Swiss Institute of Particle Physics

an Association according to Swiss law

Annual Report 2021

Participants at the CHIPP Annual meeting 2021, Spiez.

A. Benelli. CHIPP

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4 February 2022/AB

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

SUMMARY

Highlights of the Year

The main highlight of 2021 was the Annual CHIPP meeting. This year it was held in the beginning of June in Spiez, a village on the lake Thun, in the welcoming Hotel Seaside. For two days we scheduled presentations from the various experts in CHIPP to cover the three physics pillars: particle physics at the high-energy and intensity frontiers, astroparticle physics, and neutrino physics. The main goal was to cover the actual state of the field highlighting the sectors where hints of discover are found. The many talks presented were shared between senior and young researchers. Both the CHIPP board meeting and the CHIPP formal Plenary meeting were held during the two days; in parallel with the Board meeting the CHIPP Young scientists organised talks and a poster session. The plenary formal part of the meeting hosted 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 this meeting CHIPP held the elections to cover the different roles in the association and to select the Swiss representatives in the international organizations. During this meeting CHIPP held the elections to cover the different roles in the association and to select the Swiss representatives in the international organizations. A special session was dedicated to Searches for new physics: Flavour physics at the LHC, the field where many measured anomalies point to New Physics.

In the end of August, CHIPP participated to the annual meeting of the Swiss Physical Society at the Innsbruck University in Austria, helping with the organization of parallel sessions for particle and astroparticle physics where many Particle Physics students presented their work. As part of the SPS award ceremony where all winners of the various SPS prizes were honoured and the CHIPP prize for the best 2021 PhD thesis work in particle physics was awarded to Gabriel Cuomo, scientist at the École Polytechnique Fédérale de Lausanne (EPFL). Gabriel receives the award for his doctoral thesis, with the laudation "*The CHIPP Prize jury honours Gabriel Cuomo for his outstanding theoretical studies of quantum field theories in the strongly coupled regime, which elucidated new properties relevant to a variety physical system: from condensed matter to cosmology*".

During 2021, the CHIPP Executive Board and the CHIPP Board were very active in the editing of the Swiss CHIPP Roadmap as the document to illustrate to politicians and to the public the priorities of the Particle Physics community in Switzerland. The CHIPP EB kept the FLARE Tables updated with the funding of experiments of the Swiss National Science Foundation (SNSF), the Board continued to exchange information and feedback with the funding agencies.

To get flexibility for more actions towards young physicists, possibly to organise a student award the CHIPP EB proposes to increase both the personal membership fees and the institution fees, the decision has been accepted by the CHIPP Board.

The CHIPP outreach activities continued supporting the thematic portal hosted on the SCNAT website, the multi-lingual "particlephysics.ch". Thanks to the SCNAT support, we could continue to keep this a lively page with 10 interviews and a video given by B. Vogel, a professional journalist, and several other news articles and press releases in 2021.

SECTORS OF COMPETENCE: NETWORKING AND DEVELOPMENT OF SCIENCE

Meetings, Workshops and Schools

In 2021 CHIPP continued to work on its networking and educational goals and organized directly or through its members several meetings, schools and workshops.

- 25-29 January 2021, PSI Online, Open CHRISP Users Meeting. Review of the PSI experiments.
- 6-9 April 2021, PSI Online, HIMB Physics Case Workshop, Adrian Signer, Stefan Ritt.
- 26-27 April 2021, UZH Online, Workshop on Next-Generation Liquid Xenon Detector for Dark Matter, and Other Rare Events, Laura Baudis
- 22-30 Mai 2021, UZH, Science and nature festival
- 14-18 June 2021, U. Trieste Online, 16th Patras Workshop on Axions, Wimps and Wisps, Laura Baudis.
- 15-30 July 2021, EPFL, The Seventh Machine Learning summer school (Online) MLHEP 2021, Lesya Shchutska
- 16-27 August 2021, 49th SLAC SUMMER INSTITUTE SSI 2021, lectures from Dr Jan Steggemann, Dr Valerie Domcke
- 9-11 September 2021, PSI & UZH Online, Workshop on Pico-second timing detectors for Physics, Chris Betancourt.
- Scientifica 2021 UZH ETHZ

Prof. Mike Seidel (EPFL) and Dr Tatiana Pieloni (EPFL) contributed to a MOOC (Massive Online Open Course) on accelerators, as part of the European programme ARIES.

