

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](mailto:Celine.Lichtensteiger@UniGe.ch).

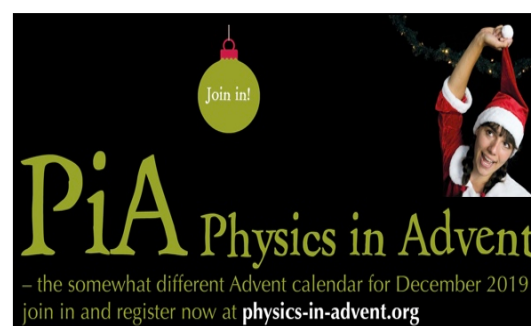
## WHAT'S UP IN SWITZERLAND?

### PiA - Physics in Advent

*Still 24 experiments until Christmas - from 1 to 24 December 2019*

Physics in Advent to do at home or in the class room? Every day, discover a new physics experiment and exciting tasks that can be done with standard household materials, with a Youtube video clip in German and English. PiA is designed for pupils aged 11 to 18 years, but as experienced in previous years, parents, teachers, students or simply those interested in physical phenomena also

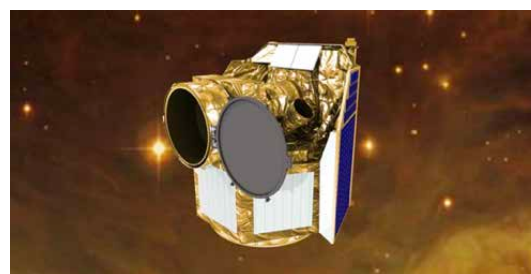
have great pleasure in it. In the end, the results will be evaluated: individually, for a class group or even for entire schools. The best participants, classes or schools receive prizes: iPods, books and experimental kits, or even a trip to Dallas to NBA basketball games with Dirk Nowitzki [watch [here](#)]. In addition, SPS is sponsoring special prizes for school teams and for individual pupils who are enrolled in Swiss-based schools. Register [here](#) [English] or [here](#) [German].



### In the search for life-friendly planets

*CHEOPS is getting ready for its launch*

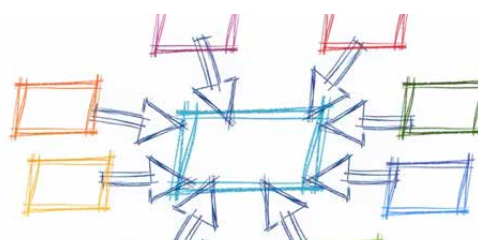
The space telescope CHEOPS - CHaracterising ExOPlanet Satellite - arrived in Kourou, French Guiana, to start launch preparations at Europe's Spaceport. CHEOPS was built at Uni Bern, and is expected to take its journey into space in **mid-December 2019** to support the search for potentially life-friendly planets. Read more about CHEOPS Uni Bern [here](#), public CHEOPS launch events [here](#), Uni Bern facebook post [here](#).



### National Thematic Networks NTN

*New Innosuisse call*

The Innosuisse call «NTN – Innovation Booster» has been launched. Themes of economic relevance are to be addressed in an innovative manner: new scientific findings provide important momentum and may lead to the launch of process, product or service



innovations in the foreseeable future. Teams from universities, business and society are sought to collaborate around a defined innovation theme to create and fund concrete innovation ideas. Interested? Apply [here](#).

## 11th Swiss Forum for Science Education

Geneva, 23-24 January 2020 - Reminder

The biennial forum of the Swiss Science Education Association ([DiNat](#)) and of the Swiss Association for Geography Education ([VGD/ADG](#)) will take place in Geneva the **23-24 January 2020**. There are 55 contributions offering an up-to-date and stimulating picture of the field in Switzerland and neighboring countries. Registration will be open in the next days. The program and more information can be found [here](#).



