

Outreach report

CHIPP plenary, 28 August 2018

Katharina Müller

(sorry for not being able to be present in person)



**University of
Zurich**^{UZH}

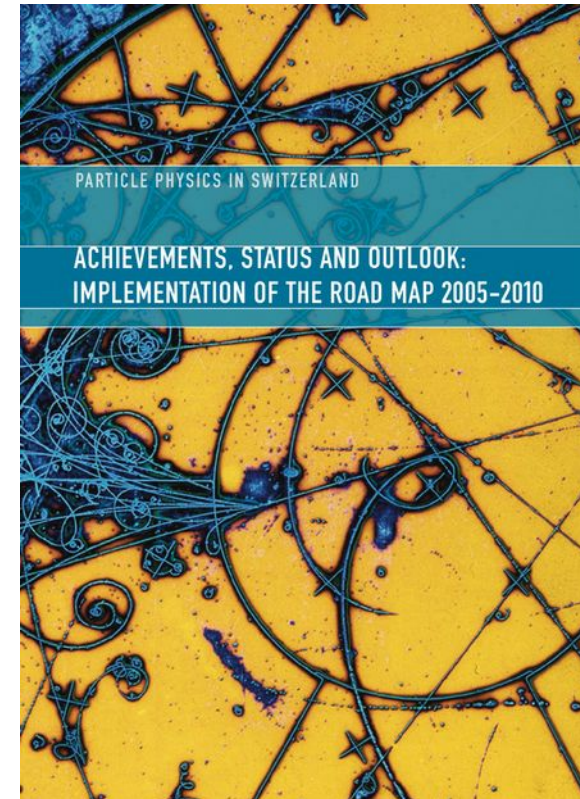
<https://naturwissenschaften.ch/service/publications/95387-chipp-roadmap-achievements-status-and-outlook-implementation-of-the-road-map-2005-2010>

- outreach activities within science
→ politicians, public, potential young physicist
- primary aim is to reach young secondary school students:

Road Map document: “The success of particle physics research in Switzerland largely results from the high-qualified and innovative scientific and technical teams within Swiss institutes. To maintain that quality, the best students must be attracted to the field. “

- outreach activities for young students:
 - importance of fundamental physics
 - excitement of being part in particle and astroparticle physics
 - rise awareness of importance of mathematical background

→ bring teachers and high-school students to laboratories and universities



outreach in Switzerland

- talks to interested groups
Schools, University events for general public (Physics on Friday, Saturday Morning physics), Industry, many more
many CHIPP members involving all CHIPP institutes are actively participating
- interviews in newspapers (print&online)
- coordinated outreach done at/by universities (cantonal and federal) and laboratories (CERN and PSI)
open day events, student information days, Scientifica, science nights
- website/newsletter/social media: inform the general public of recent scientific achievements
- evolving: science slam, science fair, talks at festivals

Help from communication offices at universities and laboratories for preparing headlines, press releases etc.

- more than 50 educational events with more than 2000 participants like information days for BSc and MSc students
high school students
- CHIPP members gave about 80 outreach talks on particle and astroparticle physics for high-school students, societies, industry and the general public
- about 80 organized visits to CERN
for university students in physics and other disciplines
children (“Drôle de physique” program)
high-school students, alumni, politicians (eg Kantonsrat Zurich), members of societies, media, and the general public at large
- an open day for children towards their professional orientation (“Zukunftstag”) took place at the Universities of Basel, Bern and Zurich
- participation of more than 200 Swiss high-school students (at the Universities of Bern, Geneva, Zurich and the ETHZ) in the framework of the International Masterclasses “Hands on Particle Physics” , where over 10’000 high-school students in about 200 institutes in 42 countries can actually work with real data from the CERN LHC
- ongoing activities: school labs, traveling exhibitions (ETH: “ETH on the road”), support with Maturaarbeiten (thesis at the end of high-school)

a selection, many more ...



Hans Peter Beck outreach talk for bankers and trustees

“The Swiss Institute of Particle Physics and CSCS are paving the way for the upcoming computational challenges”

Interview: Published in "Insights of CSCS" Christoph Grab
https://www.cscs.ch/fileadmin/user_upload/contents_publications/annual_reports/AR2017_Online.pdf

