Swiss Institute of Particle Physics

an Association according to Swiss law

Closure of the 2015 Accounts: Annual Report 2015 and Annual Accounts 2015

February 2016/MT

Introduction

CHIPP, as an association, is obliged by Swiss law to establish annual accounts and to audit them. As the annual accounts are linked with the CHIPP activities, it is common practice to present the annual report and the annual accounts under the same item.

Annual Report 2015

CHIPP as a member of the SCNAT has to submit an Annual Report to its mother organisation, structured according to the SCNAT guidelines and rules. The report (attached) covers the CHIPP publications, the CHIPP (and CHIPP supported) events and meetings, the scientific and institutional international collaboration, the promotion of the next generation, the support and coordination tasks and outreach activities.

Annual Accounts 2015

CHIPP has a unique account for all activities presented to the CHIPP Board (attached). The CHIPP membership fees (84'440 CHF) cover the salary of the CHIPP Administrator administrated by the University of Zurich (77'000 CHF), the SCNAT membership fees (3'136 CHF), the CHIPP Prize (3'000 CHF) and administrative costs (1'163.70). The contributions received from SCNAT (13'658.61 CHF) have been used for the CHIPP PhD Winter School (10'000 CHF) and the 'Dialog' outreach activities (3'658.62 CHF). The support to the 28th Texas Symposium held in Geneva (1'500 CHF) and costs for the Plenary, Board and EB meetings (1'854.80 CHF) are the remaining expenses of the year. The total asset on 31 December 2015 is of 60'266.14 CHF, compared to 63'475.15 CHF at the end of 2014. The Balance sheet therefore shows a loss of 3'209.01 CHF in 2015, which is, however, lower than the one of last year (6'343.70 CHF) and is much lower than the budgeted deficit of 15'000 CHF. The high value of the transitory liabilities of 34'370 CHF is due to membership fees for 2016 and the SERI contribution for the EPPCN already received by the end of 2015, while the transitory actives of 10'000 CHF have been received from SCNAT early this year. Both values thus influence the actual amount of 84'636.14 CHF on the Postbank account at the end of 2015.

Auditor's Report

The two elected auditors, Ben Kilminster and Michele Weber, have performed the audit on 10 February 2016, meeting in Zurich with the accounting officer, Ms Monika Röllin (UZH), and the CHIPP Administrator (Marc Türler). No mistakes, errors or false entries have been found and the audit resulted in a positive recommendation to the Board. Their report is attached.

Proposal

The Board (applying Article 27 litt. u and litt. v) is invited

- **to approve** the Annual Report 2015 to be made publicly accessible on the CHIPP website;
- **to approve** the Annual Accounts, the Balance Sheet and the Profit and Loss Statement for the year 2015;
- **to formally discharge** the CHIPP EB and the CHIPP Administration for the year 2015, expressing at the same time its thanks and appreciation for the careful accounting.

Required majority: simple

Swiss Institute of Particle Physics

an Association according to Swiss law

Final Draft for Board

Annual Report 2015

February 2016/MT

This report is a copy of the CHIPP Annual report 2015 which will be delivered to SCNAT. Therefore, it is structured and formatted along the SCNAT guidelines.

SUMMARY

Highlights of the Year

CHIPP continued successfully its activities in 2015. The **CHIPP Annual Plenary Meeting** held at the Château de Bossey (VD) on 29 June – 1 July 2015 was the main highlight of the year. The event welcomed 112 participants in this beautiful place overlooking the Lake of Geneva. A rich scientific programme covered the three pillars of CHIPP: particle physics at the high-energy and intensity frontiers, astroparticle physics, and neutrino physics. A session on future facilities, and two dedicated sessions on technology transfer completed the programme. The **CHIPP Prize 2015** for the best PhD student in experimental or theoretical particle physics was awarded on this occasion to *Lilian Witthauer* (Uni. Basel). The **formal CHIPP plenary** meeting was held on July 1st. It was the occasion to report on recent CHIPP activities and on developments in international bodies dealing with particle, astroparticle and nuclear physics.

The CHIPP Board reaffirmed in June 2015 its role in defining priorities for the Swiss funding of research infrastructures. This led to prioritisation discussions held in September for each of the three pillars of CHIPP. A concrete result was the completion and approval of a document entitled "**Experimental neutrino physics: Switzerland in the global context, a white paper**", which defines the priorities for the Swiss participation in international neutrino experiments.

