

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).

## Nobel Prize

### Nobel Prize in Physics 2019

*For contributions to our understanding of the evolution of the universe and Earth's place in the cosmos*

Michel Mayor and Didier Queloz from the University of Geneva have been awarded the **2019** Nobel Prize in physics “for the discovery of an exoplanet orbiting a solar-type star” in **1995**. The cosmologist James Peebles shares the other half of the prize “for theoretical discoveries in physical cosmology”.



While James Peebles' theoretical discoveries contributed to our understanding of how the universe evolved after the Big Bang, Michel Mayor and Didier Queloz explored our cosmic neighbourhoods on the hunt for unknown planets. With a new type of spectrograph, built in collaboration with the observatories of Haute-Provence, Geneva and Marseille, dubbed ELODIE, light from 142 stars could be measured in parallel precisely. Using it, Mayor and Queloz detected a periodic shift in the light coming from the star 51 Pegasi, a sunlike star in the constellation Pegasus. The length of the period, and thus the time it took for the presumed planet to circle around its host star, was just four days. It was this unexpectedly short period that allowed them to observe many cycles, firming their discovery and allowing others to quick confirmation.

The Swiss Physical Society congratulates all three awardees for their major contributions deepening our understanding about the cosmos. [more: Nobel Prize [webpage](#); UNIGE [webpage](#)]

*Image: an illustration of 51 Pegasi, the first planet to be discovered orbiting a sunlike star. ©NASA/JPL-Caltech*

## WHAT'S UP IN SWITZERLAND?

### A hand like no other

*When neutrons are good for archeology*

Made of bronze and gold 3'500 years ago - but how exactly was it made? Two amateur archaeologists dug it up in the fall of **2017** in the Bernese Jura. Researchers now examine this bronze sculpture at PSI's SINQ neutron source to find answers together with restorers.



This will enable conservators to get a unique view into the interior of the sensational find and gain insights into how it was made. Worldwide, there are only around a dozen facilities where neutron radiography can be conducted. [\[more\]](#)

*Picture: Archaeological Service of the Canton of Berne / Philippe Joner*

## CHIPP Prize 2019 goes to PSI researcher Dr. Michał Rawlik

*The neutron and a big question*

Michał Rawlik, who studied physics at the Jagiellonian University in Krakow and earned his doctorate at the Swiss Federal Institute of Technology in Zurich (ETHZ), was awarded the CHIPP Prize 2019. The 29-year-old researcher received the award for his doctoral thesis on the electric dipole moment of the neutron. The experiment he co-developed could one day help answer the question of why there is much more matter in the universe than antimatter. His work was presented on **29 August 2019** at the [SPS/OPG annual meeting](#) at the University of Zurich. His talk can be found [here](#). [\[more\]](#)



*Picture: CHIPP Prize 2019 Michał Rawlik at the SPS/OPG joint meeting at the University of Zurich. ©SPS, Switzerland*

## "Green peas" provide clues to the early days of the universe

*Marie Heim-Vögtlin Prize awarded to Anne Verhamme*

Primordial galaxies have triggered the period in the history of the universe known as “cosmic reionisation”. The Geneva-based astronomer Anne Verhamme has succeeded in demonstrating this by studying green pea galaxies. In recognition of this work, the SNSF has awarded her this year's Marie Heim-Vögtlin prize on **16 September 2019**. [\[more\]](#)



*Picture: Geneva-based astronomer Anne Verhamme wins the Marie Heim-Vögtlin prize 2019. © SNSF / Cornelia Vinzens*

## Scale-up coaching

*Innosuisse offers a new coaching program*

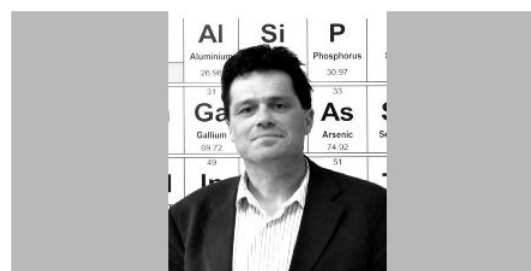
Have you been experiencing significant growth for your business? The new Innosuisse “Scale-up coaching program” aims to assist you in boosting this growth. The voucher of up to CHF 75,000 is intended to support companies that are active in a scientific field, already employ at least five full-time staff and have a very high growth potential. The call is open until **25 October 2019**. [\[more\]](#)



## Howard Flack Crystallographic Lecture Series 2019

*Design of Advanced Materials by Prof. Matthew Rosseinsky*

Prof. Matthew Rosseinsky (University of Liverpool, UK) will give a series of lectures on the design of advanced materials in various places around Switzerland during the week of **4 to 8 November 2019**: PSI, Villigen (4.11.19) - CSEM, Neuchâtel (5.11.19) - Uni Fribourg (6.11.19) - EPFL, Lausanne (7.11.19) - Empa, Dübendorf (ZH) (8.11.19). A central topic of Prof. Rosseinsky's research is the development of new methods of identifying functional materials, emphasising the