Horizonte | Physik

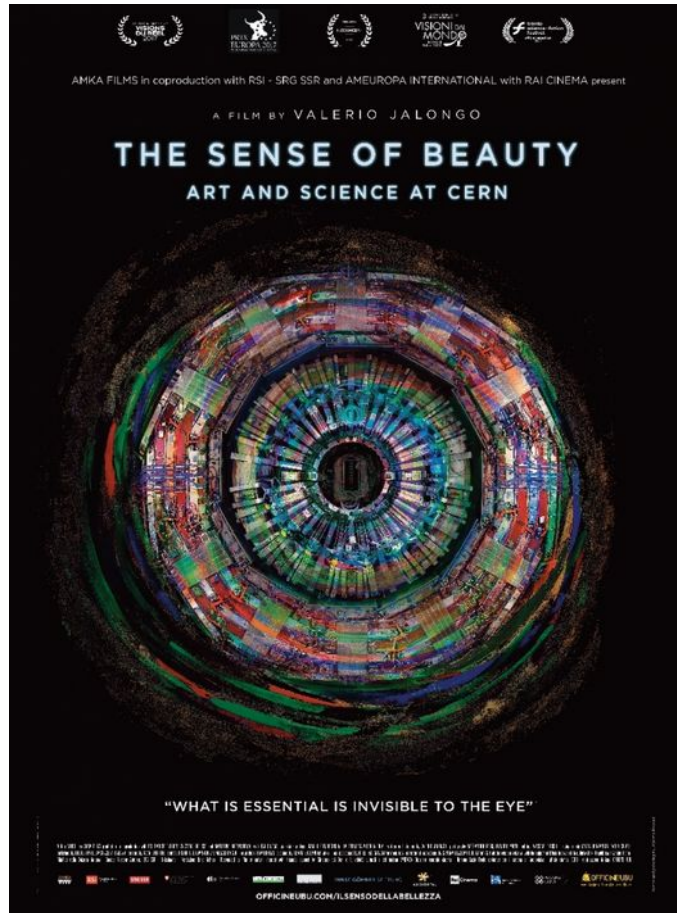
Technology Review 11/2017 S. 40

Suche nach dem dunklen **Geheimnis** **des Universums**

Das Experiment Xenon1T will die Bausteine der **Dunklen Materie** aufspüren. Sie sollen unser Universum maßgeblich geprägt haben. Aber niemand weiß, ob es sie wirklich gibt.

Laura Baudis
talks eg at Naturmuseum St. Gallen
Staatstheater Minz, Volkshochschule im Kronauer Amt
Interviews Heidelberg CEMENT, GEO Kompakt

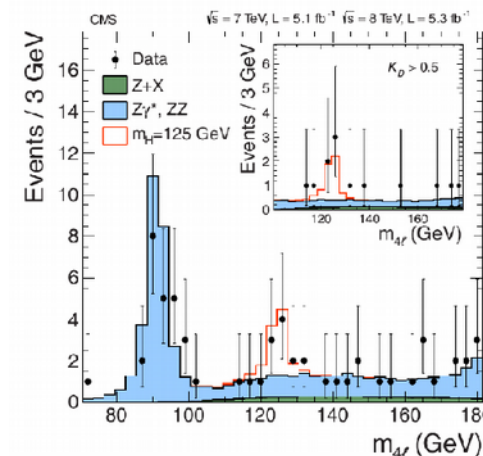
film: the sense of Beauty – art and science at CERN



with CHIPP members as invited guests for the premiere

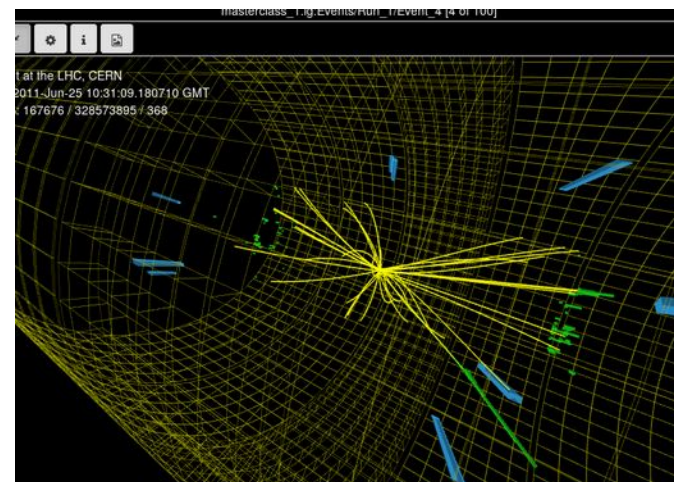
masterclasses – hands on particle physics

- high school students become particle physicists for one day
- more than 13.000 high school students in 52 countries come to one of about 215 nearby universities or research centres
- at the end of each day, the participants join in a video conference for discussion and combination of their results.
- more than 200 participants in Switzerland: Geneva, Bern, ETH+UZH and Lausanne for the first time!



typical program:

- introductory lectures:
particle physics, accelerators, detectors
- lab visits
- lunch break with particle physicists and students
- analysis of data from CMS, ATLAS or LHCb
- discussion and international video conference

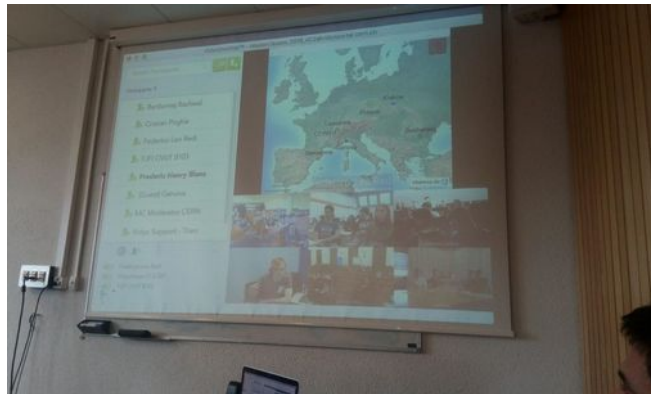
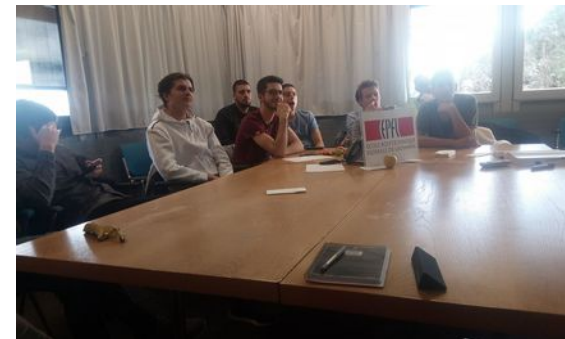
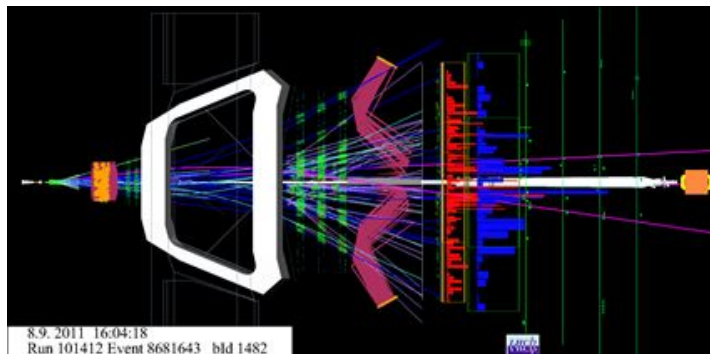


