer Open Symposium June 23-27, 2025, Conclusion in June 2026
- ***Experimental program in EC3N Facility***: Approval of SHiP proposal
- ***CERN-US collaboration:*** strong statement of intent on collaboration with CERN if FCC is approved
- ***First private donor contribution to CERN project***: Next-Generation Triggers Project from Eric and Wendy Schmidt Fund (~$50M)
- ***Science Gateway***: 247 756 visitors (from CH 53764) since 8 October 2023 (day of opening to the public) [1 year of operation) > 350k visitors, before Science Gateway, CERN used to host ~ 150k visitors/year]
- ***Russia-Ukraine war***: Waive the financial contribution of Ukraine to CERN for 2024 (and 2023, 2022) , Termination of ICAs for Belorussia and Russia institutions from June and November 2024, respectively
- ***Enlargement process***: Estonia new MS, Brazil new Associate MS (first from the Americas)
- ***HL-LHC preparation***: following developments from Accelerator and status of upgrades of ATLAS/CMS detectors
- ***CH at CERN:*** Personnel and Financial Contributions for 2022 and 2023 in attachments
- ***Topics coming up :*** LHCb and ALICE upgrades for HL-LHC; selection of Council president, ESPPU secretary, and DG selection, review of Final FCC feasibility report

Florencia Canelli - UZH

Swiss Institute of Particle Physics

ECFA ECR PANEL

Armin Ilg

Swiss Institute of

ECFA ECR Panel composition and activities

Members are, in general, ***PhD students and postdocs, either with a non-permanent contract or with up to eight years after obtaining the PhD****. Up to* ***three members*** *(+1 for countries with LDG lab), among them at least one PhD student and one postdoc, can be nominated* ***by each ECFA country*** *represented in ECFA for a* ***mandate of two years****,* ***extendable for another two years****. Nominations are to be endorsed by Plenary ECFA. Members act as individuals, but should be able to represent the views of early-career researchers in particle physics in the nominating country.*

- From PhD students to young assistant professors
- Theoreticians, phenomenologists, experimentalists, …

→ Diversity in cultural background, career and research, trying to represent the whole community

- 5 ECR delegates in Plenary ECFA, 1 delegate in Restricted ECFA, Organizing Committee

Switzerland has 3+1 representatives: Armin Ilg (UZH, *Plenary ECFA*), Giuseppe Lospalluto (PSI/ETHZ), Elisabeth Niel (EPFL), Marko Pesut (UZH, *Organizing Committee*)

- Armin Ilg reaching end of mandate end of 2024 → Replaced by Pantelis Kontaxakis (UniGe)

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ECFA Early-Career Researcher Panel Update

- 09.2023: Future Colliders for Early-Career Researchers event at CERN
  - Report to be made public on arXiv soon
  - Blueprint for national events on future colliders for ECRs (Zenodo)
    - First iterations in Nordic countries and Austria, want to organise similar event in CH
- 04.2024: ECFA ECR survey on career prospects and diversity in physics programme (arXiv:2404.02074)
- 05.2024: Survey on training in ML and software (with similar report as output)
- Community interactions: EPS2023, ICFA seminar, ECFA newsletters, FCC Week 2024
- Report of our 2023 activities to be released soon!

Future Colliders for ECRs at CERN

2

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Particle Physics

CHAPS

Martin Kunz

CHAPS news (based on 09/2023 meeting)

CHAPS structure

- Philippe Jetzer (UZH) is SCFA president and CHAPS chair.
- SSAA/SGAA corresponds to CHIPP (but separate president: Margit Haberreiter, PMOD).
- CHAPS (tenured astronomy professors) ~ CHIPP Board
- SCFA (Swiss Commission for Astronomy, committee of SCNAT) ~ CHIPP Executive Board

CHAPS membership

- CHAPS members are (astronomy) professors with a permanent position in Switzerland. This includes titular professors but excludes, e.g., SNSF and ERC professors.
- A professor is in principle either a member of the CHIPP Board or of CHAPS, but not of both. (highlighting by Ben)

CHAPS activities

- CHAPS defines strategic priorities for the Astronomy Roadmap and FLARE funding (as CHIPP for PP).
- Swiss Astronomy Roadmap 2025 – 2028 (completed in 2022).
- Update situation unclear at meeting (but SCNAT received mandate by SERI at end of 2023 for update by end of 2024). Request to CHAPS members to join themes:

  1) Fundamental physics, 2) Origins: stars, galaxies and the evolving Universe, 3) Planets and search for extra-terrestrial life, and 4) Our home and its space environment.

