

CHIPP - outreach report, June '23

Katharina Müller, Elena Graverini

High Schools & Students

- Masterclasses – at Bern, Geneva, EPFL and Zurich
- Workshops: Science Lab @ UZH, iLab @ PSI, Phiscope @ Geneva
- Visits at universities, CERN and schools
- Mentoring, workshops, visits at CERN, schools, internships

Events

- Women and girls in science, February 11: special programs for girls in science
- Women in Physics career event at SPS (mentoring project)
- Open Days (PSI, EPFL), Science Festivals (UZH), Night of physics (ETH, PSI), Night of Science (Geneva, Bern) with workshops, talks, booths, lab tours, experiments ...
- [Higgs@10](#): several activities (GE, BE, ZH) to celebrate 10 years since the discovery of the Higgs – thanks to SCNAT for support!

General public

- (Virtual) visits, (virtual) talks, videos, Youtube,...
- CHIPP articles – thanks to SCNAT for support!

Museum

- [Science Pavilion UZH](#): exhibit space with temporary exhibitions
New: gravitational waves
well attended guided tours for groups and general public (LHC & Dark Matter)



Dance your Science: proton collisions



Open days @ PSI

ideas/suggestions?

→ Katharina (kmuller@physik.uzh.ch)

For High School students

- Masterclasses
- School labs
- Visits at universities and at schools
- (Online) visits to the experiments
- Mentoring
- Matura projects

Masterclasses (high school students)



International masterclasses resumed in '23 with in total 251 CERN Masterclasses (ATLAS, CMS, LHCb & ALICE)

In addition: MINERvA, NovA (new), Belle II, Hadron Therapy, Pierre Auger (new)

Masterclasses Zurich (CMS), Bern (ATLAS), Geneva (ATLAS), Lausanne (LHCb) in spring '23 good attendance



School classes & visits

Workshops for students & schools:

- [Science Lab UZH](#): workshops, visits
- Science Pavilion UZH: guided tours
- [iLab, PSI](#) visiting program
- [Physiscope, Geneva](#)

Visits:

- [Science Pavilion UZH](#) for school classes
- [EPFL: Musee de Physique](#)
<https://www.epfl.ch/labs/lphe/visite-virtuelle-de-lhcb/>
- LHC experiments: many excellent online visits of the experiments with contributions of Swiss researchers



Internships / Matura projects / Mentoring

Internships / Maturarbeit (projects in final year of high-school)

- + very useful for students at university and high-school level
- + can attract good students to your group or university
- + visibility
- time consuming
- timing difficult (school holidays in summer)

Mentoring - at various levels:

- High-school (advisor for natura projects, eg [SCNAT](#))
- Girls in STEM (eg [Swiss Tec Ladies](#))
- Mentoring for Female Students ([ETH](#), UZH, SPS)
- [LHC Early Career Mentoring Projects](#)

For Students

- Mentoring (SPS, Universities)
- Career: SPS Women in Physics Career event
specific workshops (UZH)
- Regularly: CERN visits for bachelor and master students
- EPFL CERN visit for 80 master students
- ETH: camp for teaching assistants
- EPFL: one-week pre-university course

