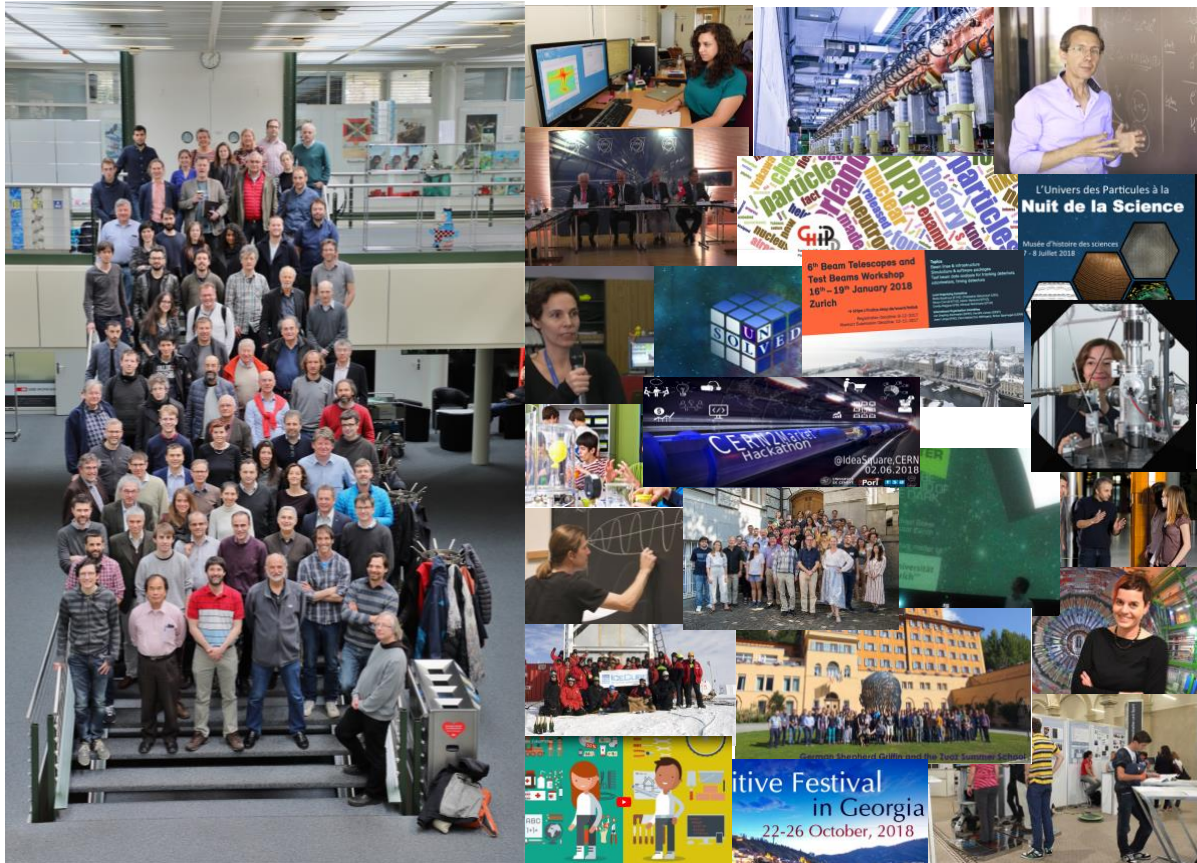


# Annual Report 2018



This report is to be delivered to SCNAT and is thus structured along the SCNAT guidelines.

### SUMMARY

#### *Highlights of the Year*

The main highlights of 2018 were the two Swiss Strategic Workshops (SWICH), which were extremely successful. The first Workshop ([SWICH1](#)) was held at the Centre Loewenberg in Murten: 3-6 April 2018 and the second one ([SWICH2](#)) in the Parc Hotel in Fribourg: 13-14 September 2018. During the first Workshop many excellent speakers presented the state of the field in Particle and Astroparticle Physics in Switzerland and internationally, in preparation of the Swiss input for the European Strategy (ESPP) process in 2019. Four days of presentations and discussions set the scientific base to prepare the discussion leading to a priority list of our Swiss activities during the second Workshop in Fribourg. In the meantime, there was an update of the [White Paper for Pillar 1](#) (Particle Physics at High Energy/Intensity). At the SWICH2 Workshop, the final discussions in each pillar took place separately followed by a common session summarized the main Swiss strategy. The CHIPP Chair, T. Nakada, was asked to prepare a first draft for the Swiss document to be submitted for the ESPP process based on the conclusion reached at SWICH2. The [final document](#) was ready for submission by December 2019.