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Swiss Committee on Space Research (CSR)

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Swiss Committee on Space Research (CSR) (https://csr.scnat.ch/en)

- CSR is a coordination body under SCNAT for space science
  - Coordinates and stimulates space research in Switzerland and maintains contact with international organisations
  - CSR president (currently Stéphane Paltani, UniGe) is the Swiss scientific representative to ESA's science program and COSPAR
  - Produces a report ("COSPAR Report") every two years on space science activities in Switzerland
    - **Hot off the prese: COSPAR report 2022-2024: Space Research in Switzerland,** available on CSR web page
  - Produces a roadmap on space science in Switzerland
    - Last version: **Roadmap Space Science in Switzerland 2019,** available on CSR web page
    - Update of the roadmap in progress
- Switzerland does not have a space agency: ESA manages the Swiss participations in space missions, including non-ESA missions, through the ESA PRODEX program
  - The Swiss Space Office of SERI decides on the selection and funding of Swiss PRODEX projects
- Successful Swiss participations in major missions launched in the past few years
  - CHEOPS (2019), Solar Orbiter (2020), JWST(2021), XRISM (2023), JUICE (2023), EUCLID (2023), …
- Current participations in missions that are planned to be launched in the coming years
  - SMILE (2024), IMAP (2024), POLAR-2 (2027), PLATO (2027), Comet Interceptor (2029), EnVision (2031), ARRAKHIS(2031), LISA (2035), ATHENA (2037), …
- Participation to mission proposals in various selection stages and potential (highly uncertain) launch dates
  - HERD (2027), LunPAN (2029), StrobeX (2032), THESEUS (2037), M-Matisse (2037), …
- CHIPP sciences/technologies are closely related to cosmology, gravitational wave, high energy astrophysics, x/γ/cosmic-ray missions
  - The long and risky selection and development process of space missions requires persistency and diversification!

Xin Wu

Swiss Institute of Particle Physics

OUTREACH/EDUCATION

Katharina Mueller

Swiss Institute of

CHIPP – short outreach report, June 2024

High Schools & Students

- Masterclasses – at Bern, Geneva, EPFL and Zurich
- Workshops: Science Lab @ UZH, iLab @ PSI, Physiscope @ Geneva
- Visits at universities, CERN and schools (eg PhD students @ schools)
- Mentoring, workshops, internships, study programs for high-school students

Events

- Women and girls in science, February 11: special programs for girls in science
- Women in Physics career event at SPS (mentoring project)
- Scientifica (Zurich), Science & Nature Festival (UZH)

General public

- (Virtual) visits, talks, guided tours, videos, Youtube,…
  CHIPP members very active in (VIP) visits at CERN and inauguration of the Science Gateway
- CHIPP articles
- Science Pavilion UZH: exhibitions (LHC & Dark Matter, GW)
  well attended guided tours for schools, groups and general public
- Interviews, articles in newspapers

for extended report, see CHIPP agenda
ideas/suggestions?
→ Katharina (kmueller@physik.uzh.ch)

2024: 70th anniversary of CERN, SPS event 10 September with talk, panel discussion and apero
Swiss coordination: Hans Peter Beck
New set of posters on CERN and Swiss contributions for SPS (Show them locally if there is an opportunity

1954-2024
ANS / JAHRE / ANNI CERN

Swiss Institute of

Proton-Proton Collisions @ LHC

ATLAS, CMS & LHCb

70 years of Swiss Science at CERN

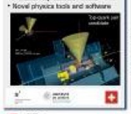
The Large Hadron Collider, LHC (start 2009)

The LHC is designed to study the origin of electroweak symmetry breaking, to search for New Physics beyond the Standard Model, and to perform precision measurements to test the Standard Model. ATLAS and CMS jointly discovered the Higgs boson in 2012, leading to the 2013 Nobel Prize in Physics.
Swiss groups have been involved in the ATLAS, CMS and LHCb projects since the mid-1990s with essential contributions to hardware, computing and physics analyses. Switzerland operates a Tier-2 computing centre at the Swiss National Supercomputing Centre (CSCS) in Lugano.

