Swiss Institute of Particle Physics

an Association according to Swiss law

Minutes of the Board meeting 2024-03 on 29 October 2024

Time of the meeting: 29 October 2024 10h00

Place of the meeting: SCNAT
Indico: https://indico.cern.ch/event/1456623/

1. Welcome and agenda

The chairman welcomes the new Prof. Valentin Hirschi (UniBe Theory), Prof. Fernando Romero-Lopez (UniBe Theory) and the new SNF observer at the CHIPP Board: Stéphanie Wyss – SNF.

ADMINISTRATIVE ITEMS

2. Apologies and Proxy votes

Board members with voting rights (as of 13 June 2024): 75
present: S. Antusch, HP. Beck, S. Braccini, L. Caminada, F. Canelli, G. Colangelo, P. Crivelli, D. Della Volpe, M. Donegà, A. De Cosa, A. Greljo, T. Golling, M. Hildebrandt, M. Hoferichter, G. Isidori, H. Ita, B. Kilminster, M. Kunz, B. Lauss, T. Montaruli, M. Marinkovic, R. Marchevski, B. Penning, A. Rubbia, S. Schramm, M. Seidel, N. Serra, L. Shchutska, A. Signer, M. Spira, A. Soter, D. Sgalaberna, M. Soares De Santos, P. Stoffer, R. Wallny, M. Weber
Other participants: Blondel (Prof. Em.), Grab (Prof. Em.), Benelli (Admin.), Gallo (Obs. SNF), L. Marchese (ETHZ), Stocker (Obs. SERI), Türler (Obs. SCNAT), Wyss (Obs. SNF)

Proxy: Malte Hildebrandt for Stefan Ritt, Bernhard Lauss for Klaus Kirch, Steven Schramm for Anna Sfyrla, Lesya Shchutska for Olivier Schneider, Rado Marchevski for Frederic Blanc

Quorum: 25 votes (= 1/3 of the Board members; Art. 24.1 Statutes); voters present: 37 present + 5 proxies = 41 → The quorum is reached

3. Minutes of the last meeting (2024-02 [June 2024]): minutes approved

DECISION ITEMS

4. Vote: Budget and Activities 2025 approval

Ben Kilminster, as chairman, presented the planned activities and budget for 2025. Following the established structure of previous years, CHIPP has organized its initiatives around four core themes: science, communication and outreach, funding, and association.

The proposed budget anticipates total expenses of 151 KCHF, to be covered by:

- 90 KCHF from membership fees,
- 20 KCHF in support for the EPPCN from SERI and CERN, and
- Approximately 35 KCHF in funding from SCNAT.

Key activities for the year include the Winter PhD Summer School in Gstaad and the Swiss Summer Students Program. CHIPP will also continue its support for the SCNAT web portal, which features news, articles, and events relevant to the physics community. This effort involves collaboration with science journalist Barbara Warmbein, whose remuneration, along with the IPPOG membership, is expected to be funded by a SCNAT Dialog with Society grant.

A projected deficit of about 3 KCHF is expected, which can be comfortably managed with the estimated starting assets of approximately 40 KCHF.

Angela also provided an overview of SCNAT's funding contributions for 2025, which include:

- IPPOG membership: 2,800 CHF
- Dialog with Society: 10,000 CHF
- Winter Summer School: 12,000 CHF
- Swiss Summer Students Project: 9,000 CHF

The Board unanimously voted in favor of approving the following:

- The CHIPP activities for 2025.
- The CHIPP budget for 2025 resulting from the outlined activities.
- The 2025 membership fees for individual members and institutions.

5. Vote: ECR observer at the CHIPP Board

The CHIPP EB has received recommendations from the ECRs and RECFA for ECRs to have an observer on the CHIPP Board. The EB endorses this recommendation. At the Board meeting in June (2024-02) the CHIPP Board discussed this possibility. The observer will not have voting rights. The observer to the Board will be nominated by the CHIPP Plenary and approved by the EB.

"*Members are, in general, PhD students and postdocs, either with a non-permanent contract or within 8 years after obtaining their PhD.*" (definition of ECR as in RECFA)

The new composition of ECR ECFA representatives from January 2025 is:

- Elisabeth Niel (EPFL) end July 2025
- Marco Pesut (UZH) end July 2025
- Giuseppe Lospalluto (PSI) end July 2025
- Pantelis Kontaxakis (UGe) end Dec 2026

It is proposed to have one ECR liaison officer (to be chosen from the four ECR ECFA representatives) who will also function as an observer to the Board. The organization of the ECRs is left to their discretion; they will form a committee for the organization of events.