On a dedicated webpage in the CHIPP website are some online presentations that took place online during the 2021 from young researchers.

INTERNATIONAL ACTIVITIES

Scientific cooperation

Research in particle and astroparticle physics usually involves large infrastructures, which are the result of regional, national and worldwide collaborations. To cover the important intellectual and technological challenges, the amounts

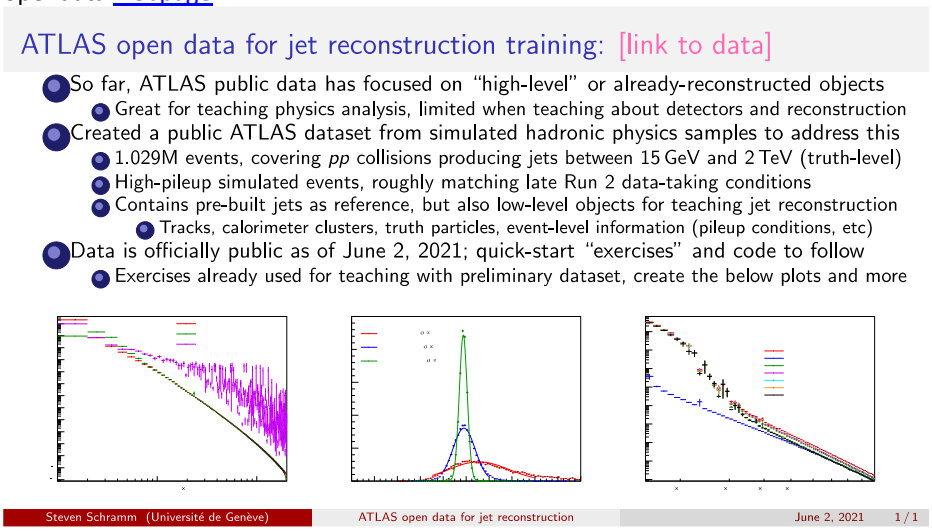
of human and financial resources required can no longer provided by a single country. The table below shows a snapshot of the current international experimental collaborations involving CHIPP Board members.

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. Here below some of the activities coordinated by CHIPP members:

- Michael Spira, Convenor of 3 Subgroups (BR, bbH, MSSM) of the LHC Higgs working group
- Stefan Ritt (MEG II), Frank Meier (Mu3e), Bernhard Lauss (n2EDM), Aldo Antognini (CREMA), Andreas Knecht (muX) coordinate the regular (between monthly and annually) collaboration meetings of the respective projects at PSI

During 2021 two PSI community papers were published:
«Science Case for the new High-Intensity Muon Beams HIMB at PSI» Editors: Andreas Knecht, Frank Meier, Thomas Prokscha, Stefan Ritt, Adrian Signer
«Review of Particle Physics at PSI» Editors: Adrian Signer, Klaus Kirch, Cyrus Hoffman.

S. Schramm (University of Geneva) created an ATLAS open dataset for outreach and teaching purposes that was made public in June 2021. An illustration of the project is in Fig. XX and more details can be found at the CERN opendata webpage.