→ unique opportunity to get interested high-school students to the universities

new this year: LHCb masterclass in Lausanne

13 high-school students: measure mass and lifetime of D0 with LHCb data

<http://lhcb-public.web.cern.ch/lhcb-public/en/LHCb-outreach/masterclasses/en/D0Lifetime.html>



International Masterclasses 2018



15.2. - 28.3.2018

+ extra dates w. Fermilab

52 countries involved

+ 3 countries without VC

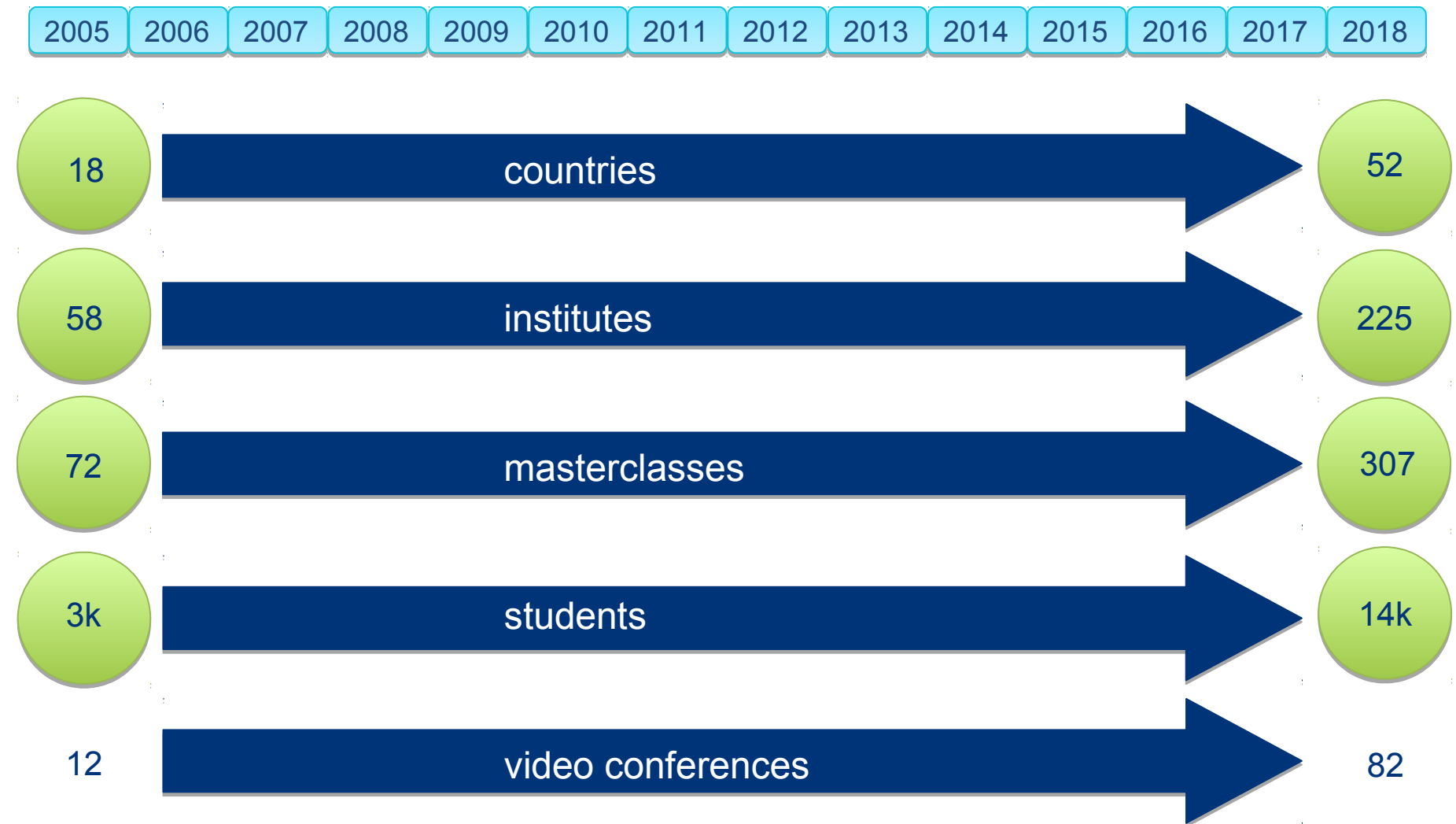


Coord.: QuarkNet / TU Dresden



- 48 institutes (43)
- 50 Masterclasses (50)
 - 31 CMS (35)
 - 19 ATLAS (15)

