

Dear Reader,

This Newsletter is intended for all SPS members, researchers, industries, students, interested specialists and physics friends. Feel free to share this Newsletter within your community, and follow this [link](#) if you want to add a person to our mailing list.

If you wish to give your contribution with news or suggestions, please do not hesitate to contact me at: margherita.boselli@cern.ch

Kind regards,

Margherita Boselli

SPS MATTERS

Helvetica Physica Acta

Getting bored during these long summer remote-working days? Why not take a look to some historical papers collected in *Helvetica Physica Acta* (1928-1999). They are easily accessible from the [SPS Webpage](#). Enjoy the reading of captivating titles such as: "[Large black holes have no hair](#)".



WHAT'S UP IN SWITZERLAND?

"Ma thèse en bande dessinée"

Irène Cucchi, a researcher at the Quantum Matter Physics Department of the University of Geneva, who successfully defended her PhD thesis on July the 2nd 2020, created a **comic strip to describe her PhD work** in collaboration with the illustrator Flavie Ndam. Her goal is to present some of the challenges of condensed matter physics to the general public, and to summarize her PhD project in an accessible and entertaining way. The result is great. Congratulations Irène for your PhD and for this excellent idea. The text is written in french, is titled "Ma thèse en bande dessinée", and can be read [here](#).



The image is extracted from the comic strip.

New generation filters based on TiO₂ nanowires

A team of researchers led by Lázló Forró, head of the [Laboratory of Physics of Complex Matter](#) at EPFL, is developing a **filtering technology containing titanium dioxide nanowires able to trap and destroy pathogens using light**. This discovery has very promising applications in personal protection equipments, filters for ventilation systems and air conditioning. Indeed, traditional disposable protection masks, based on non-

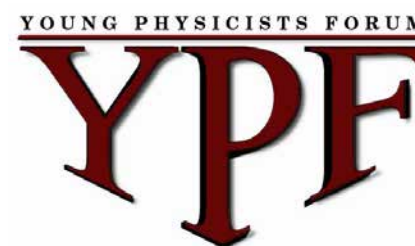


woven polypropylene plastic microfibrils, can simply trap pathogens, whereas this technology uses the photocatalytic properties of titanium dioxide to neutralize trapped bacteria and viruses. This work, appeared in [Advanced Functional Materials](#), shows the effect of this material on *E.Coli*, the reference bacterium in biomedical research. A complete summary of this work is available [here](#).

*In the image: the prototype of a mask based on this technology (extracted from the [paper](#) appeared on *Advanced Functional Materials*).*

Young Physics Forum

The Young Physicists Forum organizes every year a week-end of lectures for students. The goal is to give students the possibility to learn more about a certain topic and to visit different Swiss universities. Due to the Covid-19 pandemic, the 2020 YPF will be an online forum with Zoom, and it will take place on



Saturday the 19th and Sunday the 20th of September 2020. The topic will be Interdisciplinary physics: a miscellaneous of biophysics, medical physics, geophysics, atmospheric physics, climate physics and marine physics. The participation is open to all students (BSc, MSc or PhD) in physics or related fields, and it is free. You can find more information and register [here](#).

Quantum Industry Day – 2020

The **Quantum Industry Day** will take place on **October the 2nd 2020 at the Zurich Technopark**. It is a one day event that gathers together academic and industrial R&D specialists to exchange ideas and contribute to the development of innovative quantum products. The program of the event is rich and includes quantum computing, quantum sensing, quantum instrumentation and quantum communication. The **registration is open until September the 30th 2020** and all the information can be found [here](#).



A Swiss bronze medal at the European Physics Olympics

Between July the 22nd and July the 26th, 260 high-school students from 53 countries took part in the 2020 virtual edition of the European Physics Olympics (EuPhO). Among them, there were five Swiss students Dominik Moos, from Kantonsschule Zug (ZG), Leo Thom, from Kantonsschule Kreuzlingen (TG), Loïc Nicollerat, from Lycée-Collège de la Planta (VS), Max Wipfli, from Kantonale Mittelschule Uri (UR), and Tobias Riesen, from Gymnasium Burgdorf (BE), who (except for one of them) met at the University of Bern to participate to the challenges. Despite the lack of live interaction with the other participants, the Swiss team enjoyed both the theoretical and the practical tests, and obtained remarkable results: **Dominik Moos won the Bronze medal** and Loic Nicollerat, Leo Thom and Tobias Riesen obtained honours for their performances. Read all the details about the event [here](#).



In the image: the Swiss team during the EuPhO at the University of Bern (courtesy: Physics Olympics).