Another highlight was the **CHIPP PhD Winter School** held in Grindelwald in January 2015. It gathered 18 students receiving from five lecturers an overview of many topics in particle and astroparticle physics. CHIPP supported two other events in 2015, both in Geneva: the workshop **SuGAR 2015 - Searching for the Sources of GAlactic cosmic Rays** and the **28th TEXAS Symposium on Relativistic Astrophysics**, which took place in January and December, respectively.

The SCNAT bicentennial celebration was an opportunity for CHIPP to promote particle physics to the general public in the frame of "Forschung Live". Thanks to a special extension of the SNSF-Agora grant, CHIPP organised **three screenings of the movie "Particle Fever"** (USA, 2013) at Open Air cinemas in Lucerne and in Aarau in August, as well as indoor in Sion at the end of September. The events were followed by interviews and question sessions and, in Sion, by an interdisciplinary podium discussion. The **TV programme "Rosanna Checkt's - Woraus besteht die Welt?"** broadcasted by SRF1 on September 29th showed that the Large Hadron Collider (LHC) at CERN can even be of interest for children.

The **100 years of the General Theory of Relativity** was celebrated with a series of public talks in Zurich and Geneva.

SECTORS OF COMPETENCE: NETWORKING AND DEVELOPMENT OF SCIENCE

Publications

The work initiated in 2014 towards defining the Swiss strategy in the field of neutrino physics ended in 2015 with the formal approval of a document entitled "**Experimental neutrino physics: Switzerland in the global context, a white paper**". This publication describes the current international challenges, experiments and future projects in the rapidly evolving field of neutrino physics, and defines the Swiss involvement foreseen in the coming years. It has been edited by six CHIPP Board members active in the field and was approved by the CHIPP Board on 14 November 2015 as an official CHIPP document to be publicly available on its website.

Meetings, Workshops and Schools

In addition to the CHIPP Annual Plenary, which is to be considered as the Swiss national meeting on particle physics (see section 'Summary / Highlights' above), CHIPP continued to work on its networking and educational goals and organised or co-organised also in 2015 several meetings, schools and workshops:

- The traditional **Zurich Phenomenology Workshop** was devoted in 2015 to "The flavour of new physics". Organised by the Pauli Center for Theoretical Studies, this forum for particle physics researchers was held at the University of Zurich on 7–9 January 2015.
- The **CHIPP PhD Winter School** was held for the third time at the Hotel Schweizerhof in Grindelwald on 18–23 January 2015. Dedicated to PhD students in Switzerland, it welcomed 18 participants and 5 lecturers and covered the fields of particle detectors, LHC physics, neutrinos, cosmology and astroparticle physics, and flavour physics.
- The astro-particle workshop **SuGAR 2015 - Searching for the Sources of GAlactic cosmic Rays** was organised at the University of Geneva on 21–23 January 2015. Supported by CHIPP, it gathered 50 participants working in the field of gamma rays, neutrinos and cosmic rays.
- The **28th TEXAS Symposium on Relativistic Astrophysics** was a truly international conference held at the International Conference Centre of Geneva on 13–18 December 2015. It was organised jointly by the astronomy and physics sections of the University of Geneva with CHIPP support. With 460 participants and excellent plenary sessions, it was a very successful event bridging astrophysics and particle physics in the region hosting the CERN and timely for the 100th anniversary of Einstein's theory of General Relativity.
- The University of Zurich, ETHZ and PSI organised on 26-27 August 2015 at PSI the traditional **PhD seminar** for particle physics PhD students in the Zurich area.

INTERNATIONAL ACTIVITIES

Scientific cooperation

Particle and astroparticle physics is compelled to extensive transnational and international cooperation, as the research projects in this domain are mostly large undertakings, representing an important intellectual and technological challenge and requiring a large amount of human and financial resources. Research in this field usually involves large infrastructures, which again are the result of national, regional and worldwide collaborations. The table below shows a snapshot of the current experimental collaborations involving CHIPP members.

Further, smaller cooperation projects exist; many of them occur naturally – between groups working in the same field or requiring the same type of infrastructure – or are coordinated bottom-up by CHIPP. Such collaborations may be carried out at an informal level and are sometimes not even noted at the level of the home institution.