In August 2018 the EPFL (Lausanne) hosted the [CHIPP Annual Plenary Meeting](#). A rich scientific program covered the three CHIPP pillars: particle physics at the high-energy and intensity frontiers, astroparticle physics, and neutrino physics. There was a session with reports of the activities of the various committees such as the European Committee for Future Accelerators, the International Particle Physics Outreach Group, the Astroparticle Physics European Consortium (APPEC) and the Nuclear Physics European Collaboration Committee (NuPECC). During the meeting CHIPP held the elections to cover the different roles in the association and to select the Swiss representatives in the international organizations.

The CHIPP annual meeting was organized in conjunction with annual meeting of the [Swiss Physical Society](#) where the CHIPP participated in the organization of parallel sessions for particle and astroparticle physics. One of the two public lectures, “Thorium-Based Systems – A new concept for nuclear waste elimination and energy production”, was given by Prof. M. Bourquin (University of Geneva). Prof. G. Isidori (University of Zurich) presented during the conference a very stimulating talk on “[Hints of New Physics from flavour-changing processes](#)”. As part of the SPS award ceremony where all winners of the various SPS prizes are honored and the [CHIPP prize](#) for the best 2018 PhD thesis work in particle physics was awarded to C. Tambasco (EPFL) „for her decisive contributions to the

understanding of Landau damping and beam-beam effects at the LHC with Beam-Transfer-Function measurements that led to a substantial increase in luminosity".

During 2018, the **CHIPP Executive Board** and the **CHIPP Board** were very active in the preparation of a coherent set of requests for the funding of experiments via the **FLARE program** of the Swiss National Science Foundation (SNSF) for the next two years.

On the 8 November, the CHIPP Chair, Prof. T. Nakada, was invited to a **meeting in Bern organized by SERI for the occasion of the DoE-FNAL visit** to summarise the Swiss neutrino activities. The meeting was triggered by a letter sent by the DoE Under Secretary to the SERI State Secretary. The letter re-iterates encouragement for the Swiss participation in the Neutrino Program.

The **CHIPP outreach** activities continued supporting the thematic portal hosted on the SCNAT website, the multi-lingual "[particlephysics.ch](http://particlephysics.ch)". Thanks to the SCNAT support, we could continue to keep this a lively page with 13 interviews given by B. Vogel, a professional journalist, and several other news articles and press releases in 2018.

CHIPP continues to cooperate with CERN in its outreach program, about 30 visits to CERN organized by Swiss Professors took place, not only for university students in physics and other disciplines, but also for children, high-school pupils, alumni, members of societies, the media, and the public at large, more than 1000 people had the possibility to visit the experiments and CERN. In preparation for the next CERN Open Days, Prof. A. Sfyrla (U. Geneva) is co-organizing the ATLAS participation in the event. A very special event was held for the occasion of an [official visit](#) by the President of the Swiss Confederation, Alain Berset, [to CERN](#) on 21 June 2018. Prof. O. Schneider (EPFL) organized (together with the VIP service at CERN) a round-table discussion with 12 young Swiss physicists and engineers. On December 17<sup>th</sup> Ueli Maurer, head of the Federal Department of Finance visited CERN hosted by the CERN management and Prof. M. Weber (U. Bern).

On Halloween, the 31<sup>st</sup> October, at the Luzern Planetarium in the frame of the [Dark Matter Day](#), the University of Zurich (Prof. L. Baudis and Prof. F. Canelli) together with the Planetarium staff organized a special event covering the latest scientific development in the research field of the elusive Dark Matter with a brief introduction, the presentation of the show "Phantom of the Universe" and afterwards a first edition of a "Dark Matter Science Slam Switzerland" won by Dr. M. Baker (UZH) presenting "[What could dark matter be?](#)". Dr. M. Paniccia (U. Geneva) participated in the organization of the Dark Matter Day from the [AMS Control Room](#) at CERN, where Paola Catapano (CERN science communicator) interviewed her, by a questions & answers session from the general public on [Facebook](#).

CHIPP would like to highlight one **outreach website** on particle theory, gravity and cosmology: <https://un-solved.com/about/>, where Dr. A. Monin (EPFL), together with Prof. F. Riva (U. Geneva) are the founders. Prof. M. Shaposhnikov (EPFL) and Prof. J. Penedones (EPFL) have helped producing the material. This project is currently funded by an Agora grant of the Swiss National Science Foundation.