COSPAR report 2018-2020: Space Research in Switzerland

The Swiss Academy of Sciences (SNAT) recently published the 2018-2020 report on Space Research in Switzerland.

Switzerland is very active and a reliable partner in space research activities. On the occasion of the 43rd COSPAR Assembly in Sydney, Australia, the Swiss Committee on Space Research of SCNAT reports on its activities to the international community. Swiss scientists and industries have broad interests

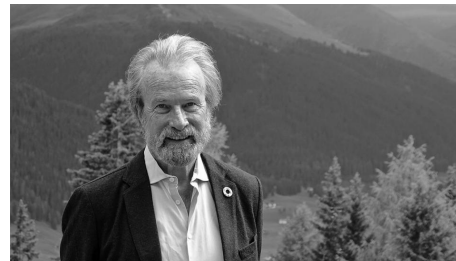


in many fields with technical innovation capabilities to match. This is reflected in the diversity and depth of this report available [here](#).



WLS loses its director Konrad Steffen

On Saturday August the 8th Konrad Steffen, the director of the Swiss Federal Institute for Forest, Snow and Landscape research (WSL) [was killed in a tragic accident](#) during field works in Greenland, near the Swiss Camp. Steffen was an exceptional scientist, a specialist on climate change, he was the director of the Swiss Polar Institute, professor at EPFL and at ETH Zurich.

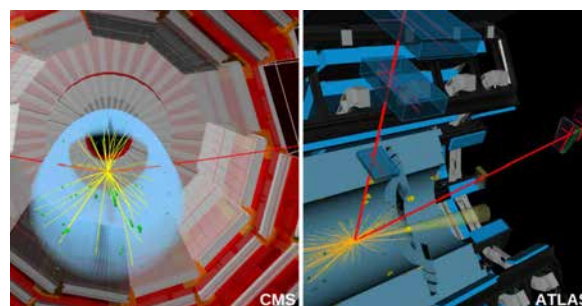


The Swiss Physical Society would like to express its sincere condolences to his family, his friends and all his colleagues.

WHAT'S UP IN THE WORLD?

First observations of Higgs boson decay in two muons

At the 40th ICHEP conference, the ATLAS and CMS experiments announced **new results which show that the Higgs boson decays into two muons**. The muon is a heavier copy of the electron, one of the elementary particles that constitute the matter content of the



Universe. While electrons are classified as a first-generation particle, muons belong to the second generation. The physics process of the Higgs boson decaying into muons is a rare phenomenon as only about one Higgs boson in 5000 decays into muons. These new results have pivotal importance for fundamental physics because they indicate for the first time that the Higgs boson interacts with second-generation elementary particles. Read [here](#) the CERN press release, the [ATLAS](#) Arxiv paper and [CMS](#) analysis summary.

In the image: CMS and ATLAS events (courtesy: CERN).

International Day of Light 2020

The 16th of May is the [International Day of Light](#). It is a global initiative that focuses on the appreciation of light and its role in different fields spanning from fundamental research and technological applications to art and culture. Many private and public

institutions celebrate this event every year with activities and initiatives for the public. Due the Covid-19 pandemic, most of the 2020 edition initiatives took place on-line, but received a lot of attention from the public and the international press. They are summarized in the [annual report](#) recently published. The planning for the next year celebration will begin within a few months: all those who have ideas or interest for collaborations, sponsorships, or other participation opportunities can contact seethelight@lightday.org, the International Day of light organization.



ANNOUNCEMENTS

23 PhD fellowships in Physics at the University of Vienna

The **Vienna Doctoral School in Physics (VDSP)** at the **University of Vienna** is a vibrant community

- Of more than 130 capable, creative and critical young researcher personalities,
- Embedded in more than 40 scientific teams,
- With innovative experimental, theoretical and computational capabilities.

They are offering 23 PhD positions in a large diversity of research fields. For detailed

information about projects and procedures, please visit [this webpage](#).

Online applications are accepted until **August the 30th, 2020**.

The most promising candidates can be invited to Vienna for the recruitment days in fall 2020, to meet the faculty and to explore how their interests and capabilities match our research opportunities.

PhD position available at the University of Bern

A PhD position in online event selection using Machine Learning Techniques with the Atlas experiment at CERN's Large Hadron Collider is open at the University of Bern. The detailed job description can be downloaded [here](#). Candidates are requested to send a short letter of motivation, their CV, and names and contact information of references to Prof. Dr. Hans Peter Beck at hans.peter.beck@cern.ch. The review of applications will continue until the position is filled.

The Swiss Physical Society (SPS) unites persons interested in physics from university, schools, research, development and industry. The SPS promotes the scientific exchange of ideas in Switzerland and with its international environment.

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