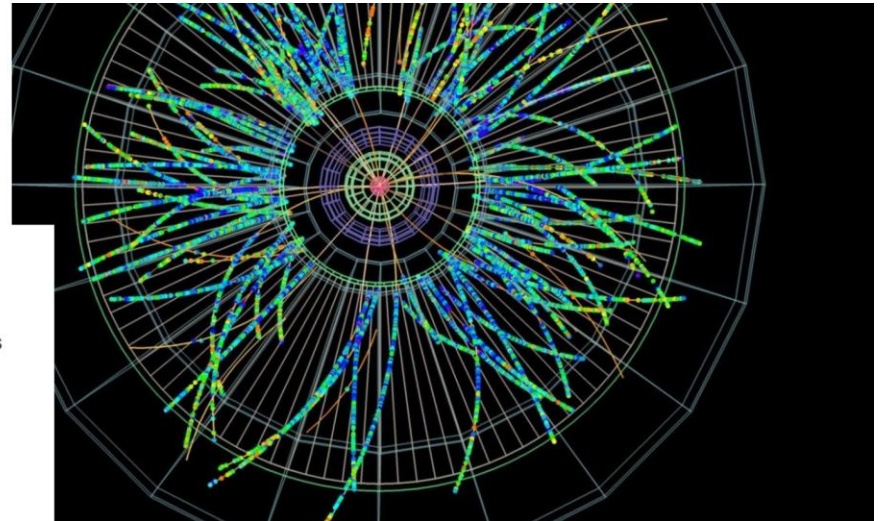


Students: EPFL pre-university course

- one-week pre-university course for high school students
- <https://www.epfl.ch/education/education-and-science-outreach/fr/accelerateur-delectrons-libres/>
- hosted visits at the lab during the fall & spring school holidays
- organizing similar visit on June 23, 2023

Accélérateur d'électrons libres


Comprendre la physique au-delà des formules et imaginer un monde où la téléportation est possible, tels sont les objectifs de cette série de semaines pré-universitaires destinées aux électrons libres du secondaire II passionnés de physique.



Students: ETHZ summer camp for physics TAs

ETH zürich Institute for Particle Physics and Astrophysics

Engaging Physics Tutoring **EPT-hub** Supporting Physics Teaching Assistants with trainings and engaging materials for their classes



The EPT summer camp for physics TAs

4-7 June 2023, Morschach

Key topics:

- engaging teaching
- Communication
- Self-management

ept.ethz.ch

[Link](#)



"We try to rethink the traditionally rather technical physics exercise class, inspiring TAs and their students to enjoy physics together!"

Events

- Women and girls in Science
- Higgs@10
- Nuit de la Science (Geneva)
- Nacht der Physik (ETHZ)
- Nacht der Forschung (Bern)
- Portes ouvertes (EPFL)
- Open Days (PSI)
- Science & Nature Festival, Long Night of Museums (UZH)

Women and girls in science, February 11

- Offer local schools the opportunity to welcome a female scientist/engineer to present her work to classes
- Interviews with and portraits from women in research
- Special activities/workshops for girls at the university

Higgs@10

- UZH: [educative walk](#) through the Irchel park with 10 posters introducing particles, interactions and LHC, FCC and the experiments. Guided tours for school classes
- Geneva: [interactive particle physics card game](#) to learn about the particles of the SM
- Bern: Particle Fever screening in Bern and discussion
[Particle Trail at the Einstein Terrasse in Bern](#)

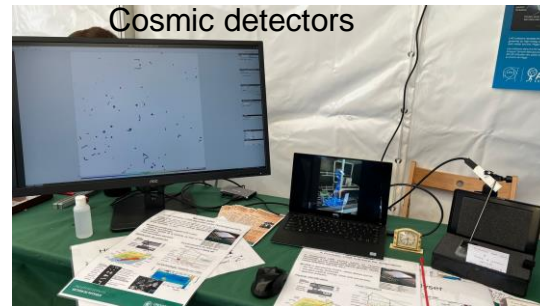
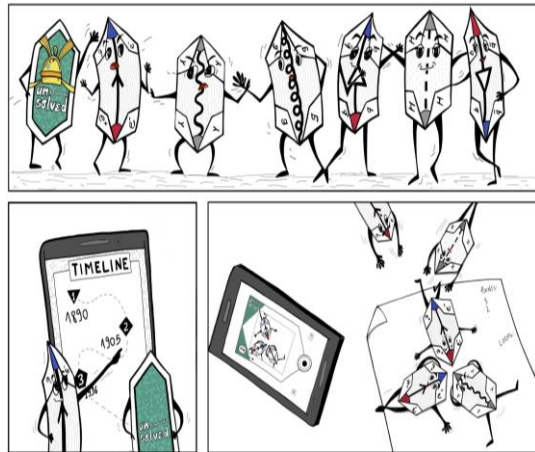


Geneva Nuit de la Science 9-10 July 2022

Francesco Riva presented a card game developed withing the SNSF Agora project unsolved

<https://un-solved.com/game/>

The game is inspired by Feynman diagrams and the Higgs boson is the card that gives most points and can also be used for schools



The Higgs Wheel of fortune



Particools" cards

Night of Physics (ETH and PSI)

Lectures, lab visits, hands-on experiments, booths

Guenter Dissertori: Was haben das Higgs Boson und Alzheimer-Früherkennung gemeinsam?