ATLAS

With a diameter of 25 m and a length of 46 m, ATLAS is the largest LHC experiment.
Swiss contributions to:
- Superconducting cables
- Silicon tracking detectors
- Calorimeter readout electronics
- Event building and high-level trigger
- Online data logging system
- Tier-3 data analysis facilities

Analyses:
- Searches for new physics
- Precision top measurements
- Novel physics tools and software



CMS

With 12'500 tons, CMS is the heaviest LHC experiment.
Swiss contributions to:
- Silicon pixel detectors
- Electromagnetic calorimeter
- Superconductors for the solenoid

Analyses:
- Higgs- & Top Quark physics
- Electroweak and QCD processes
- Heavy ion physics
- Searches exotics and SUSY
- Novel physics tools and software

LHCb

LHCb searches for new forces and particles by measuring with unprecedented precision the decays of particles containing beauty or charm quarks and antiquarks.

Swiss contributions to:
- Silicon strip tracking detectors
- Scintillating fibres (SciFi)
- Luminometer
- On-line filter farm

Analyses:
- Rare b-hadron or kaon decays
- Gamma/alpha/c b-hadron decays
- Precision charm physics
- Exotics searches
- Novel physics tools and software

SPFL

Zurich, 9 – 13 September 2024

Accelerator Developments

Particle Accelerators

70 years of Swiss Science at CERN

1953 CERN sur Arve

From PS to LEP to LHC

Superconducting RF cavities for LEP

Superconducting magnets for LHC

EPFL

Zurich, 9 – 13 September 2024

Low Energy Antiprotons @ PS

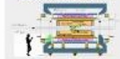
LEAR Experiments

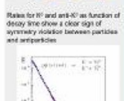
70 years of Swiss Science at CERN

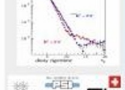
Experiments at the Low Energy Accelerator Ring (LEAR) 1982-1996

The Low Energy Antiproton Ring decelerated and stored antiprotons. LEAR delivered ~10^8 antiprotons per second onto fix targets.

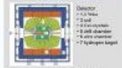
CPLEAR
Test of discrete symmetries in the neutral Kaon system

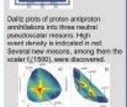


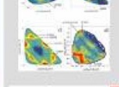




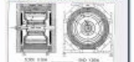
Crystal Barrel
Search for new/exotic charged and neutral states

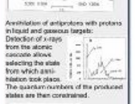






Asterix
Charged meson spectroscopy antiproton-proton annihilation





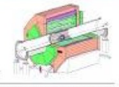
Zurich, 9 – 13 September 2024

Electron-Positron Collisions @ LEP

L3 Experiment: Precision Measurements of the Standard Model

70 years of Swiss Science at CERN

LEP and the detectors ALEPH, DELPHI, L3 and OPAL were designed to measure the parameters of the Standard Model with unprecedented precision. The L3 experiment was optimized to measure photons, electrons and muons. Already in 1989, the first measurement of the Z resonance established the existence of three neutrinos. Much more precise measurements later constrained the masses of top-quark and Higgs particle, and did not show any hint of a deviation from the Standard Model predictions. LEP was stopped in the year 2000 to allow the construction of LHC in the same tunnel.



Muon Detectors

Layers of multi-wire proportional chambers were used to detect muons. ETHZ developed the laser alignment system for the barrel, and constructed the huge chambers for the forward and backward directions.

Magnet

Construction of the magnet and yoke was lead by ETHZ. Today, this magnet is part of the ALICE detector @ LHC.

L3 Cosmics

Proposed and coordinated by ETHZ, a system was added to trigger on atmospheric muons induced by cosmic rays.

Vertex Detector

The wire chamber was designed and constructed by ETHZ, while UNIGE added a dedicated trigger system.
Later, UNIGE and ETHZ contributed to an additional Si-strip microvertex detector.

Hadronic Calorimeter

ETHZ and PSI tested, assembled and calibrated the HCAL, made from depleted Uranium.

Electromagnetic Calo.

UNIL and ETHZ contributed to the ECAL made from BGO crystals. In addition, UNIL worked on the cooling system and UNIGE on the calibration device.

Neutrinos @ CERN

OPERA : Neutrino Oscillations

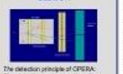
70 years of Swiss Science at CERN

OPERA (2008-2012) is unique in studying neutrino oscillations by searching for appearance of tau-neutrinos in the CERN muon-neutrino beam to Gran Sasso.
The hybrid detector has a 1250 ton target mass composed of emulsion film-lead sandwiches complemented by electronic detectors.