A very successful channel of communication nowadays is **videos**, the University of Zurich has invested a lot of effort in setting up the YouTube channel<sup>1</sup> where several talks about [Flavour physics](#) are posted.

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<sup>1</sup> <https://www.youtube.com/channel/UCAqK1OfxCPhp1G7QYkFLu9A/featured>

The release of the new 200 CHF Swiss banknote was a very special contribution from physics to economy, Prof. G. Dissertori (ETHZ) contributed in the design, and two of the articles that were written about this<sup>2 3</sup> are listed below.

## SECTORS OF COMPETENCE: NETWORKING AND DEVELOPMENT OF SCIENCE

### Publications

As already mentioned before, in March 2018 a strategic document on particle physics at the high-energy and intensity frontiers, referred to as the [CHIPP Pillar 1 White Paper](#) was published on the SCNAT website and the [final document](#) of the Swiss input to the European Strategy in Particle Physics was available since 18 December 2019.

### Meetings, Workshops and Schools

In 2018 CHIPP continued to work on its networking and educational goals and organized directly or through its members several meetings, schools and workshops. In chronological order:

- UZH and ETH Zurich [Phenomenology Workshop](#), 15-17 January 2018 (UZH: G. Isidori, N. Serra, S. Pozzorini, M. Grazzini, T. Gehrmann; ETHZ: B. Anastasiou, A. Lazopoulos) on recent results on quark and lepton flavour observables and their impact on the search for new physics beyond the Standard Model.
- 6th [Beam Telescopes and Test Beams](#) Workshop, 16-19 January 2018 (ETHZ: M. Backhaus, UZH: C. Betancourt) This workshop covered a wide range of topics related to test beams for detector studies in tracking detectors, calorimetry and beyond.
- First Strategic Workshop in Switzerland, [SWICH1](#) 3-6 April 2018, at Schweizerische Bundesbahnen SBB Centre Löwenberg, Murten.
- [SM@LHC](#) Conference in Berlin, 10-13 April 2018. (UZH: K. Müller)
- T. Golling (U. Geneva) guided the [CERN2Market Hackathon](#). This event is a creative 1-day brainstorming hackathon where participants from different backgrounds discuss ideas of converting CERN expertise and technologies into market products guided by CERN scientists and industry actors.
- [Nucleon Spin Structure at Low Q: A Hyperfine View](#), 2-6 July 2018 (ETHZ: A. Antognini, K. Kirch) ECT\*, Trento. The purpose of this workshop was to bring together the nuclear and atomic physics communities responsible for recent developments, review them, and provide directions and goals for the near-future progress.
- [Zuoz Summer School](#) 12-18 August 2018 Zuoz, (PSI: A. Signer, M. Spira)
- XIIth International Workshop on the [Interconnection between Particle Physics and Cosmology \(PPC 2018\)](#), 20-24 August 2018, main organiser: ETHZ: L. Shchutska (UZH: L. Baudis, F. Canelli, G. Isidori, B. Kilminster; ETHZ: D. Grab, G. Dissertori) Organized by the University of Zurich and ETH Zurich, the PPC 2018 conference brought together leading scientists studying the very big to the very small, spanning 60 orders of magnitude of physical processes.
- Second Strategic Workshop in Switzerland [SWICH2](#) 13-14 September 2018, Park Hotel, Fribourg, Switzerland.

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<sup>2</sup> <https://www.lastampa.it/2018/09/12/scienza/nella-banconota-da-franchi-racconto-la-fisica-delle-particelle-t2gs1bQcRhsKd9nFJp6e0l/premium.html>

<sup>3</sup> [https://naturalsciences.ch/organisations/chipp/104763-elementarteilchen-erobern-die-200-franken-note?\\_ga=2.63142767.1771435986.1548939614-377988242.1542633511](https://naturalsciences.ch/organisations/chipp/104763-elementarteilchen-erobern-die-200-franken-note?_ga=2.63142767.1771435986.1548939614-377988242.1542633511)

- [Darwin Collaboration](#) Meeting in Zurich 17-18 December 2018, (UZH) About 70 members of the ever-growing DARWIN collaboration have met at the University of Zurich to discuss and coordinate their R&D activities towards the ultimate dark matter experiment.