- 177 institutes (173)
- 257 Masterclasses (264)
 - 35 ATLAS W (45)
 - 104 ATLAS Z (93)
 - 58 CMS (52)
 - 39 LHCb (45)
 - 18 ALICE SP (24)
 - 3 ALICE R_AA (5)





CERN Teacher Programmes

several activities for teacher at high schools:

- Swiss Teacher program at CERN
(next event <https://indico.cern.ch/event/681051/>)
- HSGYM: Hochschultag der Mittelschulen (ETH, UZH):
astroparticle physics and dark matter
<https://www.hsgym.ch/archiv/anlaesse>
- teacher training at UZH
Methods and open questions of particle physics

but in general rather low attendance

attract interested pupils to natural or technical sciences

- “PhysiScope” : @ Uni GE <https://dqmp.unige.ch/physics-for-all/physiscope/>
- “Science Lab UZH” : @ Uni ZH <http://www.sciencelab.uzh.ch>
- “iLab” : @ PSI <https://www.psi.ch/ilab/>
- “S’Cool LAB” : @ CERN <http://scool.web.cern.ch>

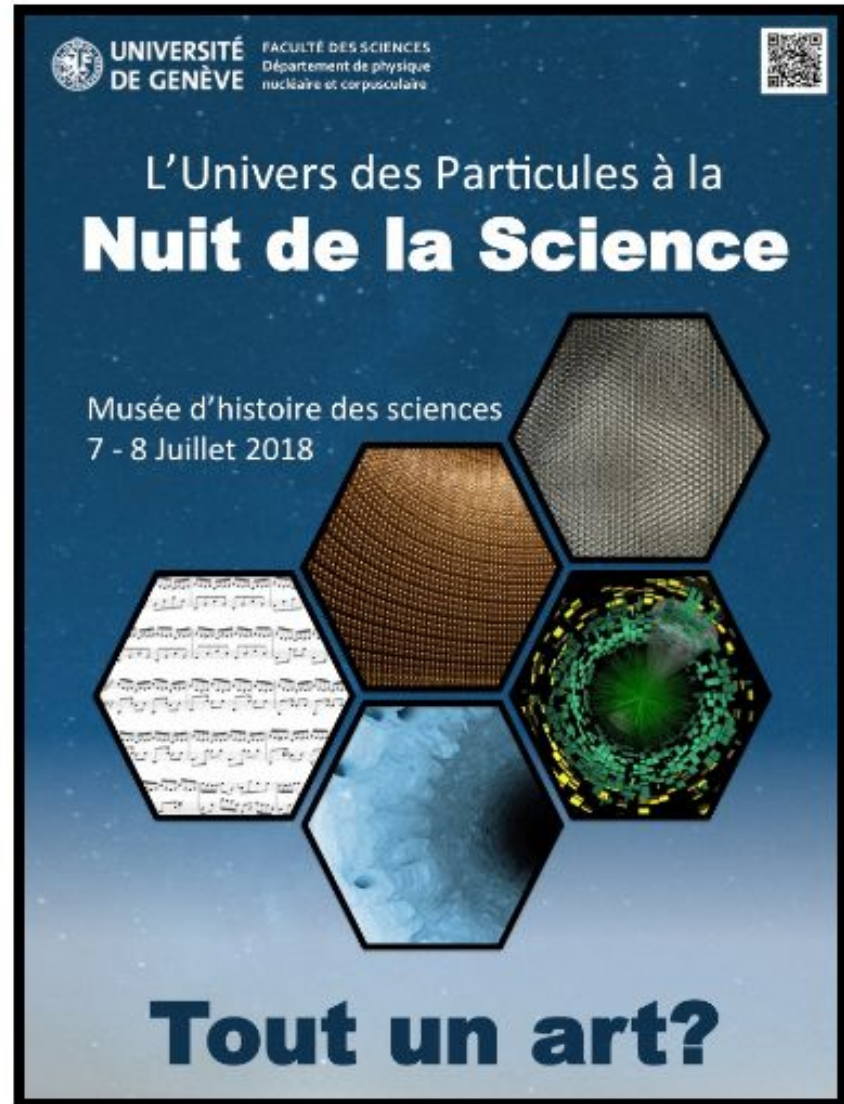
→ inform teacher about these programs



Zurich Scientifica 2017 – was Daten verraten

- Zurich Science days, 1.-3. September 2017, with more than 30000 visitors
About 300 researchers presented their projects, held short lectures or workshops and discussed in science cafés
- bi-annual event, common organization ETHZ & UZH
- the LHCb and CMS groups presented in a lecture and a booth how unprecedentedly large data sets, collected at extraordinary rates, can be distilled into a single yes/no answer taking as an example the discovery of the Higgs boson.
- visitors were extremely interested in our research projects