First observation of neutrino oscillations

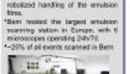
- Muon-neutrino beam from CERN to OPERA detector at 732 km distance.
- Tau-neutrino interactions detected in lead by observing O(100 µm) long τ tracks with high resolution (1 µm).
- Target: 150000 bricks with 10 billion films
- Trackers and spectrometers to trigger, point to the interaction in the target, and perform background reduction
- 19505 neutrino interactions with 10 tau-neutrino events
- 6.1σ observation of tau neutrino oscillation appearance
- Mixed sensitive limits on $\nu_\mu \to \nu_\tau$
- Oscillation appearance

Emulsion scanning station



The detection principle of OPERA: Signals in the trackers and machine films predict the brick "hit" by the neutrino. The interaction vertex is found by scanning the emulsions.

- The Swiss groups had a leading role in the realization of the emulsion European Scanning System based on automatic microscopes with CMOS camera readout and robotized handling of the emulsion films.
- Bern hosted the largest emulsion scanning station in Europe, with 6 microscopes operating 24h/7d.
- ~20% of all events scanned in Bern



Swiss contributions

- Experiment proposal, design and construction (1998-2000)
- Management: Spokesperson
- Target tracker construction
- Lead for the target
- Development and realization of automatic microscopes
- Data taking and coordination
- Mass emulsion scanning
- Physics data analyses
- Decay search procedure
- Muon ID & momentum measurement
- Nuclear fragment identification
- Charmed particle studies
- Electron reconstruction and π^0 ID
- Kinematics of neutrino-events
- Hadronic re-interaction studies
- $\nu_\mu \to \nu_\tau$ oscillation analysis
- $\nu_e \to \nu_\tau$ oscillation analysis

Neutrinos @ CERN

Neutrino Oscillations - NOMAD

70 years of Swiss Science at CERN

In the 1950s it was observed that only about half of the expected flux of neutrinos produced in the Sun arrives on Earth – the solar neutrino problem. A possible explanation was that the three neutrino species oscillate from one to the other with a frequency which depends on their difference in mass squared.
NOMAD (1995-1998) was an experiment searching for $\nu_{\mu(\tau)} \to \nu_\tau$ oscillations at the CERN SPS neutrino beam in a short base line experiment. Theoretical arguments suggested at that time that the tau-neutrinos have a mass of 1 eV/c^2 or higher and oscillating over short distances into muon-neutrinos.
The experiment was located in the CERN West Hall. It is composed of drift chambers (the target), a transition radiation detector, an electromagnetic calorimeter installed inside a magnet providing a field of 0.4 T. The muon detectors are located outside the magnet. Kinematic criteria were used to distinguish muon from tau neutrinos. No evidence for oscillations was found.

A typical muon-neutrino (top) and electro-neutrino (bottom) charged current interaction in NOMAD

We know today that muon neutrinos oscillate to tau neutrinos with an oscillation length much larger that the one available in NOMAD. NOMAD produced important results on dimuon production in neutrino interactions, and the production of Λ hyperons. These results will not be superseded before the advent of neutrino-factories.

Re-using equipment

The UA1 experiment at CERN was running from 1979-1990 it discovered the W and Z bosons. After that experiment was shut down, the magnet was used in the NOMAD neutrino experiment from 1995 to 1998. In 2008 it was shipped to Japan to be installed in the T2K neutrino experiment.

The group of Lausanne University was in charge of the construction of the **preshower detector**, in front of the electromagnetic calorimeter, and some of the drift chambers.

Fixed Target Programme @ SPS

Hyperon and Drell-Yan Experiments

70 years of Swiss Science at CERN

SPS – Super Proton Synchrotron: 7 km circumference, 1976

The 400 GeV proton beam of the SPS, was extracted and used to produce secondary beams for fixed-target experiments located in the west (WA) and north area (NA). Swiss groups were involved in several WA experiments operating with charged hyperon beams between 1976 and 1982, as well as NA experiments operating with intense pion beams between 1980 and 1985. Starting in 1981, the SPS was also operated in proton-antiproton collider mode for experiments in the Underground Area (UA), leading to the discovery of the W and Z bosons in 1983.

July 1976 completion of the SPS tunnel

WA2, WA46
Leptonic decays of hyperons
Study of the Ω⁻ properties

WA42, WA62
Strong interactions of charged hyperons, search for charmed strange baryons

NA16
Search for short-lived particles produced on nuclei with a heavy liquid mini bubble chamber

NA10 – Drell-Yan
High resolution study of inclusive production of high-mass muon pairs by intense pion beams.