Project	Swiss institutes	CHIPP Board Members	Institutes worldwide
High-Energy particle physics			
ATLAS	Bern, Geneva	Beck, Ereditato, Golling, Iacobucci, Nessi, Sfyrla, Weber, Wu	218
CMS	ETHZ, PSI, Zurich	Botta, Caminada, Canelli, DeCosa, Dissertori, Grab, Kotlinski, Kilminster, Wallny	198
LHCb	EPFL, Zurich	Bay, Nakada, Schneider, Serra, Shchutska	81
LHC Tier-2	ETHZ, CSCS	Grab	> 200
HL-LHC	EPFL, PSI	Seidel	55
CLIC	ETHZ, PSI	Seidel	70
FCC	Bern, EPFL, ETHZ, Geneva, PSI	Blondel, Rivkin, Dissertori, Laine, Seidel	134
Na64	ETHZ	Rubbia	8
FASER	Bern, Geneva	Iacobucci, Sfyrla, Scampoli	18

Astroparticle physics			
AMS	Geneva	Wu	63
ArDM	ETHZ	Rubbia	7
CTA	ETHZ, Geneva, Zurich	Biland, Montaruli, Canelli	210
DAMIC	Zurich	Kilminster	10
DAMPE	Geneva	Tykhonov	?
DARWIN	Bern, Zurich	Baudis	24
IceCube	Geneva	Montaruli	50
MAGIC+FACT	ETHZ	Biland	24-4
XENON	Bern, Zurich	Baudis	27
Neutrino physics			
GERDA	Zurich	Baudis	18
MICE	Geneva	Blondel	28
NA61 / T2K / HyperK	Bern, ETHZ, Geneva	Blondel, Ereditato, Sanchez, Rubbia	33-63-75
SBN (MicroBooNE)	Bern	Ereditato, Weber	34
SHiP	EPFL, Geneva, Zurich	Bay, Blondel, Kilminster, Serra, Shaposhnikov	53
WA105 + DUNE	Bern, ETHZ, Geneva	Blondel, Rubbia, Weber	21-175
High-precision and muon physics			
CREMA	ETHZ, PSI	Hildebrandt, Kirch	9
GBAR	ETHZ	Rubbia	18
MEG II	PSI	Hildebrandt, Ritt	15
Mu3e	ETHZ, Geneva, PSI, Zurich	Blondel, Dissertori, Grab, Hildebrandt, Kotlinski, Ritt, Wallny, Serra	8
MuMass	ETH, PSI	Crivelli	
nEDM/n2EDM	ETHZ, PSI, Bern	Kirch, Lauss, Piegsa, Soter (?)	15
PANDA	Basel	Krusche	64
Other			
Medical	Bern	Braccini, Scampoli	?
Novel Detectors	Bern	Kreslo,	
Ion-Beam Physics	ETHZ	Synal	

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. EPFL researchers organized the LHCb Starterkit lessons.

Institutional collaboration (in alphabetical order):

Several CHIPP Board members are acting as official delegates to international organizations in 2019:

- ***Hans Peter Beck*** (U. Bern) has been President of the Swiss Physical Society in the years 2020, 2021. He represents Switzerland in the European Physical Society Council. He is the Swiss representative 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 member of the Dark Matter advisory committee. She is the APPEC Scientific Advisory Committee chair. She is member of the Academy of Sciences and Literature, Mainz.
- ***Florencia 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. She is CMS physics coordinator.
- ***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. He is the Swiss scientific delegate to the CERN Council since January 2019 on mandate of the State Secretariat for Education, Research and Innovation (SERI).
- ***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.
- ***Malte Hildebrandt*** (PSI) is the Swiss BFE-delegate to IAEA Workshop on Advances in Neutron Detectors.
- ***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. Member of the European Strategy Group for EPPSU.
- ***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 chair of the APPEC General Assembly. She is also member of the LNGS Scientific Advisory Committee. As APPEC Chair she is an invited Member of the European Strategy Group of EPPSU.
- ***Katharina Müller*** (UZH) has been the Swiss representative in the IPPOG Collaboration since September 2017. She is in the organisation committee of the SM@LHC Conference.
- ***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. Swiss representative at the European Strategy Group of EPPSU.
- ***Stefan Ritt*** (PSI) is president of the Nuclear and Plasma Sciences Society NPSS of IEEE. He has been awarded a prestigious IEEE prize.
- ***Leonid Rivkin*** (EPFL and PSI) is the Strategy Secretariat Member of the European Strategy Update in Particle Physics in EPPSU. Prof. Leonid Rivkin was chair of the CERN Scientific Policy Committee (SPC) in 2021
- ***Mike Seidel*** has been re-appointed in 2021 member of RECFA representing Switzerland.
- ***Olivier Schneider*** is member of the Particle Data Group, he is convener of a sub-group of the Heavy Flavour Averaging Group (HFLAV).
- ***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 2021.