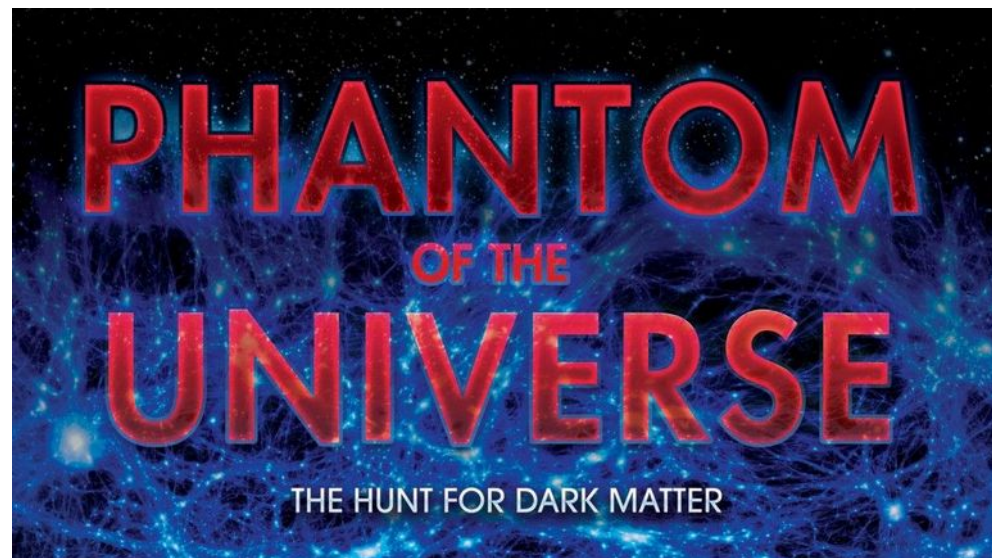




Dark matter day, October 31 2017



- international dark matter day: more than 110 global, regional, and local events were held on and around that date by institutions and individuals looking to engage the public in discussions about what we already know about dark matter and the many present as well as planned experiments seeking to solve its mysteries.
- UZH contributed with a booth in the planetarium of Verkehrshaus Lucerne explaining the hunt for dark matter at LHC



YPF (young physicist forum)

- formed as a commission under the SPS, the Young Physicist Forum (YPF) is a committee of students from various Swiss universities with the goal to create a platform of communication for physics students
- this years' event was a 2 day visit to CERN
- <https://www.young-physicists.ch>



Geneva: hackaton and machine learning challenge

- CERN2Market hackathon to bring CERN expertise to the market, June 2
<http://www.unige.ch/dpnc/en/news/all-news/cern2market-hackathon/>
 with Tobias Golling and Sabrina Amrouche from DPNC:
 participants from all backgrounds discuss ideas of how to convert CERN expertise and technologies into market products guided by CERN scientists and industry actors. Selected proposals will be presented to industrial partners to implement the ideas into real world services.

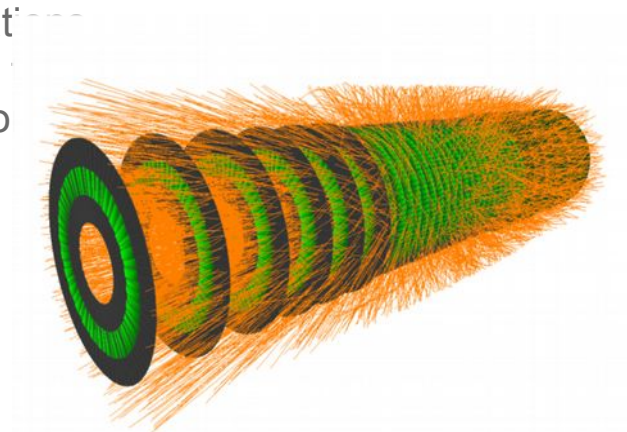


- Kaggle competition: a machine learning challenge for particle tracking (UniGe platinum sponsor)

<https://www.kaggle.com/c/trackml-particle-identification>

Scientists from the ATLAS, CMS and LHCb collaborations have launched the TrackML challenge – your chance to develop new machine-learning solutions for the next generation of particle detectors and win hardware and cash prizes.

Kaggle: <https://www.kaggle.com/competitions>



to come – science museum at UZH

first item for a future science museum at UZH campus Irchel - 1:10 model of the CMS detector



Talks for the general public, also on Part. Phys., are organized centrally at PSI in a series called 'Forschung live erleben'.



Typically ~100 participants.
(2018, A.Knecht)

Visits of groups of students and general public to PSI including presentations of PP and many guided tours.

Large range of group sizes from small numbers to 50-100 students (e.g. RWTH Aachen, M.Spira,)

Visits to schools, addressing students, explaining physics and what physicists do

- 2017, Gymnasium Münchenstein (BL) „Fenster zur Berufswelt“ (M.Hildebrandt)

or, addressing teachers,

- 2017, Kantonsschule Beromünster (LU) discussing “Thinking in humanities and natural sciences” (K.Kirch)

Services as external experts for CH-Gymnasium, involved in:

- selection of physics teachers
- check of written Matura problems
- participation to oral Matura exams (Ti, Lugano I, A.Antognini)

Various press releases concerning physics results, prizes, ERC grants issued by the PSI communications mostly addressing the local media.

- Angela Benelli is the SWISS EPPCN delegate: helps improving communication between CERN press offices, communication offices of Swiss universities and institutes, media and general public
- A new three-year agreement will be signed with CERN this year.
- Twitter @CHIPP_news is a very efficient way to push news, articles, events and job offers in Particle Physics
- Many articles in collaboration with B. Vogel

Angela Benelli



04.06.2018 | CHIPP | news

Namu Bae from Switzerland won an honour mention at the European Physics Olympiad in Moscow

Swiss high school students participated at the second in Moscow (Russia) from May 28 to June 1 this year.