Fixed Target Programme @ PS

DIRAC & CLOUD

70 years of Swiss Science at CERN

Proton Synchrotron (PS): 628 m circumference, 1959

The 25 GeV Proton Synchrotron was CERN's first synchrotron, accelerating protons first time on 24 November 1959, and was for a brief period the world's highest energy particle accelerator. Ever since, the PS has accelerated protons, alpha particles, oxygen, sulphur and lead nuclei, electrons, positrons and antiprotons. Today, the PS supplies protons and lead ions in the pre-injector chain for the LHC. The PS also supplies protons to a target where antiprotons are generated for the Antiproton Decelerator. The DIRAC and CLOUD experiments use proton beams from the PS and are situated in the CERN East Hall, located adjacent to the PS.

DIRAC – Dimeson Relativistic Atom Complex

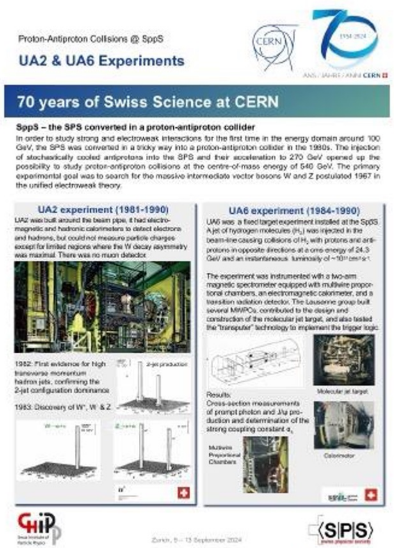
DIRAC is an experiment that measures Hydrogen-like atoms consisting of a charged meson pair at the PS. Dimesons, such as the $\pi^+\pi^-$ ($A_{2\pi}$) and the πK atom ($A_{\pi K}$) – provide a unique tool for exploring low-energy hadron-hadron interactions and understand the strong force.

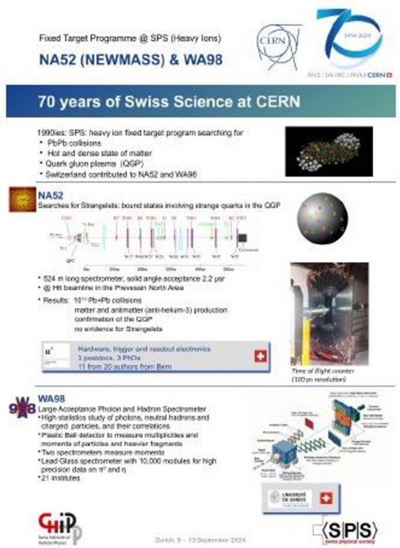
CLOUD: Cosmic Rays, 2009

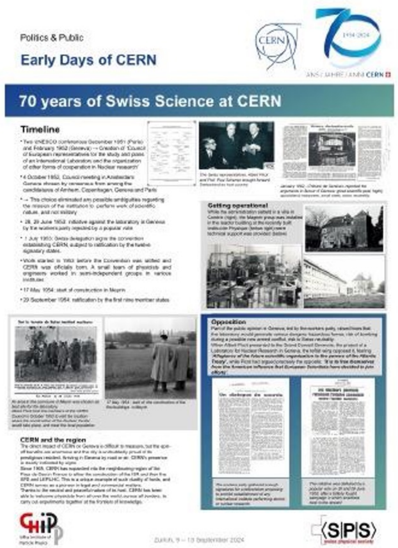
The CLOUD project investigates the possible influence of galactic cosmic rays on the aerosol-cloud-climate interaction. This is used to produce ions to simulate atmospheric ionization down to ground level to the upper free troposphere. The 27 m³ cloud chamber allows to precisely control experiments with a very low contamination background and close to atmospheric conditions.