Each ECFA country and CERN has three ECR representatives (+1 if country has an LDG lab). All of them together form the ECFA ECR panel.

The Board (in conformity with Article 19.3, litt. e) approves the decision to have one ECR as observer at the Board with 36 votes "Yes" and 1 "Abs"

The EB announces that the chosen ECR to be the CHIPP observer is Marko Pesut (UZH).

6. Vote: Swiss NuPECC representative

The election of Swiss representatives to the Nuclear Physics European Collaboration Committee (NuPECC) is managed by SERI, based on a recommendation from the Board (Statutes Article 19.3, litt. e).
Klaus Kirch (ETHZ/PSI) has served as the Swiss representative in NuPECC from 2023 to 2024. Kirch has expressed his willingness to step down from this role. Anna Soter (ETHZ) has been nominated for the position and has kindly accepted the nomination.
NuPECC has a broad scope. While Switzerland does not have a dedicated nuclear physics program, many research areas within the country fall under NuPECC's domain and benefit from its collaborations and support. These include low-energy physics programs, medical applications, neutrinos, light nuclei, muonic atoms, and, in principle, radiochemistry. Active research in these areas is ongoing in Switzerland. Additionally, NuPECC addresses topics related to research facilities, which are particularly relevant to Switzerland. PSI plays a significant role in this regard, especially with new developments such as HIMB and TATTOOS, which are integral to broader roadmaps and plans.

The Board (in conformity with Article 19.3, litt. e) recommends to the SNF/SERI the election of Anna Soter (ETHZ) as Swiss NuPECC representative from January 2025 to December 2027 with 35 votes "Yes".

The CHIPP Chair will submit the name of the recommended candidate to SERI/SNF.

7. Vote: CHIPP PostDoc Prize

The goal of the CHIPP PostDoc Prize is to reward the best PostDoc researcher in Experimental or Theoretical Particle Physics for scientific contributions over a maximum of 3-year period and a minimum of 2 years It was emphasized that the impact of work should be funded by a Swiss Institute. The importance of external letters of recommendation was highlighted, ensuring that the evaluation is not solely based on internal supervisors. The diversity and composition of the judging panel will be reviewed to ensure impartiality. The award ceremony will normally take place at the annual CHIPP Plenary. The winner will get a diploma, a medal and will present his/her current research activity in a talk. If it will be possible in the future, we will associate a monetary prize to this award.

The postdoctoral prize proposal is available on Indico.

The Board (in conformity with Article 19.3, litt. e) approves the decision to have a CHIPP PostDoc prize with 26 votes “Yes”, 9 “Abs” and 2 “No”.

8. Vote: CHIPP Roadmap 2024 approval

The four-year CHIPP roadmap for 2029–2032 has undergone several revisions since the initial workshop earlier this year, with drafts prepared by section editors, refined through iterative feedback, and consolidated into a final version. The roadmap outlines strategic plans, including updates for CERN's future, and reflects input from various discussions and workshops. The editing team have worked to ensure consistency across sections. While minor grammatical and formatting adjustments may still be needed, no major changes will be accepted at this stage. After approval, the roadmap will be sent to SCNAT for final formatting, followed by a presentation and publication by year-end.

The board acknowledges the significant developments expected in the next four years which will lead to a new version of the roadmap and not to a shorter update like this version.

The roadmap is considered an example of effective organization within the scientific community, and it reflects the collaborative effort to establish a clear direction for the years ahead.

The Board approves the CHIPP Roadmap Update 2024 with 37 votes “Yes” and 1 “Abs”.

The distributed version after the inclusion of the received comments is available here.

9. Vote: Endorsement for Scientific Delegate to CERN Council

The decision regarding the scientific member of the Swiss delegation to CERN Council belongs to the State Secretariat for Education, Research and Innovation (SERI). However, as mentioned in the CHIPP Statutes (Article 27, litt. m) the Board can nominate the candidate(s) for the appointment by SERI.

Renewal of Florencia Canelli mandate as the scientific delegate to the CERN Council. Florencia Canelli has served as the scientific delegate to the CERN Council for 3 years, and SERI proposes to renew her mandate for a second term. The renewal is seen as beneficial due to the need for continuity in light of significant ongoing decisions regarding CERN's future. Francesca Stocker (SERI Observer) was invited to comment, acknowledging Florencia's valuable contributions in both scientific and strategic matters and expressing strong support for her continued role.

The Board (applying Article 27, litt. m of the Statutes) recommends to SERI Florencia Canelli as candidate to be scientific member of the Swiss delegation to CERN Council from 1 January 2025 to 31 December 2027 with 35 votes “Yes”.