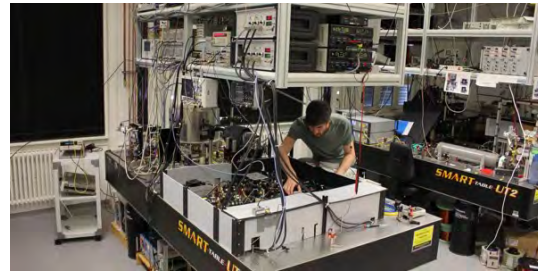


integration of experiment with computational methods for materials discovery, which includes new tools for crystal structure prediction. [\[more\]](#)

## Award ceremony for the Prix Schläfli "Physics" 2019

*University of Basel - 5 November 2019*

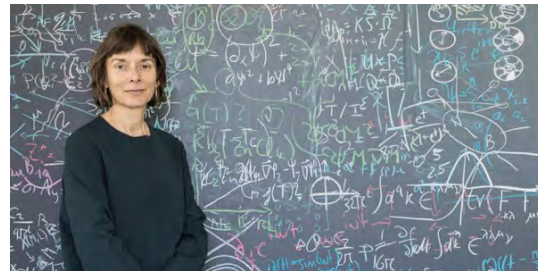
The Swiss Academy of Sciences (SCNAT) has awarded the Prix Schläfli 2019 to the four most important insights gained by young researchers at Swiss universities. Matteo Fadel has been awarded by the Prix Schläfli "Physics" for his findings in quantum mechanics. He will receive his prize from Hans Peter Beck (president of the jury) and present the awarded work "*The Einstein-Podolsky-Rosen paradox in a many-body system*" at the University of Basel on **5 November 2019**. [\[more\]](#)



*Picture: Matteo Fadel - Prix Schläfli 2019 Physik. ©Universität Basel*

## Nicola Spaldin awarded Swiss Science Prize Marcel Benoist

Nicola Spaldin, Professor of Materials Theory at the ETH Zurich, has been awarded the Swiss Science Prize Marcel Benoist for her ground-breaking research into multiferroic materials, with which she has laid the foundations for new ultrafast and energy-efficient data storage technologies. For the second consecutive year, the Swiss National Science Foundation (SNSF) was commissioned by the Marcel Benoist Foundation to select the prize-winner on behalf of the Board of Trustees. Federal Councillor Guy Parmelin personally informed Prof. Spaldin about the award, and will present her with the prize of CHF 250,000 in Bern on **7 November 2019**. [\[more\]](#)



*Picture: Nicola Spaldin. ©Daniel Rihs*

## Leonhard Euler's methods of celestial mechanics

*Public lecture by PD Dr. Andreas Verdun - Basel, 22 November 2019*

Vol. 26 of Series II (Mechanics and astronomy) of Leonhard Euler's *Opera Omnia* comprises eight of Euler's treatises on the theory of perturbations from the years **1763–1771** that turn on the movement of heavenly bodies about a central star modified by the effect of additional gravitational forces – such as the influence of Venus on the Earth's orbit, the interaction of Jupiter and Saturn and the three-body system formed by the Sun, the Earth and the Moon: this last issue was of great practical importance for navigation. These treatises allow us to gain insights into Euler's approach to problems of celestial mechanics, a central field of work during all his life. At the occasion of the edition of the new volume, PD Dr. Andreas Verdun (University of Berne) will give a public lecture on Leonhard Euler's methods of celestial mechanics. [\[more\]](#)



*Image: Portrait of Leonhard Euler (1707-1783), painted by Emanuel Handmann (1753)*

## Applied Machine Learning Days

*EPFL Lausanne, 27-29 January 2020*

For the first time, *AI & Physics* is part of the Applied Machine Learning Days as a separate full-day track. In addition to keynote and invited talks, there is a call for presentations



and posters with a submission deadline of **1 November 2019** ([here](#)). If you have some interesting research, a practical project, an awesome product, a promising startup, a sharp expertise, a strong opinion or anything worth sharing and discussing with other researchers, practitioners, fields experts or machine learning and AI enthusiasts, we encourage you to submit a proposal for one of the tracks in development. [\[more\]](#)



## WHAT'S UP IN EUROPE?

### Tatsuya Nakada wins Enrico Fermi Prize

This year, one Enrico Fermi Prize has been awarded to Professor Tatsuya Nakada at EPFL, co-director of its [High Energy Physics Laboratory](#). Given by the Italian Physical Society ([IPS](#)) since **2001**, the prestigious [Enrico Fermi Prize](#) is awarded to commemorate the great physicist and Nobel



Società Italiana di Fisica

laureate, Enrico Fermi. The Prize is awarded yearly to one or more Members of the Society. The IPS states that Professor Nakada is being awarded *“for the conception and crucial leading role in the realization of the LHCb experiment that led this year to the discovery of the CP violation in D mesons with charm quarks.”* [\[more\]](#)

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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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