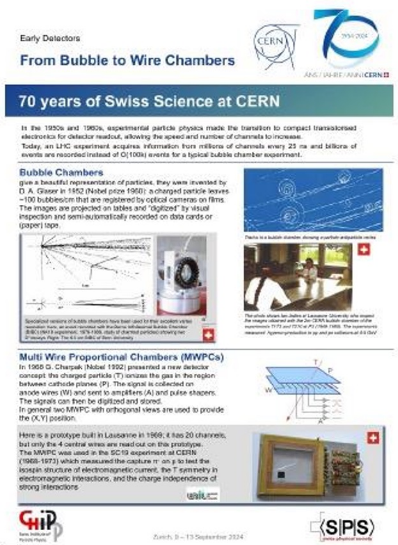
Katharina Mueller

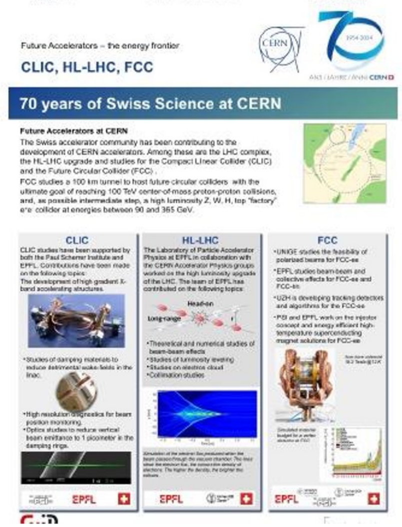
Swiss Institute of Particle Physics

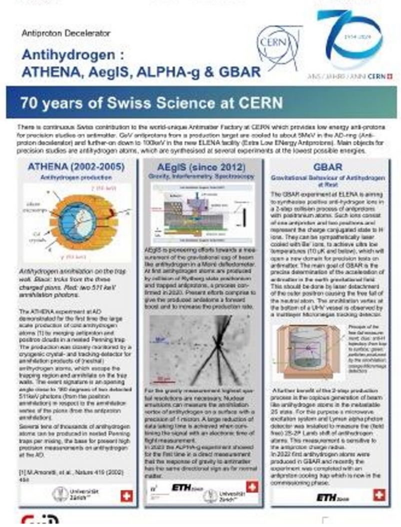


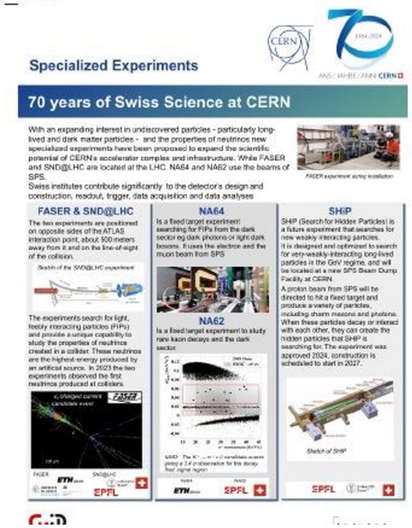












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ACCU

Sergio Gonzalez

ACCU report (2024)

ACCU

- **CERN news**
  - 2024 LHC run extended by ~1 month until end of Nov. 2024
  - CERN to terminate its International Collaboration Agreement with Russia and Belarus at their current expiry dates (Nov.2024 and June 2024, respectively)
  - Mid-term review of the FCC feasibility study completed, concluding the best option is a 90.7 km tunnel at an average depth of 200 m.
  - Science Gateway opened to public in Oct. 2023 and events linked to CERN's 70th anniversary planned for Sep / Oct 2024.
- **IT**
  - 2FA authentication to be used by all users
  - End-of life of Windows 10 in Q4 2025 (check your hardware compatibility !)
  - New Google workspace for professional projects

- For more detailed information (including various useful links), please check the ACCU detailed report attached to this meeting agenda.

- I'd like to re-iterate my usual encouragement for Swiss users at CERN to contact me with your questions / requests that may matter for you and I'll brought them at the next ACCU meetings, thanks !

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ECT*

Update on the (CH participation to the) ECT*

UNIVERSITÄT BERN

CHPP Board 2024-02

Gilberto Colangelo

Zoom-CH, 20.6.2024

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ECT* mission

- ✓ to be a Centre at the frontline of research in theoretical nuclear physics
- ✓ to promote active contacts between theory and experiments, and to related areas of research
- ✓ to further the training of young researchers

- established in 1993
- Institutional member of ESF-Expert Committee NuPECC (Nuclear Physics European Collaboration Committee)
- community-driven, bottom-up approach