## INTERNATIONAL ACTIVITIES

### Scientific cooperation

Research in particle and astroparticle physics usually involves large infrastructures, which are the result of regional, national and worldwide collaborations. In order to cover the important intellectual and technological challenges, the amounts of human and financial resources required can no longer be provided by a single country. The table below shows a snapshot of the current international experimental collaborations involving CHIPP Board members.

Furthermore, smaller cooperation projects exist; many of them occur spontaneously – between groups working in the same field or requiring the same type of infrastructure – or in a coordinated way by CHIPP.

Project	Swiss institutes	CHIPP Board Members	Institutes worldwide
High-Energy particle physics			
<a href="#">ATLAS</a>	Bern, Geneva	Beck, Ereditato, Golling, Iacobucci, Mermod, Nessi, Sfyrla, Weber, Wu	218
<a href="#">CMS</a>	ETHZ, PSI, Zurich	Canelli, Dissertori, Grab, Kotlinski, Kilminster, Pauss, Shchutska, Wallny	198
<a href="#">LHCb</a>	EPFL, Zurich	Bay, Nakada, Schneider, Serra, Straumann	81
<a href="#">LHC Tier-2</a>	ETHZ, CSCS	Grab	> 200
HL-LHC	EPFL, PSI	Rivkin	55
CLIC	ETHZ, PSI	Rivkin	70
FCC	Bern, EPFL, ETHZ, Geneva, PSI	Blondel, Rivkin, Dissertori, Laine	134
Na64	ETHZ	Rubbia	8
Astroparticle physics			
<a href="#">AMS</a>	Geneva	Wu	63
<a href="#">ArDM</a>	ETHZ	Rubbia	7
<a href="#">CTA</a>	ETHZ, Geneva, Zurich	Biland, Courvoisier, Montaruli, Straumann, Canelli	210
<a href="#">DAMIC</a>	Zurich	Kilminster	10
<a href="#">DARWIN</a>	Bern, Zurich	Baudis	24
<a href="#">IceCube</a>	Geneva	Montaruli	50
<a href="#">MAGIC+FACT</a>	ETHZ	Biland, Pauss	24-4
<a href="#">XENON</a>	Bern, Zurich	Baudis	27
Neutrino physics			
<a href="#">GERDA</a>	Zurich	Baudis	18
<a href="#">MICE</a>	Geneva	Blondel	28
<a href="#">NA61 / T2K / HyperK</a>	Bern, ETHZ, Geneva	Blondel, Ereditato, Sanchez, Rubbia	33-63-75
<a href="#">SBN</a> (MicroBooNE)	Bern	Ereditato, Weber	34



<a href="#">SHiP</a>	EPFL, Geneva, Zurich	Bay, Blondel, Kilminster, Mermod, Serra, Shaposhnikov	53
<a href="#">WA105 + DUNE</a>	Bern, ETHZ, Geneva	Blondel, Rubbia, Weber	21-175
High-precision and muon physics			
<a href="#">CREMA</a>	ETHZ, PSI	Hildebrandt, Kirch	9
<a href="#">GBAR</a>	ETHZ	Rubbia	18
<a href="#">MEG II</a>	PSI	Hildebrandt, Ritt	15
<a href="#">Mu3e</a>	ETHZ, Geneva, PSI, Zurich	Blondel, Dissertori, Grab, Hildebrandt, Kotlinski, Ritt, Straumann, Wallny	8
<a href="#">nEDM/n2EDM</a>	ETHZ, PSI, Bern	Kirch, Lauss, Piegsa	15
<a href="#">PANDA</a>	Basel	Krusche	64

In parallel to these experimental collaborations and projects, Swiss theorists are involved in numerous international collaborations. The prominent ones, in which Swiss theory institutes are key players is

- The [LHC Higgs cross-section working group \(LHCHXSWG\)](#) created in 2010 to produce agreements on cross sections, branching ratios and pseudo-observables relevant to the Higgs boson: M. Spira (PSI) was involved in the LHC Higgs cross-section working group responsible for the [HDecay Manual](#).

**At the University of Bern the work on the [review of lattice results](#) continues.** It is related to pion, kaon, D- and B-meson physics with the aim of making them easily accessible to the particle physics community.

Prof. O. Schneider (EPFL) is convener of a sub-group of the Heavy Flavour Averaging Group ([HFLAV](#)). HFLAV is responsible for calculating world averages of measurements of beauty-hadron, charm-hadron and tau-lepton properties from current and past experiments and provides a comprehensive resource for the field in terms of web pages and full documentation of results.