25.06.2018 | CHIPP | news

In the triangle Uni Zurich-PSI-CERN

Anyone who studies physics at the University of Zurich knows Lea Caminada for her lectures. Most of the time, however, you will not find the particle physicist on the Irchel campus, but at the Paul Scherrer Institute (PSI) in Villigen in the canton of Aargau doing research. There, the 36-year-old scientist...



15.08.2018 | CHIPP | Medienmitteilung | Meldung

Elementarteilchen erobern die 200-Franken-Note

Am 22. August bringt die Schweizerische Nationalbank die neue 200-Franken-Note in Umlauf. Auf der neuen Banknote wird die wissenschaftliche Schweiz durch die Elementarteilchenphysik repräsentiert. Die Auswahl dieses Sujets ist Ausdruck des hohen Stellenwerts, den die teilchenphysikalische Grundlagenforschung in der Schweiz



05.07.2018 | CHIPP | news | Press release

NEWS from ICHEP2018, SEOUL, Korea

Many Swiss physicists are now in Seoul (Korea) for the very prestigious conference ICHEP2018. We report here their latest findings and contributions to the conference.



15.06.2018 | CHIPP | news | Press release

LHC with higher luminosity

On 15 June, the European Particle Physics Laboratory (CERN) in Geneva officially celebrates the upcoming upgrade of the Large Hadron Collider (LHC). By the year 2026, the performance of the world's largest particle accelerator will be significantly improved by many technical optimizations in...

Physics lessons – a day at School class of the Freies Gymnasium Bern g elementary particles



Students of the Freies focus on mathematic European particle ph Geneva on 24 April.

There they were introd physics by Bern Univer:

- European Strategy – communicate about it, and communicate about the involved projects.



16.04.2018 | CHIPP | news

The best way to new physics

If you are looking for unknown things, you usually do not know which way to go to find the unknown. This dilemma is also faced by scientists who want to advance into previously unknown areas of elementary particle physics. And yet they have to find a consensus on which experiments promise the...

- keep track of the media coverage related to particle physics in CH by linking all articles under “Media” on “particlephysics.ch” and act as the webmaster of this site.



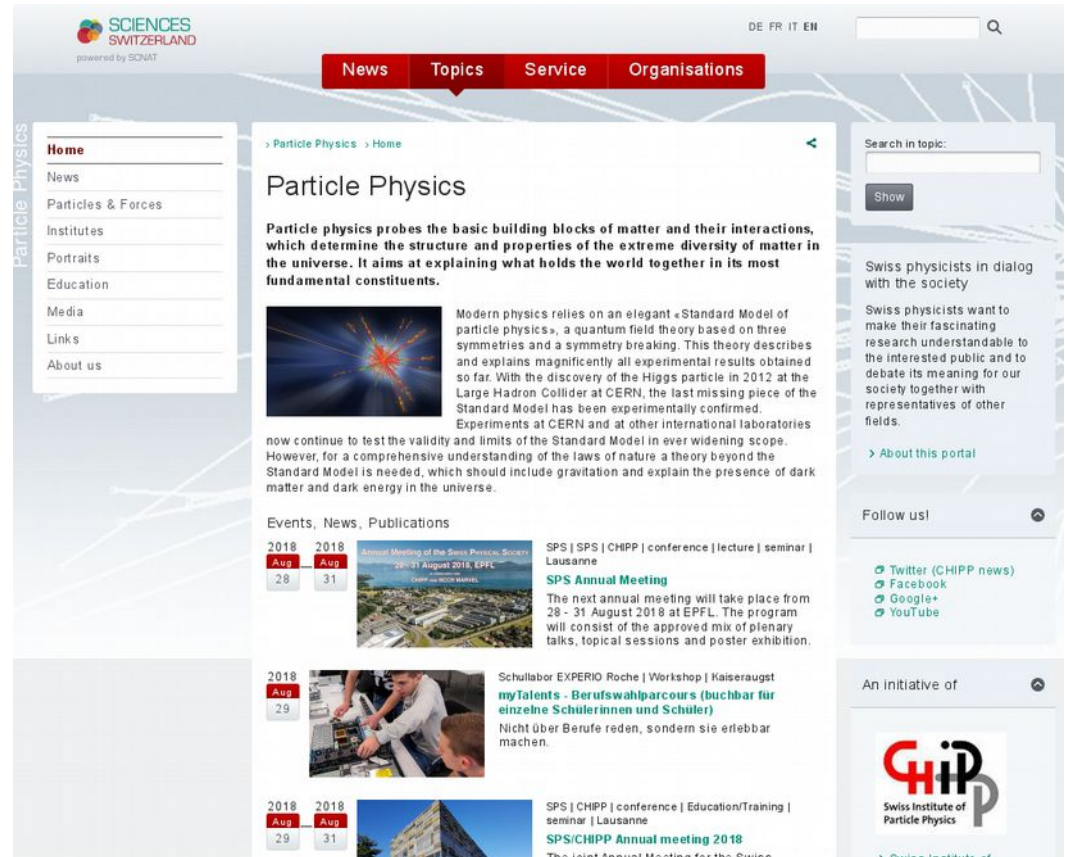
SPS | SPS | CHIPP | conference | lecture | seminar
| Lausanne

SPS Annual Meeting

The next annual meeting will take place from 28 - 31 August 2018 at EPFL. The program will consist of the approved mix of plenary talks, topical sessions and poster exhibition.