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News 2023/24

ECT* celebrated its 30th anniversary in 2023

- **In 2023 it underwent a full review by an external committee with very positive outcome (available upon request)**
  Sonia Bacca (Mainz), Barbara Erazmus (Nantes), Richard Hall-Wilton (FBK), Maria Paola Lombardo (INFN)
  Piotr Magierski (Warsaw), Ulf-G. Meißner (Bonn), Sanjay Reddy (Seattle)
- **The interim Director, Gert Aarts, ended his mandate and a new one has been nominated Ubirajara van Kolck (Orsay)**
- **Most MoUs have to be renewed, ours too**
- **I have been nominated to the scientific board starting 2024**

CHIPP decision/recommendation on the new MoU

- **Confirm Swiss support to the ECT***
- **Recommend to SNF to renew the MoU**
- **Recommend to increase financial support from 10 → 20 kCHF**

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APPEC

Teresa Montaruli

APPEC short report

- This report concerns the General Assembly 05.06.2024 (next one Dec. 4-5, 2024)
- The SAC is mandated to prepare the New Roadmap that will cover from 2027-2036.
- Newly elected SAC Chair: Aldo Ianni (LNGS, ex-director of the lab), Deputy: M. De Nerois
- At this GA election of Chair of GA (CH excluded from vote due to a technical delay in the signature of the new APPEC MoU): Carlos Peña Garay (director of Canfranc lab); General Secretary: Julie Epas.
- Main task is the participation to the European Particle Physics Strategy Update launched by CERN in March 2024. In the EPPSU the APPEC GA Chair is invited as observer. Physics Preparatory Group tasked with Briefing Book preparation by Sept. 2025. Deadline submission for the contributions in March 2025, Drafting session Dec. 2025, approval by CERN Council June 2026
- Preparation of JENAS 2025 in RAL (see JENAS Expressions of Interest on DM, GWs, ML optimised design of experiments, Nuclear physics at LHC and Search of Charged Particle Electric Dipole Moments in this link)
- List of WGs of Interest for the white paper on computing in

- HPC: https://indico.scc.kit.edu/e/JENA_computing_wp1/
- Software: https://indico.scc.kit.edu/e/JENA_computing_wp2/
- Data Management: https://indico.scc.kit.edu/e/JENA_computing_wp3/
- ML & AI: https://indico.scc.kit.edu/e/JENA_computing_wp4/
- Training: https://indico.scc.kit.edu/e/JENA_computing_wp5/

Expression of Interests (EoI)

1. Dark Matter - iDMEu (https://indico.cern.ch/event/869195/overview)
2. Gravitational Waves for fundamental physics (https://agenda.infn.it/event/22
3. Machine-Learning Optimized Design of Experiments - MODE (https://mode-
4. Nuclear Physics at the LHC (https://indico.ph.tum.de/event/4492/)
5. EDM - Search of Charged-Particle Electric Dipole Moments (https://indico.p

T. Montaruli, CHIPP meeting, June 20, 2024

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Outcomes of P5-HEPAP meeting 9-10 May 2024

Highest Priorities: complete construction of HL-LHC, the first phase od DUNE, PIP-II accelerator at FermiLab, the Rubin Observatory to carry out the legacy survey LSST and the LSST Dark Energy Science Collaboration.

Construct a portfolio of experiments for fundamental constituents of the universe and their interactions (also in the range of APPEC):
- CMB-S4 : NSF prioritises infrastructure in Antarctica necessary to maintain operations. DOE may fund projects not in Antarctica (no go for South Pole Telescope)
- G3 of DM direct detection: 2 proposals for G3 XLZD and ARGO - DOE is supportive of development of off-shore concepts.
- IceCube-Gen2.

