

Dear Reader,

You scientists shape this newsletter.

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. If you would like to share some news with us, please contact Celine.Lichtensteiger@UniGe.ch.

WHAT'S UP IN SWITZERLAND?

Decarb Science! But how?

Join the Swiss Academy of Sciences' Symposium - 24 May 2019, Bern

Boston, Copenhagen, Kyoto: science is global and scientists are jetting around the world. Like the rest of society, science should lower its carbon emissions to net zero emissions in the next 30-50 years, in order to halt global warming below +2 degrees Celsius. Scientists and scientific institutions need to act now. Yet, how is it best to achieve decarbonisation? Is global science with only very few flights possible? Are there any tradeoffs for the scientific competitiveness? Register **TODAY** to join the ScNat Symposium. [\[more\]](#)



Picture: Carbon Footprint Science. Credit: Hansjakob Fehr, 1 kilo / Horizonte SNF

Art & Science

Espace Ballon - May 2019 - March 2020, Château-D'Oex

The temporary exhibition in espace Ballon in Château-D'Oex is presenting selected works by CERN researcher [Michael Hoch](#), as well as the foundations of particle physics explained and related by CERN researcher [Hans Peter Beck](#), from the Universities of Bern and Fribourg. The exhibition provides a historical overview and adds a local touch on the discovering of cosmic rays, where the physicist Albert Gockel from Fribourg established first hints in the balloon flights he undertook over a century ago. [\[more\]](#)



Particle Acceleration, God and School Education

Interview with the SPS President

Dr Hans Peter Beck grew up in Weggis and works as a physicist at CERN. In a interview, he talks about the particle accelerator, God and the school class and tells us that "*Physics is the simplest explanation we have to conceive the world*". Read the interview in the [Freier Schweizer](#).



Picture: Dr Hans Peter Beck in front of the University of Pérolles in Fribourg, where he also gives lectures. Credit: Matthias Niederberger / Freier Schweizer.

SATW Technology Outlook 2019

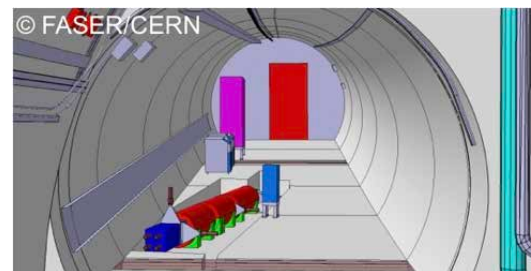
Every two years since 2015, the [SATW](#) presents its list of the most promising technologies for Switzerland. Big data and sustainable food production top the list for their commercial potential. On the other hand, machine learning or photo-voltaics offers the most skills. Technology represents hundreds of thousands of jobs and a significant share of GDP. Photonics alone represents a current market of 4 billion francs - and this is only one of the 37 technologies examined by the report. The report is written and supervised by about 50 scientific experts from industry and academia, with support from [SERI](#). Read the report in [French](#) or [German](#).



FASER will be Operational in 2021

Complementing existing searches for dark matter at the LHC

The CERN Research Board approved a new experiment designed to look for light and weakly interacting particles at the LHC. FASER, or the Forward Search Experiment, will complement CERN's ongoing physics programme, extending its discovery potential to several new particles. Some of these sought-after particles are associated with dark matter, which is a hypothesised kind of matter that does not interact with the electromagnetic force and consequently cannot be directly detected using emitted light. Astrophysical evidence shows that dark matter makes up about 27% of the universe, but it has never been observed and studied in a laboratory. FASER will search for a suite of hypothesised particles including so-called "dark photons", particles which are associated with dark matter, neutralinos and others. The experiment will be installed during the ongoing Long Shutdown 2 and start taking data from LHC's Run 3 between 2021 and 2023. [\[more\]](#)



WHAT'S UP IN THE WORLD?

Xenon-124, the Longest-Lived Unstable Element Ever

The [XENON1T](#) collaboration has just publicly announced the discovery that xenon-124 is fundamentally unstable. With a half-life of 1.8×10^{22} years which is more than one trillion times the age of the Universe. It's the longest half-life ever measured directly. The XENON experiment is a collaboration of 160 scientists, representing 24 different nationalities, and 27 institutions across the world. Switzerland participates with the group of [Laura Baudis](#) from University of Zürich. Read the Nature paper [here](#).



Picture: The XENON1T detector, with its low-background cryostat, is installed in the centre of a large water shield to protect the instrument against cosmic ray backgrounds.

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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