## Small-scale cosmology with dwarf galaxies

Oliver Müller receives the Edith Alice Müller Award 2019

The PhD Prize of the Swiss Society for Astrophysics and Astronomy (SSAA) is awarded this year to Oliver Müller for his dissertation on "Small-scale cosmology with dwarf galaxies" conducted at the University of Basel. The Milky Way and Andromeda galaxies are each surrounded by a thin plane of satellite dwarf galaxies that may be corotating. Cosmological simulations predict that most satellite galaxy systems are close to isotropic with random motions, so those two well studied systems are often interpreted as rare statistical outliers. Oliver Müller's work shows that corotating satellite systems may be common in the universe, challenging small-scale structure formation in the prevailing cosmological paradigm. Read more [here](#).



Image: Oliver Müller / Flyer of Edith Müller Award. Credit SSAA/UniGE

## Evading Heisenberg isn't easy

Shomroni et al, Phys. Rev. X 9, 041022 (2019)

Physicist from EPFL Lausanne, with colleagues at the University of Cambridge and IBM Research–Zurich, unravel novel dynamics in the interaction between light and mechanical motion with significant implications for quantum measurements designed to evade the influence of the detector in the notorious "back action limit" problem. Read more [here](#) (EPFL website) or find the paper [here](#).

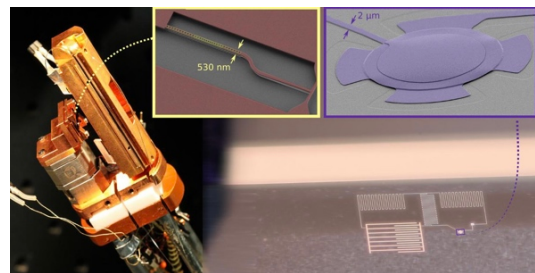


Image: Two different quantum optomechanical systems used to demonstrate novel dynamics in backaction-evading measurements. Credit: I. Shomroni, EPFL.

## Science and exploration using space-born platforms

A report on space science in Switzerland and recommendations for the future

This roadmap document presents an overview of space science in Switzerland as of **2019** and recommendations for its future. It was edited by Nicolas Thomas (Univ. of Bern), president of the Commission for Space Research (CSR) of the Swiss Academy of Sciences (SCNAT). Read more and find the report [here](#).



## WHAT'S UP IN EUROPE?

### Importance of physics to the economies of Europe

*New study by the EPS*

On **15 October 2019**, the European Physical Society (EPS) has presented its new report "*The Importance of Physics to the Economies of Europe*". The report was commissioned by the EPS as an independent economic analysis from the Centre for Economics and Business Research (Cebr) to answer two key



questions: how important is physics to the economies of European countries, and how worthwhile is it to maintain and increase investment in physics research, innovation and development. The report is available [here](#).

## WHAT'S UP IN THE WORLD?

### Don't fear the robots. Worry about algorithms replacing any task that can be automated.

*A report from MIT and IBM*

Martin Fleming is chief economist at IBM. Together with a team of researchers, he analyzed 170 million online US job listing posted between 2010 and 2017. Learn more by reading the WIRE article by Sara Harrison [here](#), or read the publication by the MIT-IBM Watson AI Lab on "*The Future of Work: How New Technologies Are Transforming Tasks*" [here](#).



*Photograph: Tobias Schwarz/Reuters*

### Proton radius puzzle closer to being resolved

*Xiong et al., Nature 575, 147 (2019)*

A long-awaited experimental result at the CEBAF accelerator at the Thomas Jefferson National Accelerator Facility in Newport News, Virginia has found the proton to be about 5% smaller than the previously accepted value. The finding has helped to prompt a redefinition of the particle's official size and



seems to spell the end of the "*proton radius puzzle*", which has enthralled physicists since 2010, when R. Pohl et al. measured a 4% shrink of the proton radius when using muonic hydrogen at the Paul Scherrer Institut. Read more [here](#) (Nature article) or [here](#) (Nature news). Access the paper [here](#).

*Photograph: The CEBAF accelerator at the Thomas Jefferson National Accelerator Facility in Newport News, Virginia, was used to measure the radius of the proton. Credit: DOE's Jefferson Lab*

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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