Rainer Wallny Quarks, Higgs & Co.: Neues vom Large Hadron Collider

Klaus Kirch, ganz Kleines und ganz Grosses – von Teilchenphysik und Musik



PSI Open Day – impressions

[A Finger on the Pulse of Research – Homepage for the Open Day 2022](#)



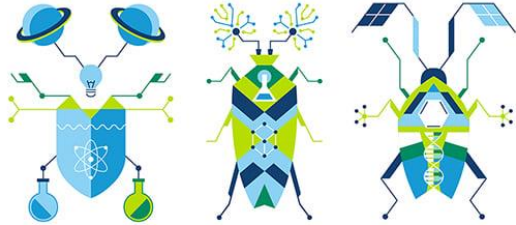
EPFL portes ouvertes, April 29-30



Science & Nature Festival, Long Night of Museum (UZH)

Workshop on cosmic rays and cloud chambers

SCIENCE
AND NATURE
FESTIVAL



22.-30. MAI 2021 | ENTDECKEN | ERFORSCHEN | VIELFALT FEIERN



Long Night of Museums

[Dance your Science](#): acceleration and collision of protons
[video](#)

Talk on particle physics at CERN



Nacht der Forschung (Bern)

- 10 September 2022 [Nacht der Forschung](#)
- Around 10,000 people visited the "Fair of Knowledge", where more than 750 researchers shared their knowledge at over 70 stands, including with the help of around 1,000 science posters.
- The Albert Einstein Centre of Uni Bern (AEC) participated with a full scale interactive exhibition in a full tent 'AEC village'



CHIPP articles

About 10 articles per year, funding from SCNAT since 2015

Published articles:

CHIPP : <https://chipp.ch/de>

SCNAT: <https://naturalsciences.ch/>

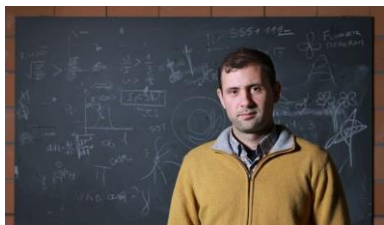
Scientific writer: Barbara Warmbein since 1/22

Ideas for an article?

Contact Katharina (kmueller@physik.uzh.ch)



Articles from Barbara Warmbein



June 23: [New flavour for Basel](#) portrait Admir Greljo

April 23: [Order through kaons](#), portrait Radoslav Marchevski

May 23: [First sighting of neutrinos from a collider collision](#)

Feb 23: [Strange animals in the spotlight](#)

Jan 23: [Impact of physics](#) (economic and social value, study by SPS)

Nov 22: [No Axion action](#) (Beam EDM experiment)

Nov 22: [Looking for just that little bit of difference](#) (properties of the neutron)

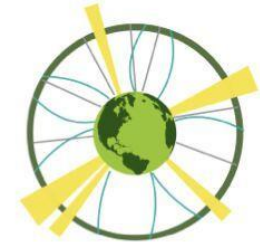
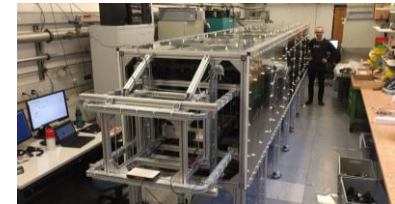
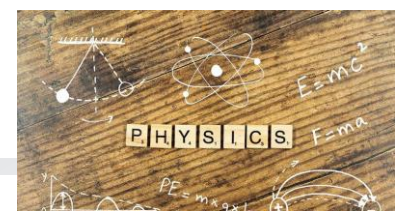
Oct 22: [In search of a global solution to a global problem](#) (sustainable HEP)

July 22: [Restarting the LHC: a new era of physics](#)

July 22: [Hopp Higgs](#)

June 22: The symmetries of the very big and very small (CHIPP prize)