- the funding of the activities comes from CERN (5 kCHF) and from SERI (15 kCHF). We thank SERI for continued support!
- send news, articles, pictures etc to Angela: Angela.Benelli@cern.ch

- SCNAT provides portal for particle physics within the SCNAT web portal
<https://naturalsciences.ch>
- Benedikt Vogel writes about one article/month on particle physics research, activities, results and their application



The screenshot shows the 'Particle Physics' section of the SCNAT website. The header includes the 'SCIENCES SWITZERLAND' logo, language options (DE, FR, IT, EN), and a search bar. A red navigation bar contains links for 'News', 'Topics', 'Service', and 'Organisations'. A left sidebar lists categories: Home, News, Particles & Forces, Institutes, Portraits, Education, Media, Links, and About us. The main content area is titled 'Particle Physics' and features a detailed article about the Standard Model of particle physics, including a diagram of particle interactions. Below the article is a section for 'Events, News, Publications' with a calendar for August 2018. The calendar highlights the 'Annual Meeting of the Swiss Particle Physics Society' from August 28-31, 2018, and the 'SPS/CHIPP Annual meeting 2018'. The right sidebar contains a search bar, social media links (Twitter, Facebook, Google+, YouTube), and a section for 'Follow us!'.

> Particle Physics > About us

Swiss physicists in dialog with the society

Swiss physicists want to make their fascinating research understandable to the interested public and to debate its meaning for our society together with representatives of other fields. They initiated in 2013 the project 'Interactions' in this perspective. The project directed by the physicist PD Dr. Hans Peter Beck from Bern is an initiative of the Swiss Institute of Particle Physics (CHIPP). The outreach portal was funded by the Swiss National Science Foundation (SNSF) with the Agora project 'Interactions' based on the former project called 'Das verflixte Higgs' (2012-2013), which was supported by the SERI. In 2016, the portal begins a second life with its migration on a portal of the Swiss Academy of Sciences (SCNAT) dedicated to particle physics. The text below describes the origin of the current site.

Document: [A look back at the Agora project "Interactions" \(2013-2015\)](#)

With the discovery of the Higgs particle, the CERN's particle physicists have celebrated a spectacular achievement in July 2012. The discovery had a huge impact in the media with 150'000 media reports globally reaching over one billion people. Many other research activities falling into the four branches of particle physics – high energy physics, neutrino physics, low energy physics and astroparticle physics – made less noise in the public opinion, but are almost as important towards a better understanding of our world. Furthermore, particle physics is not only of relevance for pure fundamental research, but is also at the forefront of new applications in industry, medicine, and the daily life.

Search in topic:

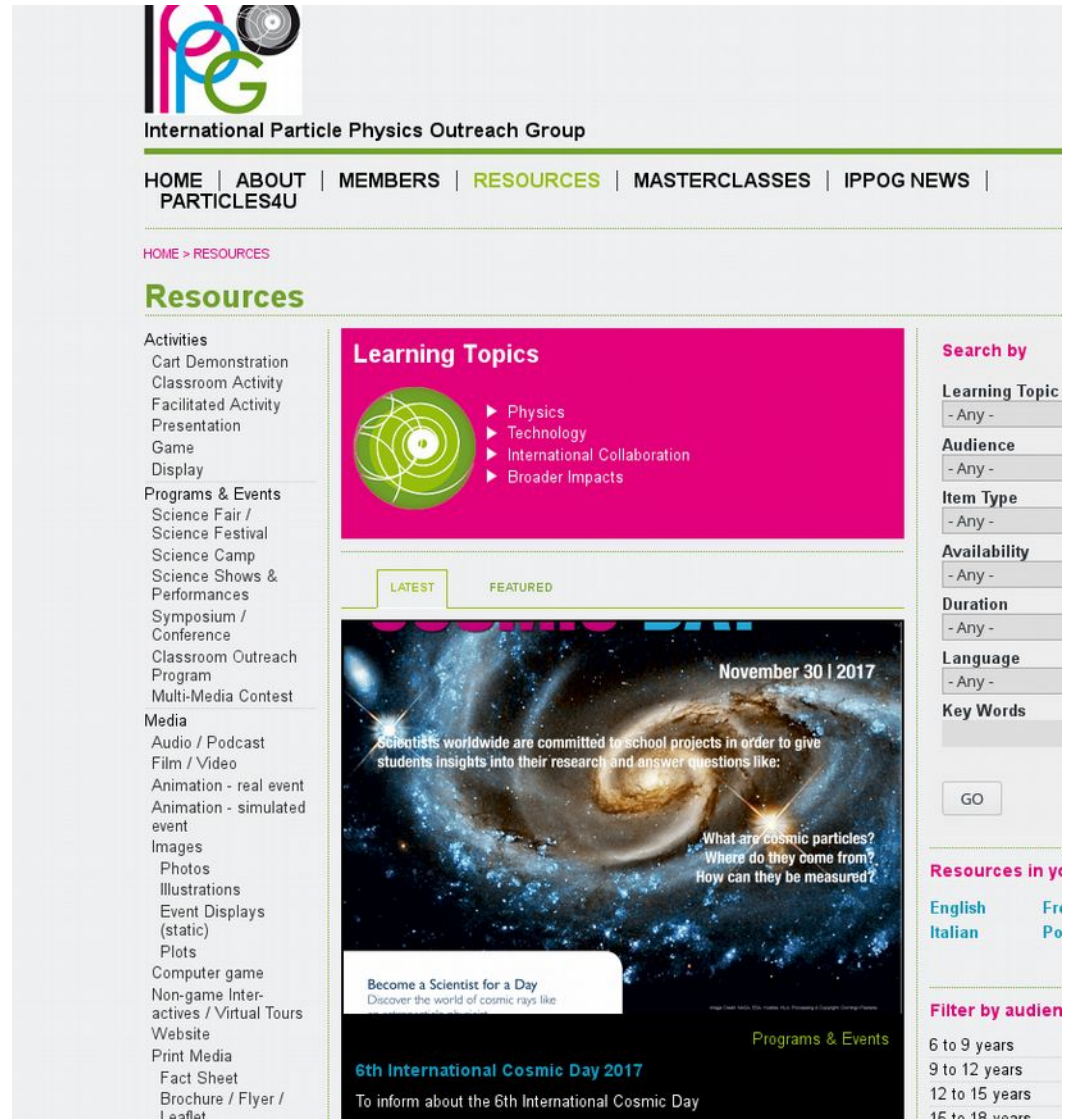
Show

Contact project
director 'Interactions':

PD Dr. Hans Peter Beck
Universität Bern
Sidlerstr. 5
3012 Bern
Tel. 022 767 11 94
Secr. 031 631 40 64
Fax 031 631 44 87

> Hans.Peter.Beck@cern.ch
Laboratory for High
Energy Physics

- IPPOG is a network of scientists, science educators and communication specialists working across the globe in science education and public outreach for particle physics
- an international collaboration members are countries, experiments and institutes (CERN, DESY)
- 2 collaboration meetings/year
spring meeting in Pisa
- Co-chairs: Steven Goldfarb and Hans Peter Beck



The screenshot shows the IPPOG website's 'Resources' page. At the top is the IPPOG logo and the text 'International Particle Physics Outreach Group'. Below this is a navigation bar with links: HOME, ABOUT PARTICLES4U, MEMBERS, RESOURCES (highlighted), MASTERCLASSES, IPPOG NEWS. The main content area is titled 'Resources' and features a sidebar on the left with a list of activity types and media formats. The main content area has a 'Learning Topics' section with a green circular icon and a list of topics. Below this is a 'LATEST' section featuring a large image of a galaxy with text about the 6th International Cosmic Day 2017. On the right side, there is a 'Search by' section with filters for Learning Topic, Audience, Item Type, Availability, Duration, Language, and Key Words. At the bottom right, there is a 'Resources in your language' section with links for English, Italian, and Polish, and a 'Filter by audience' section with age ranges.

International Particle Physics Outreach Group

HOME | ABOUT PARTICLES4U | MEMBERS | **RESOURCES** | MASTERCLASSES | IPPOG NEWS

HOME > RESOURCES

Resources

Activities

- Cart Demonstration
- Classroom Activity
- Facilitated Activity
- Presentation
- Game
- Display

Programs & Events

- Science Fair / Science Festival
- Science Camp
- Science Shows & Performances
- Symposium / Conference
- Classroom Outreach Program
- Multi-Media Contest

Media

- Audio / Podcast
- Film / Video
- Animation - real event
- Animation - simulated event
- Images
- Photos
- Illustrations
- Event Displays (static)
- Plots
- Computer game
- Non-game Interactives / Virtual Tours
- Website
- Print Media
- Fact Sheet
- Brochure / Flyer / Leaflet

Learning Topics

- ▶ Physics
- ▶ Technology
- ▶ International Collaboration
- ▶ Broader Impacts

LATEST | **FEATURED**

November 30 | 2017

Scientists worldwide are committed to school projects in order to give students insights into their research and answer questions like:

- What are cosmic particles?
- Where do they come from?
- How can they be measured?

Become a Scientist for a Day
Discover the world of cosmic rays like

6th International Cosmic Day 2017
To inform about the 6th International Cosmic Day

Search by

Learning Topic
- Any -

Audience
- Any -

Item Type
- Any -

Availability
- Any -

Duration
- Any -

Language
- Any -

Key Words


GO

Resources in your language

English | Italian | Polish

Filter by audience

- 6 to 9 years
- 9 to 12 years
- 12 to 15 years
- 15 to 18 years


[Login / Sign-up / FAQs](#)





International Particle Physics Outreach Group

[HOME](#) | [ABOUT](#) | [MEMBERS](#) | [RESOURCES](#) | [MASTERCLASSES](#) | [IPPOG NEWS](#) | [PARTICLES4U](#)

[HOME > WELCOME TO IPPOG NEWS WEBSITE!](#)

Welcome to IPPOG News website!

Get up-to-date information about the activities and plans of the IPPOG community by reading IPPOG newsletters and more!

July 2017		IPPOG is alive also in summer! :)
November 2016		What happened in IPPOG in 2016?
February 2016		Learn about IPPOG highlights in this second number of newsletter!
September 2015		Enjoy the first IPPOG newsletter from Autumn 2015!

outreach activities within science are needed to inform the general public, potential future students and politicians

- there are various channels - from talks or science events to interviews, films or using new media. It's great to see that many of these channels are actively used by CHIPP members
- outreach talks at/for schools are important → reach out to the parents
- getting teachers to CERN or to education events is difficult and needs larger effort
- coordinated outreach events – such as dark matter day, girls day, science nights are unique opportunities to reach a large audience with high presence in the media