Project	Swiss institutes	CHIPP Board Members	Institutes worldwide
High-Energy particle physics			
ATLAS	Bern, Geneva	Beck, Ereditato, Golling, Iacobucci, Mermod, Nessi, Sfyrla, Weber, Wu	178
CMS	ETHZ, PSI, Zurich	Canelli, Chiochia, Dissertori, Grab, Horisberger, Kilminster, Pauss, Wallny	186
LHCb	EPFL, Zurich	Bay, Nakada, Schneider, Serra, Straumann	69
LHC Tier-2	ETHZ, CSCS	Grab	> 200
HL-LHC	EPFL	Rivkin	21
CLIC	ETHZ, PSI	Rivkin	62
FCC	Bern, EPFL, Geneva, PSI	Blondel, Ereditato, Iacobucci, Rivkin	72
Astroparticle physics			
AMS	Geneva	Pohl, Wu	56
ArDM	Zurich	Rubbia	7
CTA	ETHZ, Geneva, Zurich	Biland, Courvoisier, Montaruli, Neronov, Straumann	211
DAMIC	Zurich	Kilminster	9
DARWIN	Bern, Zurich	Baudis, Schumann	25
IceCube	Geneva	Montaruli	42
MAGIC+FACT	ETHZ, Geneva	Biland, Neronov, Pauss	25
XENON	Bern, Zurich	Baudis, Schumann	21
Neutrino physics			
EXO	Bern	Gornea	16
GERDA	Zurich	Baudis	17
MICE	Geneva	Blondel	21
NA61 / T2K / HyperK	Bern, ETHZ, Geneva	Blondel, Ereditato, Rubbia	54
SBN (MicroBooNE)	Bern	Ereditato, Weber	30
SHiP	EPFL, Geneva, Zurich	Bay, Blondel, Kilminster, Mermod, Serra, Shaposhnikov	45
WA105 + DUNE	Bern, ETHZ, Geneva	Blondel, Rubbia, Weber	43
High-precision and muon physics			
CREMA	ETHZ, PSI	Hildebrandt, Kirch	9
MEG II	PSI	Hildebrandt, Ritt	12
Mu3e	ETHZ, Geneva, PSI, Zurich	Blondel, Dissertori, Grab, Hildebrandt, Ritt, Straumann, Wallny	8
nEDM	ETHZ, Fribourg, PSI	Kirch, Weis	14

It is worth mentioning in addition that *André Rubbia* (ETHZ) was elected on 10 March 2015 as the co-Spokesperson of the Deep Underground Neutrino Experiment (DUNE) at Fermilab, USA.

In parallel to these experimental collaborations and projects, Swiss theorists are involved in numerous international collaborations. The following list shows the largest and most important ones, in which Swiss theory institutes are key players:

- The LHC Higgs cross-section working group (LHCHXSWG) was created in 2010 to produce agreements on cross sections, branching ratios and pseudo-observables relevant to the Higgs boson(s);
- The Workshop Series "Physics at TeV Colliders" are meetings held at Les Houches (France) every second year since 1999;

- The Snowmass physics studies.

In addition, University of Zurich, ETHZ and PSI participate in 'HiggsTools' (2014–2017), an FP7 Initial Training Network of the European Commission, whereas the University of Bern is coordinating the activity of the Flavour Lattice Averaging Group (FLAG) (since 2011).

Institutional collaboration

Several CHIPP members are acting as official delegates to international organisations in 2015:

- *Olivier Schneider* (EPFL) is the Swiss scientific delegate to the CERN Council since 2013 on mandate of the State Secretariat for Education, Research and Innovation (SERI).
- *Ulrich Straumann* (Uni. of Zurich) is mandated since 2010 by the "Round Table International" to represent the Swiss participants in the Resources Board of the Cherenkov Telescope Array (CTA) project.
- *Teresa Montaruli* (Uni. of Geneva) is the Swiss scientific delegate to the General Assembly of the Astroparticle Physics European Consortium (APPEC) since 2013.
- *Bernd Krusche* (Uni. of Basel) continued his longstanding mandate of the Swiss National Science Foundation (SNSF) as Swiss representative in the Nuclear Physics European Collaboration Committee (NuPECC).
- *Michael Dittmar* (ETHZ) is the Swiss representative in the Advisory Committee of CERN Users (ACCU) since 2015.
- *Leonid Rivkin* (EPFL and PSI) is mandated by the CHIPP Plenary to represent the Swiss particle physics community in the Restricted ECFA (European Committee for Future Accelerators) from 2013 to 2018. In the Plenary ECFA, he is supported by *Terence Garvey* (PSI, since 2010), *Olaf Steinkamp* (Uni. of Zurich, since 2013), and *Sigve Haug* (Uni. of Bern, since 2014).
- *Florencia Canelli* (Uni. of Zurich) was elected as a member of commission C11 of the International Union of Pure and Applied Physics (IUPAP) on particles and fields for a three-year mandate (Nov. 2014 to Nov. 2017).
- *Hans Peter Beck* (Uni. of Bern) is the Swiss representative (since 2009) and the co-Chair (since 2013) of the International Particle Physics Outreach Group (IPPOG).
- *Antonio Ereditato* (Uni. of Bern) is the ad interim contact for the Swiss funding agencies (SERI & SNSF) for Swiss participation in the neutrino programme at Fermilab, USA.