Several CHIPP members were committed to international responsibilities:

- ***Andreas Knecht*** (PSI), Delegate to Plenary ECFA until end of 2021
- ***Olaf Steinkamp*** **(**UZH) is a member of the Kruger International Advisory Committee.

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.

Several information days for future students were organised, in Zurich at the University three sessions in March and September with approximately 130 pupils participated; ETH organised two "unterwegs" at two high schools (Baldegg LU, and Bern). Elena Graverini (EPFL) organized 4 sessions at the Liceo Galilei, Siena (IT) with 80 participants.
Information days for pupils in the last year before their Matura/baccalaureate were organised, at UZH 6 evets with more than 120 pupils; at the EPFL 20 participants visited the particle physics lab of Prof. Schneider and Prof. Shchutska. Events were organised also for smaller students, at the UZH one event hosted 24 participants while at the EPFL Maria Vieites Diaz visited a class of 15 students of the Galician primary school. Frederic Blanc (EPFL) intervened for a special event "Journée des métiers" organised for school children in Lausanne; Dr Ana Barbara Rodrigues Cavalcante (EPFL) organised an online event "Kid Game Jam". At the University of Zurich an open day for children was organised, it hosted 50 children.

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).

Figure 2 Masterclasses

Figure 3 HSSIP - CERN webpage

Since 2017 CERN invites high-school students to come to CERN for two weeks, to gain practical experience in science, technology, and innovation (High-School Students Internship Programme, HSSIP). Each student gets a supervisor and works on a project, eg. working on vacuum techniques, accelerators or in experimental areas, or working on an analysis or a simulation project. Switzerland takes part for the first time; HSSIP was scheduled for Autumn 2020 and then re-scheduled to Spring '21. It was finally decided to move it to Autumn '21, 24 students were very happy to participate.
At PSI 5 high-school students had an internship of 3 weeks in particle physics, while the University of Geneva hosted a high school student for a two-weeks internship as a stage "extra-muros".
Dr Valérie Domcke (EPFL) gave outreach talk at Jashore University of Science and Technology, Bangladesch (18/10/2021, online) while Prof. Joao Penedoens (EPFL) gave an outreach talk "What is Quantum Field Theory?" at PLANCKS 2021 on 08/05/2021, targeting undergraduate physics students from several schools.
Bernd Krusche (University of Basel) gave a talk ('Bausteine der Materie') to a class from the Muensterplatzgymnasium in Basel (was in presence).

In the following we outline a few of the key activities for the general public and high-school students of the past years:

- Visits to CERN: CERN as the centre of high energy research is extremely attractive for visits which are organised regularly by CHIPP members. In recent years about 50 visits a year were organised for university students in physics and other disciplines, high-school students, alumni, politicians, members of societies, media, and the general public at large. Two special VIP visits were organised by the University of Geneva, the first to accompany the Swiss chancellor Walter Thurnherr, the second to introduce the Swiss president Guy Parmelin to CERN and its experiments. The EPFL members organised several virtual vistis to CERN to which more than 1000 people participated, Violaine Bellée, who moved in 2021 from EPFL to UZH, played a major role in the organisation of most of these events and promoted virtual visits at LHCb in an amazing way.
- During the COVID pandemic several institutes offered Guided Tours to visit the laboratories and facilities; PSI, for example, Georg Bison, Urs Greuter, Klaus Kirch, Andreas Knecht, Patrick Schwendimann offered free guided tours to find out more about the research topics of the Paul Scherrer Institute in the company of an expert.
- Teacher education: we collaborate with secondary-school teachers in the development of innovative and interesting physics demonstrations, sometimes using particle physics data. Education of secondary-school teachers is done by providing teaching material, via the CERN Teacher program and specific topical workshops as well as open days for teacher at our institutes.
- Outreach lecture for high school students: young researchers offered to spread their passion for science, we have collected some of them on the dedicated CHIPP webpage.