DISCUSSION ITEMS

10. News from the EB

CERN fellowship:
For applications to the CERN Fellows program (experimental and theoretical), please inform the EB if someone applies, as we sometimes encounter missing candidates. The issue is that applicants are required to select Switzerland as their designated country, but the wording can be confusing, and they often select their home country instead. We can coordinate with CERN HR to identify any missing Swiss candidates.

update on CHEF:

All Swiss institutions have joined CHEF, and an application was submitted to SERI on September 30th by Ben Kilminster. If successful, a governance structure similar to CHART will be established. No final confirmation has been received yet, but the process is moving forward.

11. FLARE requests

The FLARE panel will meet the 28th and 29th January 2025.

In September 2023, the various experiment that planned to request for FLAIRE funding presented their projects. Since then, some updates have been made to the list and budget requests:

- NA62 Request Removed: Due to decisions in the CERN program, NA62's request was removed.
- muEDM Added: The muEDM project was included but does not have a funding request for this term.
- Gravitational Waves Request Modified**:** Adjustments were made to the gravitational wave-related proposals, which will be presented in detail during this session.

Despite some reductions in requests, the overall funding demand significantly exceeds the available budget. The total funding available for the program is CHF 46.3 million, historically split between CHIP (80%) and CHAPS (20%). For context, the 2021-24 allocation serves as a rough benchmark for what can be expected this time. However, the current projections are CHF 10 million above this benchmark.

Some projects overlap between CHIP and CHAPS, which requires careful categorization to avoid losing any projects in the middle ground.

Projects are urged to submit clear and realistic business plans, even for non-immediate funding needs. While detailed figures might not be available for long-term projections, submitting the best possible estimates is encouraged.

Gravitational Waves Plan Update:

The gravitational waves program has seen updates since the last presentation by Steven Schramm in September 2023, which focused exclusively on the Einstein Telescope (ET). Changes in the approach will be explained in the upcoming presentation. These adjustments reflect evolving priorities and constraints.

Marcelle Soares dos Santos outlines revised plans for FLARE gravitational wave research, highlighting Swiss contributions to LIGO, Virgo, KAGRA, and preparations for the Einstein Telescope (ET). While the Swiss team at UZH traditionally focused on data analysis, the speaker's team is now involved in hardware development, particularly for LIGO's fifth observing campaign and its upcoming upgrades in 2025.

Key upgrades, including the Voyager program, will enhance detector sensitivity through advanced optics, squeezed light, and cooling techniques, paving the way for ET's future capabilities. The research aims to shift from individual gravitational wave detections to studying event populations, enabling cosmological measurements and tests of general relativity.

A major focus is improving interferometer photodiodes, whose current efficiency lags by 1-2%. Enhancing their performance will significantly boost detection sensitivity for LIGO and ET. This effort, costing CHF 100,000 annually, leverages existing resources while preparing for future funding needs.

The dual proposals for LIGO and ET address different timelines: LIGO focuses on immediate upgrades, while ET prepares for third-generation detectors. These complementary efforts aim to advance current detection capabilities and ensure Swiss leadership in gravitational wave science.

12. CHIPP input for European Strategy Update in Particle Physics

The European Strategy for Particle Physics update has begun, with a kickoff meeting held last month. The process aims to address the feasibility of future colliders at CERN and includes several deadlines for input: the primary deadline is March 2025, with additional submission opportunities in May and November to accommodate evolving information. A physics briefing book will be prepared by September 2025, followed by a drafting session for the strategy. The timeline includes milestones like the Open Symposium in June 2025, which will inform the strategy.

Switzerland, benefiting from its recently completed roadmap for 2029–2032, organises a workshop on February 5, 2025, in Bern. This meeting will discuss key questions from the strategy group, such as prioritization of the next collider at CERN, alternative options if the preferred choice is not feasible, and the role of complementary and non-collider research. A collaborative plenary format will involve early-career researchers and observers, with preparatory materials provided in January to streamline discussions.

Key questions include the physics potential, timing, sustainability, and responses to global developments like Japan's ILC or China's CEPC. Non-collider research priorities at CERN, its role in nuclear or

astrophysics, and collaborations with European labs like PSI will also be addressed. The goal is to structure discussions effectively and prepare a strong Swiss contribution to the strategy. Feedback is welcome to refine the plan for the February workshop.

Switzerland recently completed its roadmap for particle physics, which simplifies the process of contributing to the European Strategy update. This roadmap will largely align with the physics briefing book being prepared as part of the update. Gino Isidori, who is part of the strategy group, is assisting in organizing Switzerland's input to address specific questions raised by the strategy group, supported by roadmap editors.