COORDINATIVE TASKS

Promotion of the next generation

CHIPP members and CHIPP institutes continued their efforts to inform the public at large about particle and astroparticle physics and to attract young women and men to this field of research. Throughout Switzerland, more than 30 educational events like information days for BSc and MSc students, for pupils finishing high school and for high-school classes were organised involving more than 2000 people. One should mention specifically the participation of more than 150 Swiss high-school pupils (at the Universities of Bern, Geneva, Zurich and the ETHZ) in the frame of the **International Masterclasses "Hands on Particle Physics"**, where over 10'000 Gymnasium level students in about 200 institutes in 42 countries can actually work with real data from the CERN LHC. A few events for physics teachers have been organised: two at the ETHZ and one at the University of Basel. EPFL and the University of Geneva also organised on 30 March 2015 the **Physics PhD Career Day** of the CUSO doctoral programme in physics.

About 50 visits to CERN took place, not only for university students in physics and other disciplines, but also for children ("Drôle de physique" programme), high-school pupils, alumni, members of societies, the media, and the public at large. The **Open Day at PSI** on 18 October 2015 attracted some 15'000 visitors. The particle physics lab proposed an exhibition and talks followed by more than 2000 people, including families. An open day for children towards their professional orientation ("Zukunftstag") took place at the Universities of Basel and Bern, which also prepared a few exhibitions.

CHIPP Board Members gave about 80 outreach talks on particle physics for high-school students, societies and the general public.

Contacts from the bicentennial of SCNAT enabled a new experience for particle physics outreach to children. *Hans Peter Beck* made the complex world of the Large Hadron Collider (LHC) at CERN and the ATLAS detector understandable to the younger ones in the **TV programme "Rosanna Checkt's - Woraus besteht die Welt?"** broadcasted by SRF1 on 29 September 2015.

The **CHIPP Prize 2015** for the best PhD student in experimental or theoretical particle physics was awarded to *Lilian Witthauer* (Uni. of Basel). The laudatio says: "for her comprehensive study of photoproduction of η-mesons on nucleons bound in deuterium and ^{3}He with polarized beams and targets, which covered all aspects from data-taking with two different experimental set-ups at two medium energy electron accelerators to detector calibration and a challenging analysis". She received the prize money (3000 CHF) and the diploma at the CHIPP Plenary meeting, where she presented her thesis work.

Information and coordination tasks supporting research and science

CHIPP's website contains news, documents, minutes of all meetings, as well as the complete membership database. The continuous dialogue between the institutes, which is enshrined in the CHIPP Statutes and By-Laws, aims at having at hand in a timely and transparent manner the information about current and planned research activities. This information is collected annually in the so-called **CHIPP Long-term Financial Tables** and includes for each experiment or project the detailed manpower involvement per institute and the attributed funds for past and current years, as well as projections and needs for the future years. The table format has been completely reworked in 2015, with a new template for a simplified edition of individual projects. The inputs received from the Swiss community were presented graphically at the CHIPP Board meeting of June 2015 and showed that the needs exceed the foreseeable future resources. This fact triggered a discussion, which reaffirmed **the role of CHIPP in defining priorities**. As a follow-up, a prioritisation process of the experiments with Swiss involvement was initiated, separately in each of the three pillars of CHIPP. A concrete outcome was the finalisation of the white paper on neutrino physics (see the publication section above). The CHIPP Tables were also used as input for the first **APPEC Census**, towards the completion of the APPEC Roadmap.