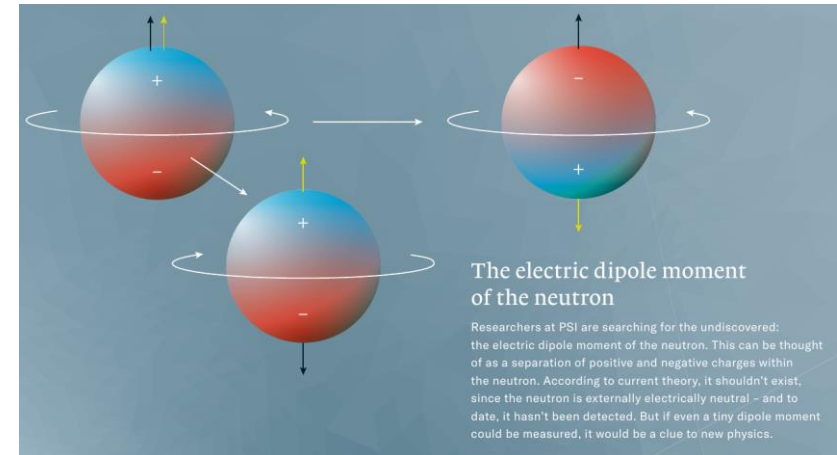
To come: CHIPP prize, Collaboration with industry, NUPECC summary, SND, Neutrinos



PSI Summary

Klaus Kirch

- [Open Day: Finger on the Pulse of Research](#), Oct 23 (p 14)
- Guided tours at PSI
- [iLab, PSI](#) for schools
- 25th PSI summer school on particle physics in Zuoz
Vision and Precision“ Aug 14 – 20, 2022
90 participants (52 CH, 30 EU, 8 non EU) and 7 lecturers
- Huge success for electronics apprentice working in particle physics
[gold medal at Swiss Skills](#), [silver medal at world championship](#)
- 23-25 January 2023, [Open CHRISP Users Meeting](#) & Review of the PSI experiments
- 2 February 2023, [PSI magazine 5232, Issue 1/2023](#) mostly on particle physics at PSI
- 05 April 2023: [Media release](#) in view of the start of the JUICE mission
- Pint of Science



Bern Summary

Hans Peter Beck

- [Higgs@10](#): Particle Fever screening in Bern and discussion [Particle Trail](#) at the Einstein Terrasse in Bern
- Summer 2022: High school student internship of seven students (2 from Bernese high schools for a two weeks program and 5 from Italy for a two month program) fully immersed in LHEP activities
- 10 September 2022: [Nacht der Forschung Bern](#) (p 17)
- CERN visits
CERN Protocol Visit "Visite confédérale du Conseil d'État des Grisons et du Conseil d'État de Genève"
[Physics Department of Uni Fribourg at CERN](#) (34 part.)
Swiss High School Teachers at CERN (31 part.)
High school (15 part.), Bachelor students (35 part.)
- ATLAS masterclass with 40 participants
- [Video](#) at CERN and ATLAS (Radio Television Svizzera Rumantsch)
- SPS Focus 2 – Impact of Physics on Swiss Society
([Paper](#), [Factsheet](#), [CHIPP article](#))
- SPS Young Physicists Forum hosted in Bern