The briefing book will focus on physics priorities and will not address administrative specifics, such as budget percentages allocated to non-collider research. However, discussions revealed concerns about balancing diversity in CERN's research programs with core priorities in collider physics.

Switzerland aims to deliver unified input for the strategy. Early-career researchers will participate in the February workshop, encouraged to prepare in advance. The workshop will focus on consolidating community consensus, addressing global developments (e.g., in Japan or China), and defining Switzerland's stance on both collider and non-collider programs.

The plan is to involve the entire community in addressing the strategy questions without organizing parallel group meetings. Input from all participants will be integrated into the discussions. If anyone has specific concerns or suggestions regarding the questions, they are encouraged to reach out directly so these can be addressed appropriately.

13. CHIPP computing report

Mauro Donegà provides an update on the computing infrastructure and challenges related to the high-performance computing (HPC) systems used for high-energy physics experiments. They are currently operating on the second generatizn of high-performance computers at the CSCS facility, having moved on from the previous system, Piz Daint, to a new system called "ALPS" However, as they approach the end of the first four-year cycle with "ALPS" there have been significant issues affecting performance. The key issue is that, despite efforts from the technical team, the system remains unstable and inefficient, underperforming compared to typical computer classes, making it difficult to meet the pledged computing demands for their experiments.

Donegà explains that their workflows are trivially parallelizable; they can be run on standard HTC clusters, and strictly speaking do not need HPCs as for other use cases as e.g. lattice QCD). The current setup has failed for several months to deliver the pledged resources. Even with the old and new systems running together, they have struggled to keep up with the pledges, especially for the CMS experiment.

As a solution, the team is exploring ways to diversify their computing resources. They are in discussions with the Swiss National Science Foundation (SNF) to explore alternative computing solutions both within and outside of CSCS. This includes reinvesting a portion of the funds into standard clusters to maximize the return on investment. The goal is to ensure the infrastructure is capable of handling the growing computational needs of their projects, especially in light of the upcoming challenges posed by the high-luminosity LHC, which will generate much more data.

The group is also working on securing a reliable long-term path for their computing needs and plans to develop a procurement strategy for the new infrastructure. This will involve spreading out investments over time to ensure sustainability. Discussions are ongoing, with the hope that by April 2025, a solid plan for acquiring and deploying new computing resources will be in place.

Finally, Donegà raises concerns about the lack of support for 10% of the European Grid Infrastructure (EGI) fees, a cost that has yet to be addressed by Swiss universities or other institutions. This small but important issue could lead to significant complications if the infrastructure fails due to lack of payment. The group is exploring options, including going back to universities or other entities in Switzerland to see if they can help resolve this financial gap. However, without a solution, the system could face disruptions that would delay progress across various scientific fields.

14. Swiss Summer Program

The presentation discussed the Swiss Summer Student Particle Physics Program, which was launched this year with collaborations between the University of Zurich, ETH Zurich, and the University of Geneva. The program gave students the opportunity to work on research projects for about nine weeks, joining research groups at one of these universities. The students worked closely with the research groups, providing regular updates and at the end, writing a report on their experience. The program covered a wide range of

experiments, including those from the LHCb, CMS, and other projects, with both hardware and software tasks.The program received 81 applications from UK and European students, as well as 34 applications from overseas. However, due to bureaucratic limitations, only six students were selected this year. The feedback from students involved was very positive. The costs for the students' participation in the program varied by location, with Zurich, for instance, costing about 5000 CHF per student for accommodation and project-related expenses.

Looking forward to 2025, the program will continue, with a more extended timeline for applications. The program aims to announce selected students by March or April, giving them more time to prepare. There are plans to organize 1-2 days for all the participating students at the end of the experience, where they will give presentations. The Academy of Sciences has agreed to contribute 3000 CHF towards the program for 2025. Marchese highlights that the funding available for the program largely determines the number of students who can be selected. As such, there will be discussions with the CHIPP Executive Board to ensure the funds are used appropriately, focusing on enhancing the students' experiences rather than directly funding the research projects themselves.

Additionally, the chairman mentions that the program was successful in its first year, especially in terms of managing the application process. He praises Luigi for the detailed work in evaluating applications and matching students to projects. In closing, Kilminster thanked everyone involved and emphasized that the program would continue to grow, benefiting both the students and the institutions involved. He encourages the team to think about participating in the program for the upcoming year.

INFORMATION ITEMS

15. New professorships at CHIPP institutes: report from each institute

16. A.O.B.