One particular example of scientific collaboration and help at the service of the new arrivals in the LHCb experiment has been provided by the EPFL team that has built the [LHCb starterkit project](#) where the lessons from the dedicated Workshops and online tutorials are stored. Violaine Bellée (EPFL) was co-organizer of the [LHCb Impackit](#) (Software workshop for LHCb newcomers, who have already taken the Starterkit), 9-11 May 2018, 26 participants. Two EPFL researchers were involved in teaching and helping. Five EPFL researchers were also involved in teaching and helping in the [LHCb+ALICE+SHiP Starterkit](#), a Software workshop for newcomers in high energy physics experiments, 29-30 November 2018, 51 participants. G. Dissertori, as Deputy Spokesperson of CMS, has given the introductory presentation for the so-called CMS Induction Days in January 2018. During those days, newcomers to CMS are presented with many details about the CMS experiment.

#### **Institutional collaboration (in alphabetical order):**

Several CHIPP members are acting as official delegates to international organizations in 2018:

- **Hans Peter Beck** (U. Bern) has been the co-Chair of the International Particle Physics Outreach Group ([IPPOG](#)) since 2013, and he has been elected President of the Swiss Physical Society on the 22<sup>nd</sup> August 2017 for a period of two years. He represents Switzerland in the European Physical Society Council. He has further been appointed representing Switzerland in IUPAP as of 1 January 2019.
- **Angela Benelli** (CHIPP) has been the Swiss member of the European Particle Physics Communication Network ([EPPCN](#)) since June 2017.

- **Laura Baudis** (UZH) is part of the [CERN Scientific Policy Committee](#) till the end of 2019. She is member of the [Dark Matter](#) advisory committee.
- **Alain Blondel** (U. Geneva) is member of the International [Steering Committee](#) for the Hyper-Kamiokande project and member of the [FCC design](#) study coordination group.
- **Florenca Canelli** (UZH) has been a member of commission C11 of the International Union of Pure and Applied Physics ([IUPAP](#)) on particles and fields since Nov. 2014. She has been elected secretary of the IUPAP C11 Commission from 1 January 2018 for 4 years. She is a member of the Physics Advisory Committee of Fermilab, member of [LHCP](#) international advisory committee and member of the Dark Matter workshop advisory committee.
- **Günther Dissertori** (ETHZ) has been Chair-person of the International Advisory Committee for the [FCC](#) project since the beginning of 2017. He is chairman of the scientific policy committee of the INFN National Laboratory of Frascati. From Sep 2016 to Aug 2018 he was also Deputy Spokesperson of the CMS collaboration.
- **Michael Dittmar** (ETHZ) has been the Swiss representative in the Advisory Committee of CERN Users ([ACCU](#)) since 2015.
- **Antonio Ereditato** (U. Bern) is the ad interim contact for the Swiss funding agencies ([SERI](#) & [SNSF](#)) for Swiss participation in the neutrino programme at Fermilab, USA.
- **Roland Horisberger** (PSI): is member of the [XFEL](#) Detector Advisory Committee (DESY) and of the KIT Advisory Committee (Particle Physics & Accelerators)
- **K. Kirch** (ETHZ and PSI) is member of the Scientific Advisory Committee [SAC](#) of the European Spallation Source ESS in Lund/Sweden, is a member of the Hyper-Kamiokande [Advisory Committee](#) in Japan, is a member of the [Scientific Council](#) of the Excellence Cluster PRISMA in Mainz/Germany, is a member of the [Scientific Advisory Board](#) of the Stefan-Meyer-Institute in Vienna/Austria.
- **Bernd Krusche** (U. Basel) continued his longstanding mandate as Swiss representative in the Nuclear Physics European Collaboration Committee ([NuPECC](#)).
- **Teresa Montaruli** (U. Geneva) has been the Swiss scientific delegate to the General Assembly of the Astroparticle Physics European Consortium ([APPEC](#)) since 2013. Teresa Montaruli has been nominated unanimously as vice-chair of the General Assembly. She is also member of the LNGS [Scientific Advisory Committee](#).
- **Katharine Müller** (UZH) has been the Swiss representative in the [IPPOG](#) Collaboration since September 2017.
- **Tatsuya Nakada** (EPFL) is Chair of the Linear Collider Board [LCB](#) (subpanel of ICFA), is member of the NIKHEF Scientific Advisory Committee [SAC](#), is Chair of the [LNGS Scientific Advisory Committee](#), is Chair of the KEK Belle Program Advisory Committee.
- **Felicitas Pauss** (ETHZ) is the [President of the SNSF Foundation Council](#) and she is member of the Executive Board at the SCNAT.
- **Stefan Ritt** (PSI) is president of the Nuclear and Plasma Sciences Society [NPSS](#) of IEEE
- **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 **Olaf Steinkamp** (UZH), since 2013), **Domenico della Volpe** (U. Geneva, since 2017), and **Andreas Knecht** (PSI, since 2016).
- **Olivier Schneider** (EPFL) has been the Swiss scientific delegate to the [CERN Council](#) since 2013 on mandate of the State Secretariat for Education, Research and Innovation (SERI).
- **Olaf Steinkamp** (UZH) is a member of the [Kruger](#) International Advisory Committee.
- **Ulrich Straumann** (UZH) 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.
- **Rainer Wallny** (ETHZ) is member of the Physics Advisory Committee of [DESY](#).
- **Xin Wu** (U. Geneva) was re-elected as CHIPP observer in the Swiss Commission on [Space Research](#) till December 2019.