CHIPP took actively part in the biannual meetings of the SCNAT's **Round Table International**. This information forum on the participation of Swiss groups in international research facilities comprises – in addition to SCNAT and CHIPP – representatives of the SERI, SNSF, and "Swissuniversities".

Likewise, CHIPP puts its know-how and information at the disposal of the **Lenkungsausschuss FLARE** (LA FLARE), which is the steering committee defining the priorities for Funding LArge international REsearch projects (FLARE). In 2015, *Rainer Wallny* (ETHZ) was the LA FLARE representative for particle physics and *Martin Pohl* (Uni. of Geneva) the one of astroparticle physics, while the LA FLARE observers for particle and astro-particle physics were *Olivier Schneider* (EPFL) and *Teresa Montaruli* (Uni. of Geneva), respectively.

Since an agreement in November 2013, *Teresa Montaruli* (Uni. of Geneva) acts as the CHIPP observer in the **College of Helvetic Astronomy ProfessorS** (CHAPS), while Xin Wu (Uni. of Geneva) was elected in March 2015, as the first CHIPP observer in the SCNAT **Commission for Space Research** (CSR).

CHIPP maintained its links with the **Swiss Physical Society** (SPS) in 2015 with *Hans Peter Beck* (Uni of Bern) being in the SPS Committee as representative of the TASK ("Teilchen-, AStro- und Kernphysik") section.

Dialogue with society

The CHIPP outreach activities reduced slightly in 2015. Indeed, after the SERI project "Verflixtes Higgs" in 2012–2013, and the follow-up SNSF-Agora project "Interactions – Swiss particle physicists initiate a dialogue with society" (from February 2013 extended to January 2015), the CHIPP proposal for continued SNSF-Agora funding was not approved. Fortunately, the bicentennial of SCNAT in 2015 offered an opportunity for a special Agora funding, which was used by CHIPP to conduct an outreach project as part of the "**Forschung Live**" tour of Switzerland. The concept was to screen **the movie "Particle Fever"** (USA, 2013) at Open Air cinemas in Lucerne on 9 August and in Aarau on 23 August, as well as indoor in Sion on 25 September. The events were followed by live interviews of *Hans Peter Beck* in Lucerne and of *Lea Caminada* in Aarau, both animated by *Benedikt Vogel*. The last event in Sion was in the auditorium of a high school. A first screening was for the students and another one in the evening for the general public. The latter was followed by a **multi-disciplinary podium discussion** – moderated by *Elisabeth Chardon*, journalist at "Le Temps" – where *Olivier Schneider* represented the particle physics viewpoint next to the theologist *Jean-Blaise Fellay SJ* and the philosopher *Michel Siggen*. All three events were well attended, despite unpleasant meteorological conditions in Lucerne and Aarau.

A report on these events can be found on the multi-lingual website "teilchenphysik.ch", which benefitted, again in 2015, from an SCNAT support via the project "**Dialog Schweizer Teilchenphysiker mit der Gesellschaft**" for the translation of part of the articles in English ("particlephysics.ch"), French ("physiquedesparticules.ch"), and Italian ("physicadelleparticelle.ch").

In addition to the visits at CERN and PSI, as well as the outreach talks already mentioned in the section on the promotion of the next generation, about 5 interviews were given for the TV, radio or journals. Several articles were also written for the CERN Courier and other magazines, newspapers and newsletters.

The long-standing issue to find a Swiss representative in the **European Particle Physics Communication Network (EPPCN)** has been solved in 2015 with an annual financial support granted by SERI and the Board approval that *Marc Türler* (CHIPP Administrator) will take this responsibility at the start of 2016. This positive development shall improve the communication channels between the CERN press office and the communication offices of Swiss universities and institutes, as well as with the media and the general public.

Last but not least, it is worth mentioning the outreach events to celebrate the **100 years of the General Theory of Relativity** published by *Albert Einstein* in November 1915. The biggest event was the **Einstein Symposium 2015** at the ETH Zurich on 12–14 November, with a series of excellent talks from international experts on the history and the modern developments and applications of this revolutionary theory. The event was completely open and free. At the University of Geneva, there was also an outreach event "**Les secrets de la gravitation – 100 ans de relativité générale**" with a series of four evening lectures for the public on 24–27 November. In addition, an outreach lecture called "**L'Héritage d'Einstein**" was given by *Michael Kramer* – director of the Max Planck institute for radio-astronomy in Bonn – on 15 December in the frame of the 28th Texas Symposium on Relativistic Astrophysics.