• UNSOLVeD, funded by Agora: is a platform with 10 videos addressing open questions in physics - from quantum field theory to dark matter. They are used to create a dialog with non-scientist, with particular target on high-school students.

Specialised school labs as well as lectures and workshops for school classes play a key role in attracting young students to study STEM related subjects. There are several dedicated laboratories at our institutes that offer special courses in cosmology as well as particle, astroparticle and neutrino physics for school classes targeting different ages of young students. With hands-on experiments, visits to the labs and by meeting bachelor and master students they get in contact with state-of-the-art research and passionate researchers (iLab at PSI, Science Lab at the University of Zurich, Physioscope at University of Geneva).

Figure 4 iLab - PSI

Figure 5 Science Lab - UZH

Several events were organised during the year; researchers helped and participated giving presentations and supporting young kids to get closer to scientific topics:

- 25.3.2021: Lea Caminada, Presentation at PGZ, «Neues von den Experimenten am PSI», http://pgz.ch/events/ss21/event.20210325/index.html

- 31.3.2021: Klaus Kirch, public (remote) talk at PSI: «Forschung online erleben: Mit kosmischen Teilchen den Geheimnissen des Universums auf der Spur», https://www.psi.ch/de/psiforum/news/forschung-online-erleben-chrisp ; the event was followed by a remote tour of the CHRISP facility at PSI
- 31.10.2021: Andreas Crivellin, Manager Retreat at Quinta do Cabo, Portugal, "Das Standardmodell der Teilchenphysik"
- 10.11. & 15.11.2021: Andreas Crivellin, Studium Generale of the Business School Alb-Schwarzwald in Rottweil, "Das Standardmodell der Teilchenphysik"
- 27.11.2021: Michael Spira, Studienstiftung des deutschen Volkes, Sektion Freiburg, "Theoretische Teilchenphysik – Mein Leben als Teilchenphysiker"
- Malte Hildebrandt, 1.Dezember 2021, Gymnasium Münchenstein, Event: «Fenster zur Berufswelt», Presentation: «Physiker in der Teilchenphysik am PSI»
- Dr Tara Nanut Petric contributed to the following Viewpoint article in Nature Review Physics, entitle "The spectrum of early career physics": https://doi.org/10.1038/s42254-021-00379-2, https://rdcu.be/cywDF
- Dr Tara Nanut Petric was also a member of the organizing committee of the LHC Mentoring Programme (20 mentor-mentee pairs were initiated, mixing all 4 major LHC experiments)

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. 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".

On the 14 April 2021, Lea Caminada gave a motivational talk at the CMS job matching event.

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 2020 with the addition of 10 interviews, a video 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 2020 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.
At the EPFL, G. Pietrzyk is in charge of the LHCb Experiment Twitter account: @lhcbexperiment and the LHCbExperiment Instagram account with around 26.3K 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 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.
Several articles have been published on magazines, here are some of them:

- 08.04.2021: Andreas Crivellin, Interview in NZZ article, https://www.nzz.ch/wissenschaft/teilchenphysik-das-myon-weckt-zweifel-am-standardmodell-ld.1609736
- 27.11.2021: Andreas Crivellin, SRF-Wissenschaftsmagazin, «Das Standardmodell der Physik, reicht es noch?», https://www.srf.ch/audio/wissenschaftsmagazin/erkaeltungen-schuetzen-wohl-vor-sars-cov-2?id=12093671
- Georg Bison, Dieter Ries, Philipp Schmidt-Wellenburg, «Ein Weg zur Lösung des kosmischen Antimaterie-Rätsels?», Physik in unserer Zeit 4, 52 (2021), https://onlinelibrary.wiley.com/doi/10.1002/piuz.202101607
- The SCNAT published the portrait of Prof Laura Baudis as part of the Women in Science campaign https://map.scnat.ch/en/activities/women_scientists/uuid/i/5582add7-b65d-5c8f-a776-ac2f4cf6b19e-Making_the_invisible_visible
- On the State Italian Television (RAI) during the "Super Quark show" a report on Flavour Anomalien of LHCb was presented by Nico Serra and Gino Isidori from the UZH.
- Nico Serra (UZH) was interviewed on Flavour anomalies on several magazines: higgs.ch, UZH News, NZZ, Tagesanzeiger.
- LHCb results: Astronomische Gesellschaft Graubuenden (Katharina Müller)
- Rätsel Dunkle Materie" for the Evangelischer Frauenbund Zurich (Laura Baudis)
- Cristina Botta Low-energy leptons for high-energy physics (CERN Physics Briefing) https://cms.cern/news/low-energy-leptons-high-energy-physics
- LHCb collaboration: Test of lepton universality in beauty-quark decays arXiv:2103.11769
- Podcast for UniGe data science centre "Learning from data" on Physique corpusculaire et grand collisionneur de hadrons https://soundcloud.com/user-842727938/lfd9_as

Video: Since the traditional open day at the Physics Department of the University of Zurich had to be cancelled the students and postdocs of the University of Zurich prepared short videos presenting their research.

- Bernhard Lauss, CNRS-Movie: n2EDM / UCN@PSI
- 29.06.2021: Lea Caminada, CERN LIVE (June 2021), CMS Pixel installation, https://www.youtube.com/watch?v=d0I-h4cX9e0
- this was missing from Ben YouTube channel for the UZH physics institute, and uploaded ~20 videos of experimental demonstrations for introductory physics: https://www.youtube.com/channel/UC1BPD7mzUXvzBZttnUg-i1w
- Federico Sanchez (UGe) : You can mentioned my participation in the Neutrino film: https://pariscience.fr/wp-content/uploads/2021/09/GP_EPK_June_21.pdf

Gender issue & society

Several events were organized in the contest of the "International day of women and girls in science" project of the United Nation, around the 11 February:

- February 2021: Lea Caminada, Int. Day of Women in Science, participation to UZH Physik-Institut's action, https://www.physik.uzh.ch/de/institut/International-Day-of-Women-and-Girls-in-Science-.html
- 10. Mai 2021: Lea Caminada, UZH physics student organization FPU (https://www.fpu.uzh.ch/de.html) 'Role model Event' Women in Science, participation to panel discussion.
- 11. Februay: International day of women and girls in Science UZH: twitter statements from women in physics at UZH
- Launched project "Mercredi à l'Uni" to promote science among kids helping at the same time parents who work at the UniGe with childcare on Wednesday afternoon, when there is no school at the Canton de Geneve. https://www.unige.ch/sciences/fr/lafaculte/organisation/commissions/egalite/mercredi-a-luni/
- Dr Valérie Domcke was panelist at the 'Women in Research' conference, organized by University College Cork, Ireland (09.02.2021, online),

Exhibitions

When was it ? Science Exploratorium UZH with three exhibits on CMS, Deark Matter and Superconductivity https://www.sciencelab.uzh.ch/de.html

4 November 2021, Focus Terra ETHZ Gravitational waves in the context of the AGORA-Project "The irresistible attraction of gravity"

22-30 Mai 2021, UZH, Science and nature festival; Booth on XENON, CMS and Superconductivity.

4 September, UZH at the Zürcher Museen, Lange Nacht der Museen. Booth on XENON, CMS and SUperconductivity.

4-5 September 2021, Scientifica, Synthetic naturally, ETHZ & UZH. Booth on particle physics at CERN and dark matter Labtour to XENOSCOPE

Abbildung 1 XENOSCOPE

Abbildung 2 Theater: three black holes at a bar

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