## COORDINATIVE TASKS

### **Promotion of the next generation**

One of the main objectives for CHIPP is to attract the young public to Physics and Astroparticle Physics. To achieve this goal more than 50 educational events like information days for BSc and MSc students, for pupils finishing high school and for high-school classes were organized, throughout Switzerland, involving more than 4000 young students.

More than 200 Swiss high-school pupils (at the Universities of Bern, Geneva, Zurich and the ETHZ) were invited to participate in the [International Masterclasses 'Hands on Particle Physics'](#), where over 13'000 Gymnasium level students in about 215 institutes over 52 countries can actually work with real data from the CERN Large Hadron Collider (LHC). For example, the EPFL group has organized a Master Class for the students from the Gymnase du Bugnon, Lausanne. In particular, Dr. F. Redi (EPFL) is the Head of the International [Masterclass project for the LHCb experiment](#), where around six hundred students from dozens of institutes in many different countries have been involved in the LHCb master classes at CERN. Prof. T. Montaruli (U. Geneva) was involved in the organisation of the Masterclass project on [the IceCube experiment](#).

Several **events for physics teachers** have been organized in the different Institutes. In particular for this year, "Dr. M. Paniccia (U. Geneva) gave a talk and a debate on the "Astroparticle Physics with AMS on the International Space Station" at the Aiglon College Erasmus Society in Chesières-Villars on the 2 February 2018." The University of Basel has a [special program](#) for physics teachers with several events during the full year. Prof. M. Weber (U. Bern) and Dr. S. Braccini (U. Bern) participated to a gymnasium teacher's formation event on the 14 January 2018 presenting "medical applications of particle physics".

Each institute has its own program towards young students and often organizes special events. For this year, one should mention in particular the following activities:

At the **University of Zurich** several events have been organized for high school students as the [Science Info Day](#), which takes place annually on a Saturday afternoon in March at Irchel Campus. High school students, their parents, and teachers learn about the degree programs offered by the Faculty of Science. In September, the [study information days](#), organised by UZH and ETH, provided an overview of the broad study program in Zurich. About 200 high-school students attended the lecture on the presentation for the physics major at UZH. Several high school classes were invited to participate to "Ladies First!" by [Dr. L. Caminada \(UZH/PSI\)](#) at the Schloss Lenzburg.

**ETHZ** organized a series of eight special event days for 100 gymnasium high-school students in October and November, called [ETH-unterwegs](#). The students were invited to participate in some experiments and lectures. On the website are the programs for different schools.

Some [special days](#) for high-school classes were organized for visiting the Physics Department at ETHZ. Dr. A. Antognini, Prof. C. Grab and Prof. R. Wallny acted as experts for "Matura degree exams" in an Italian and two German high schools.

The **University of Bern** organized the [Physik am Freitag](#), which is a series of five talks to high-school students. Two of these talks contain CHIPP specific topics: Dr. U. Wenger gave a talk on the mass of the proton and of the Universe; and Prof. M. Weber gave a talk on cosmic muons and their application in topological scans. Two "fresher days" were organized for cantonal gymnasia and for extra-cantonal gymnasia students with a total of 150 pupils guided through the physics department of the University of Bern. The experimental particle physics department participated to the [Nationaler Zukunftstag](#).