- o x o -

CHIPP Jahresrechnung 2015 / CHIPP annual financial statement 2015

Bilanz/Balance sheet

	31.12.15	31.12.14
AKTIVA / ASSETS	**CHF**	**CHF**
Post / Postbank	84'636.14	79'544.81
Forderungen / Accounts receivable	0.00	0.00
Transitorische Aktive (TA)	10'000.00	9'760.34
Total Aktiva / Assets	94'636.14	89'305.15
PASSIVA /LIABILITIES		
Verbindlichkeiten / Accounts payable	0.00	0.00
Transitorische Passive (TP)	34'370.00	25'830.00
Vermögen/Assets	60'266.14	63'475.15
Total Passiva / Liabilities	94'636.14	89'305.15

Vermögensveränderung per 31.12.2015	
Change in net assets by 31.12.2014	
Vermögen am 31.12.2014	
Assets at 31.12.2014	63'475.15
Vermögen am 31.12.2015	
Assets at 31.12.2015	60'266.14
Vermögenabnahme 2015	
Decrease in assets 2015	-3'209.01

Erfolgsrechnung / P/L statement

	31.12.15
AUFWAND / EXPENDITURE	**CHF**
Öffentlichkeitsarbeit / Outreach	3'658.62
Schulen / Schools	10'000.00
Konferenzen & Workshops / Conferences & Workshops	1'500.00
Mitgliederbeiträge / Membership fees	3'136.00
Preisgeld / Prize money	3'000.00
Plenarversammlung /Plenary meetings	987.00
Board-Sitzungen / Board Meetings	567.45
Sitzungen EB / EB Meetings	300.35
Saläre Verwaltung durch UZH/salaries administrated by UZH	77'000.00
Verwaltungsaufwand / Administrative costs	1'163.70
Finanzaufwand / Financial Expenditure	0.00
Total Aufwände / Total Expenditure	101'313.12
ERTRAG / INCOME	
Mitgliederbeiträge CHIPP / Membership fees CHIPP	84'440.00
Beiträge SCNAT / Contributions SCNAT	13'658.61
Beiträge SBFI / Contributions SERI	0.00
Finanzertrag / Financial Income	5.50
Jahresgewinn/Verlust /Profit/Loss	3'209.01
Total Erträge / Total Income	101'313.12

CHIPP INDEPENDENT AUDITOR'S REPORT 2015

To the CHIPP Chair and the CHIPP Board Members

We have audited the annual accounts and the accompanying balance sheet of the CHIPP Association for the period from 1 January 2015 to 31 December 2015.

In our audit, we reviewed the correlation of the accounting entries with the available supporting documents (invoices, receipts, proofs) and with the extract of the CHIPP Postfinance account. The available fortune as shown on the latter is coherent to the total assets according to the Balance sheet.

The auditing of the Annual Accounts has shown that all accounting entries are in line with the final accounts and accompanied by a corresponding proof.

The Profit and Loss Statement for 2015 shows a loss of +3'209.01 CHF decreasing the assets on 31 December 2015 to 60'266.14 CHF.

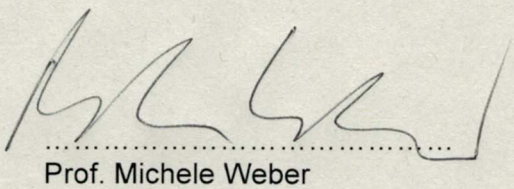
In our opinion, the Financial Statements referred to above

(1) present fairly, in all material respects, the financial position of CHIPP as of 31 December 2015, the results of its operations and its cash flows for the year then ended;
(2) have been prepared with great care by the accounting officer;
(3) comply with relevant statutory requirements.

Therefore, we recommend to the CHIPP Board:

1. to approve the Annual Accounts, the Balance Sheet and the Profit and Loss Statement for the year 2015;
2. to formally discharge the CHIPP EB and the CHIPP Administration for the year 2015, expressing at the same time its thanks and appreciation for the careful accounting.

The auditors:



Prof. Michele Weber
University of Bern

Prof. Ben Kilminster
University of Zurich

Zurich, 10 February 2016