SPS Young Physicists Forum hosted in Bern

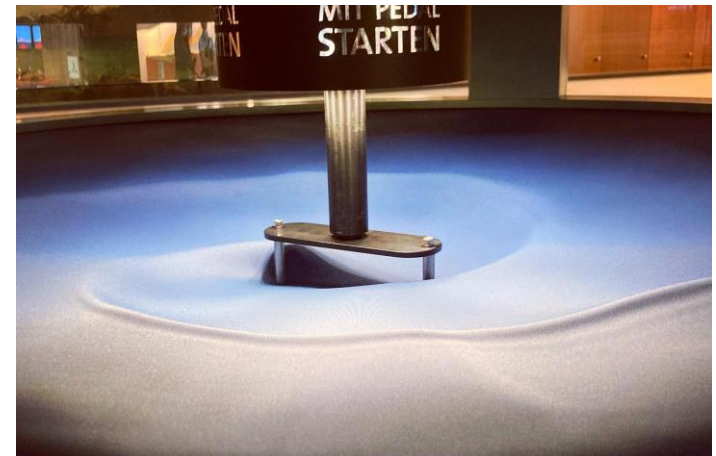


Summer students at Bern

UZH Summary

Katharina Mueller

- Science & Nature festival for the general public workshop with cloud chambers (p16)
- Long night of museums (p16) talk on particle physics, dance your science
- [Higgs@10](#) (p11)
- CMS masterclass with 75 participants
- Workshops for high school classes on particle physics and cosmology cosmology at [Science Lab UZH](#)
- Guided tours through the physics department
- Guided tours through the physics exhibitions [Science Pavilion UZH](#) for schools and the general public
- New exhibit on gravitational waves at [Science Pavilion UZH](#)
- Open Day of the physics department
- January: Swiss Physics Olympiad



ETHZ Summary

Thea Arrestad

- Günther Dissertori „Treffpunkt Science City“
Das Higgs-Teilchen und Alzheimer
13 k views on [Youtube](#)
- EPT summer camp for physics TAs (see p 8)
- Lange Nacht der Physik (see p 13) with more than 10'000 visitors
- CHIPP Winter School 2022
- Luigi Marchese is PI for a new project with the Italian Disney magazine for kids "Topolino (Mickey Mouse)" → three stories to be published in the magazine in 2022-23 to teach kids about some of the most cutting-edge topics in science
publication: June 28 together with a short interview



EPFL Summary

Elena Graverini

- › Accélérateur d'électrons libres (pre university course for high school students) (p7)
- › LHCb masterclasses
- › CERN visits for master students
- › Portes ouvertes at EPFL (p15)



Geneva Summary

Anna Sfyrla

- › ATLAS masterclasses
- › Faculty of Science “Athena” project for high-school students:
New “seminaire de lecture” involved weekly guided study of the Higgs discovery paper
- › “Boussole” at physics section, with presentation of various research activities and talks including “ML & Physics” for high-school students:
- › Open Day „La physique fait son show“
- › Nuit de la Science (p 12)
- › Participation to VIP visits at CERN / ATLAS (e.g. Conseil d'état de Genève and the PSI directorate together with some of our particle physics colleagues)
- › “ML & physics” presentations at UniGe Data Science Center events
- › [Data Science Day "Promises of AI"](#) plenary presentation and panel on “The rise of generative modelling and anomaly detection in science”
- › [Video capsule](#) on ML & physics for interdisciplinary competences
- › Interview for Canada TV on ML, to be released later this year
- › Interview for US/Canada TV for Gamma ray bursts documentary, to be released later this year
- › Participation with articles to “Astrophysics and Cosmology news” for CERN courier

International networks – IPPOG

Katharina Mueller



International Particle Physics Outreach Group — <http://ippog.org>

The IPPOG collaboration comprises 37 members
30 countries, 6 experiments and CERN as an international laboratory and 2 associate members

Organises masterclasses for more than 13'000 high school students a year



Lots of outreach material already available or being developed

International networks - EPPCN (European particle physics communication)

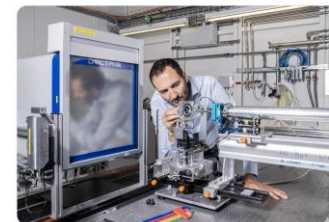
Angela Benelli

- **Social Media Working Group**
- **ENVIRONMENT Working Group**

☐ Womens in Science 11 Feb → [link](#)

☐ Sustainability & Environment day 5 June → [link](#)

CHIPPnews @CHIPPnews · 6 Jun
 DID YOU KNOW THAT... the Swiss Light Source SLS 2.0 @psich.ch will significantly improve the intensity of the synchrotron light at the experimental stations from 2025 onwards reducing energy consumption by 30 percent? #EPPCNewEnvironment
psich.ch/en/media/press-releases
 @CERN @ETHZ @UZH