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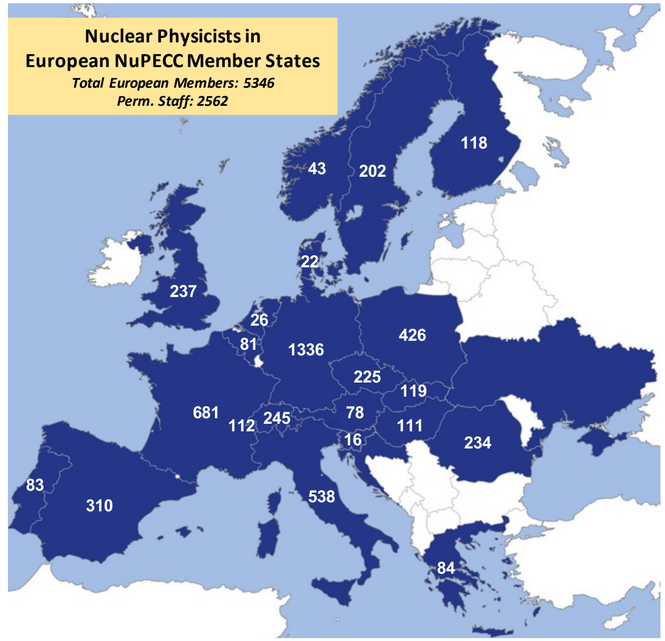
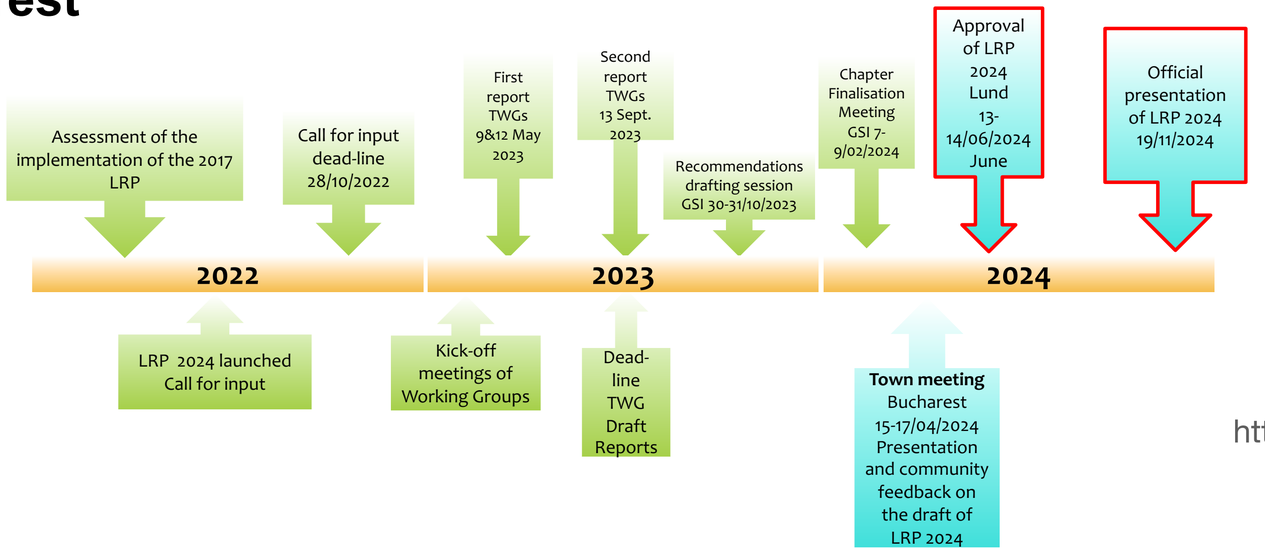
NUPECC

Nuclear Physics European Collaboration Committee (NuPECC)
Is the European Expert Board for Nuclear Physics hosted by European Science Foundation



In June 2022, NuPECC launched the call for input for the Long Range Plan 2024 (LPR2024). The work was split among 10 thematic working groups with the goal to identify opportunities and priorities for nuclear science in Europe.

The draft of the LRP2024 was presented to the Community at the Town Meeting 15-17 April 2024 in Bucharest



The official LRP2024 presentation will be on the 19.11.2024 in Brussels

https://indico.ph.tum.de/event/7598/timetable/?view=nicecompact

Gravitational Waves WG

Steven Schramm

Updates on GW in Switzerland

New Swiss hires:
- UZH (CHIPP): recently hired M. Soares-Santos, who started 01/2024
- ETHZ (CHIPP): hiring process at an advanced stage
- UniGe (CHAPS): stabilisation of A. Fragkos expected to be finalised next week
- UniGe (CHIPP): proposed stabilisation of S. Schramm, pending confirmation late 2024

Swiss community activities:
- GW-Learn Sinergia project has started (09/2023): brings together ET, LISA, ML, and theory
- Organised first GW session at SPS in 2023; currently organising second edition for 2024

Swiss research activities:
- ET: Switzerland continues to play a leading role at many different levels
    - Science and computing leadership already well established
- Virgo: T. Fragkos and S. Schramm are actively discussing Swiss participation in Virgo
    - Computing architecture evolutions for the future of ground-based GW observatories
    - Developing key DAQ infrastructure for Virgo and ET (collaboration with Annecy)
    - Virgo is an important milestone for Switzerland to build expertise in preparation for ET