The **EPFL** Professors have organized more than six visits to CERN for a total of more than 140 students including EPFL Bachelor students, 15 chemistry professors and staff of the EPFL, 15 participants from the UNIL course “Science au carre” and 30 young students from a Brazilian school.

As in the past years, the EPFL was engaged in creating an interdisciplinary knowledge at the university level. Researchers have collaborated with the University of Lausanne at the program “[Science au carre](#)” providing science courses for the students that follow humanitarian studies.

Prof. O. Schneider was invited to give a presentation at the [Young Physicist Forum 2018](#) in CERN, the 4 April 2018 “CERN, LHC and the LHCb experiment”.

Particle physicists at **PSI** are routinely guiding visitors (~1000 per year) through the facilities and a science exhibition in the frame of the PSI-Forum. School classes are also coming with their teachers to visit the PSI school laboratory ‘[iLab](#)’. PSI was also involved in the very successful “[Nationaler Zukunftstag](#)” where pupils from the Swiss schools come to explore new professional horizons. A special effort is put in discovering jobs that are usually performed by the opposite gender.

In **Geneva**, in March 2018, an information open day was held at the University for around 2000 pupils in the last year of high-school. During the three days [Stage boussole](#) several visits of the physics department and of the teaching classes were organized. A very successful series of events were organized by several researchers in the occasion of the “[La Nuit de la science](#)” for the 7-8 July 2018 at the “Musée d’histoire de sciences”.

**Basel University** organized a series of several [special events](#) high-school students and children during the full year 2018 and organized talks for the general public: “[Saturday Morning Physics](#)”.

### **Information and coordination tasks supporting research and science**

[CHIPP’s website](#) contains news, documents, minutes of all meetings, as well as the link to 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.

As in previous years, CHIPP took an active role in the biannual meetings of SCNAT’s **Round Table International Organisations and Research Infrastructures**. The scope of this information forum is the exchange between the research fields involving with large international infrastructures. It accounts for the participation of Swiss groups in international research facilities and also comprises representatives of the SERI, SNSF, and “Swiss universities”.

### **Dialogue with society**

The SCNAT offered a firm place with increased visibility among the other fields of science for both the CHIPP website and the more general Physics outreach website ([‘particlephysics.ch’](#)). The site was kept lively throughout 2018 with the addition of 13 interviews and other news articles. As approved by the CHIPP Board, the articles are authored by B. Vogel, a science journalist collaborating with CHIPP since many years. Dr. H. P. Beck (the University of Bern) was responsible for their scientific content and Angela Benelli inserted them on the SCNAT portal in Italian, in German and in English. CHIPP is grateful to SCNAT for supporting this activity as an important dialogue with the society.

During 2018 the CHIPP Twitter account [@CHIPP\\_news](#) has continuously spread physics news to increase the public awareness about science and publicized available jobs in academia and outside for

physicists. Knowledge Transfer and campaigns focused on attracting younger generations to physics are important challenges pursued by the CHIPP and will continue also in the coming years.

At the EPFL, G. Pietrzyk is in charge of the LHCb Experiment Twitter account: [@lhcbexperiment](#) and the [LHCbExperiment](#) Instagram Account with around 3500 and 13000 followers respectively. The University of Geneva has set the Particle Physics Twitter [@DPNC\\_Unige](#). The Facebook site [Verflixtes Higgs](#) continued to be fed by Dr. H. P. Beck.

With A. Benelli as the Swiss member in the European Particle Physics Communication Network (EPPCN), CHIPP continues its link between the CERN press office and the Swiss media, as well as with the communication offices of the institutes related to CHIPP. The contact has been established and a measure of the [media coverage of particle physics in Switzerland](#) is provided on-line.

CHIPP Board Members gave outreach talks and interviews on particle physics for high-school students, societies and the general public, we would like to mention some of them in alphabetic order:

- Prof. L. Baudis (UZH) was interviewed by the Radio SRF2 in the [Mysterium Energy](#) project, and about her work in [XENON](#) at the Gran Sasso laboratories.
- Prof. A. Bay, (EPFL) "La guêpe de la Tanzanie a une ouverture alaire de moins de 1mm, un albatros de 3,6m. Les deux savent voler. Comment ?", [public lecture at UNIL](#), 21 November 2018.
- Dr. HP. Beck (U. Bern) was invited keynote speaker at the [STEP Alpine conference](#), 31 January – 2 February 2018, Interlaken, Switzerland. HP Beck was invited speaker at CERN [Cognitive Festival](#), 22-26 October in Tbilisi, Georgia. This is a scientific and educational event based on CERN scientific research and innovation technologies for the popularization of scientific activities among the young generation and to provoke interest in fundamental research, engineering, IT technology and mathematics. HP Beck discussed (articles in the local press: [1](#) and [2](#) ) with the Georgian Minister of Education, Science, Culture and Sport of Georgia, Mikheil Batiashvili on matters of education and research.
- Prof. A. Biland (ETHZ) was interviewed from the [Tagesanzeiger Newspaper](#) on detection of potential source of high-energy cosmic neutrino from different experiments: IceCube, Fermi-LAT and MAGIC.
- Dr. L. Caminada (PSI) was interviewed about [her work](#) in the CMS experiment (CERN).
- Prof. G. Dissertori gave several talk for the general public: "Make the invisible visible and the impossible possible. The research at CERN" at the Sud Tirol Planetarium (6/11/2018) and in Baden (10/10/2018). "Stories from the Universe" at the Smart Energy Party in Umweltarena Spreitenbach. At the HTW in Chur [Prof. G. Dissertori](#) gave a multimedia lecture "We are all made of stardust".
- A. Fehr (U. Bern) was interviewed on the ATLAS upgrades that resulted in an article reported on the University of Bern Newsletter.
- Prof. C. Grab (ETHZ) Reinschrift Science Communication, on "Higgs Zerfall in Beauty Quarks".
- Prof. J.-F. Loude, (EPFL) was invited from the AG de l'ASEISTE (Association [nationale française] de Sauvegarde et d'Étude des Instruments Scientifiques et Techniques de l'Enseignement), to present a [talk](#) about the "Musée de physique de l'Université de Lausanne", in Rennes (Bretagne), 24 Mars 2018. A [video](#) of the session is available.
- Prof. T. Montaruli (U. Geneva) gave a presentation '[Guardando il cielo con occhi nuovi](#)' about gravitational waves and neutrino physics, Biogem center, Ariano Irpino in Italy.
- Dr T. Nanut, (EPFL) participated at the [roundtable](#) on the topic " Building a research career abroad", Koper, Slovenia, 11 January 2018. She was a guest scientist hosting a chat at Researcher's night (international event); specific event: "A chat with a scientist", at Jozef Stefan Institute, Ljubljana, Slovenia, 28 September 2018.
- Prof. J. Penedones, (EPFL) "[Thought experiments about Particle Collisions](#)", EPFL Physics Day, 1 October 2018
- Dr L. Pescatore (EPFL) gave the [LHCb outreach talk](#) at XIXXX International Conference on High Energy Physics ([ICHEP 2018](#)), Seoul, 6 July 2018.

- Dr. F. Redi (EPFL), was interviewed on the state Italian radio (drive time program, ~1 M listeners), about the Long Shutdown 2 of the LHC.
- Prof. A. Sfyrla (U. Geneva) was interviewed On the occasion of the [HL-LHC](#) ground breaking ceremony.

### **Gender issue & society**

A team from the EPFL (Dr. A. B. Rodrigues Cavalcante and V. Bellée) participated in "Journée internationale des femmes et filles de science // International Day of Women and Girls in Science" (5-9 February 2018) through a presentation in various schools in Geneva and nearby French region (e.g. Collège de Saussure, 1213 Lancy). This campaign has been initiated by the United Nation to draw the attention of the international community to the serious gender gap that affects the science institutions. CHIPP has contributed to the campaign joining the CERN press office [Twitter](#) project #WomanInScience explaining the work by several women in the Swiss institutes. Prof. [L. Baudis](#) (UZH), [A. Santamaria](#) (EPFL), Dr. [T. Nanut](#) (EPFL), [N. Chernyavskaya](#) (ETHZ) and [L. Vesterbacka](#) (ETHZ) participated to the project.

### **Exhibitions**

At the University of Zurich science museum started the preparation of a scale model of the CMS experiment by Prof. B. Kilminster.

The EPFL presented the LHCb detector and SciFi tracker project with prototypes of fibre modules, as well as cosmic ray tracker demo at "Salon des technologies et de l'innovation de Lausanne" (STIL), [Swiss Tech Convention Centre](#).

The University of Bern was responsible for a temporary exhibition of a spark chamber at the Gymnasium Koeniz-Lerbermatt.

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