CHIPPnews @CHIPPnews · 10 Feb
 I enjoy discussing physics with me collaborators until we understand a complex physical phenomenon.
 But I also like very much sitting at my desk and playing with equations to derive something new.
 Ruth Dumer (U. Geneva)
chipp.ch/en/meetings.do



UZH Science @UZH_Science · 11 Feb
 Happy 🌍🌱 #WomenInScienceDay, for which we highlight past and current #WomenInScience to inspire the #FutureGeneration!
 Who inspired YOU to become a #scientist?
 Who's your #WomanInScience? 🙋🙋🙋🙋
 Learn about #Pioneers and our #GameChangers
mf.uzh.ch/en/mnf-gleichs



First campaign:

WORLD ENVIRONMENT DAY
 5 June

Based on a pool of stories and material that can be used in different countries and contexts

social media +
 web-based articles +
 local (internal) events

CHIPPnews @CHIPPnews · 6 Jun
 Researchers organize sustainability workshop to reduce the scientific carbon footprint
chipp.ch/en/uuid/1/51a5a

21.10.2022 | Press release | News

In search of a global solution to a global problem

Researchers organize sustainability workshop to reduce the scientific carbon footprint

No one can avoid the energy crisis – not even science. Faced with rising cost and possible power shortages, research centres such as CERN in Geneva are already taking action: in addition to power-saving measures such as switching off lights and ringing in the heating season later, accelerators will be switched off two weeks earlier than planned and operations will be shortened by 20% next year.

Sender: CHIPP
 Swiss Institute of Particle Physics
 Contact: Swiss Institute of Particle Physics (CHIPP), CH Post, St. Rue 240/Kollmator, Universität Zürich, Department of Physics, 8057 Zürich, Switzerland
 Telephone: 022 552 3111, E-mail: chipp@chipp.ch

Paul Scherrer Institut @psich.ch · 9 Jun
 A sustainable heat supply on the PSI Campus is now a reality. We use the warm cooling circuits of the accelerators as a direct heat source and plan to use one of the two chillers of SLS 2.0 as a heat pump in winter.
 #EPPCNewEnvironment #CHIPPnews

Photo: Sanderling Seven Photography

CHIPPnews @CHIPPnews · 8 Jun
 Did you know that... Existing waste from the operation of conventional nuclear power plants could even be used as fuel?
 Learn more about the Transmex project and about the engagement of the community for a more sustainable future
 #EPPCNewEnvironment
chipp.ch/en/activities/...

Highest Safety Profile | Burns Long-Lived Waste | Profitable Energy
 TRANSMUTEX
 Collaborating Nuclear

CHIPPnews @CHIPPnews · 7 Jun
 Did you know that... The use of High Temperature Superconductors (HTS) and normal conducting technology for the combined function magnets is explored aiming for potential savings above 10% of the synchrotron radiation power?
psich.ch/en/activities/...
 #EPPCNewEnvironment
 @CERN @EPFL

Websites & Social Media

besides the websites of the institutes and laboratories lots of additional activities

- particle theory, gravity and cosmology <https://un-solved.com/about/> (EPFL and Geneva) funded by an Agora grant of the SNF
- particlephysics.ch
about one article/month on particle physics research, activities, results and their application (supported by Swiss Academy of Sciences, SCNAT)
- IPPOG <http://ippog.org>, newsletter <http://ippog.org/news>
- Facebook: Verflixtes Higgs (<https://www.facebook.com/VerflixtesHiggs/>) fed by Hans Peter Beck
- CHIPP Twitter account [@CHIPP_news](https://twitter.com/CHIPP_news) to spread physics news and increase the public awareness about science
- EPFL maintaining: LHCb Experiment twitter account: [@lhcbexperiment](https://twitter.com/lhcbexperiment) and instagram account with around 3500 and 13000 followers respectively

Twitter: Geneva: [@DPNC_Unige](https://twitter.com/DPNC_Unige), Bern [@bernlhep](https://twitter.com/bernlhep), Zurich: [@UZHPhysics](https://twitter.com/UZHPhysics), PSI [@psich_en](https://twitter.com/psich_en), ETH [@ETH_en](https://twitter.com/ETH_en), EPFL [@EPFL_en](https://twitter.com/EPFL_en)