

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](mailto:margherita.boselli@cern.ch)

Kind regards,

*Margherita Boselli*

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## WHAT'S UP IN SWITZERLAND?

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### SPS Section "Earth, Atmosphere & Environmental Physics"

The SPS Board decided at its meeting on 12 June 2023 to extend the current SPS Section "Earth, Atmosphere & Environmental Physics" by adding "Energy Sciences" and to name it "Energy, Earth - Atmosphere and Environmental Physics".

The reason for this is that all the current global crises have led to uncertainty among the population about energy supply, and in addition, new carbon-free concepts are needed, as climate change is a central challenge of our time. The expertise of physicists is needed to provide new sources of energy and to engage in green physics research, with the adoption and creation of policies and technical means to limit the exponentially growing energy demand of digitalisation and the operation of energy consuming infrastructures, as well as other aspects of research such as travel.

We are looking for highly motivated colleagues willing to join the SPS Board team and to lead the Section. [A panel discussion on sustainable research in physics](#) will take place during the SPS Annual meeting, on Friday September 8 at 11h45.

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### SPS-ÖPG Joint Annual Meeting

The **2023 Annual Meeting of the Swiss Physical Society**, organised jointly with the Austrian Physical Society, will take place next week, from **September 4 to 8 at the "Kollegienhaus" of the University of Basel**.

The conference will open on Monday September 4 with a symposium celebrating

the 400<sup>th</sup> Birthday of Blaise Pascal. The program of the week is available [here](#).



On Monday September 4, there will also be a satellite event, **the Women in Physics Career Symposium**. This event aims to promote the careers of women physicists, by establishing a professional and mentoring network in physics for early-career women from undergraduate to postdoctoral level. The 2023 edition follows the successful first edition in 2022.

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### The scientific heritage of Johannes Kepler and Jost Bürgi

The intuition that the orbits of the planets are better described by ellipses than by circular orbits marks a

radical change in our understanding of the Solar System, and we call this model “Keplerian” after its originator. This breakthrough was made possible by the remarkable refinement of the observational and computational methods used at the time, and developed out by Tycho Brahe and Jost Bürgi.



**Das wissenschaftliche Erbe  
Keplers und Bürgis**  
Die Prägung der Moderne durch Präzision, Zeitmessung und Ellipsen.



To accompany the special exhibition on Bürgi at the Kulturmuseum St. Gallen [Ausstellungen | Kulturmuseum St. Gallen \(kulturmuseumsg.ch\)](https://www.kulturmuseumsg.ch), the **Jost**

**Bürgi Foundation** has produced a **booklet** describing the influence that the work of Kepler and Bürgi continue to have on various fields such as economics, theoretical physics (from Kepler, Newton, Lagrange, Hamilton and Emmy Noether), astronomy and industrial surveying. The booklet (in German only) can be ordered free of charge as a paper print from [Kontakt - Jost Bürgi Lichtensteig \(jostbuergi.com\)](https://kontakt-jostbuergi.com).

*Image: the frontpage of the new booklet about Johannes Kepler and Jost Bürgi.*

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## Daniel Bernoulli's research site in Basel, the new EPS historic site

For years, the EPS has been recognising places around the world where physics history has been written. In most cases, these are places where important physicists have worked or lived, and which need to be preserved for posterity as intangible cultural assets. Recently, the **Physics Cabinet in the Stachelschützenhaus** in Basel was declared an **EPS Historic Site**.



The Stachelschützenhaus hosted **Daniel Bernoulli** during his research and teaching activity at the University of Basel. Daniel Bernoulli (1700-1782) was a member of the world-famous Bernoulli family of mathematicians and scientists, based in Basel since 1623, and he played a prominent role in the development of physics in Switzerland and beyond. During his activity at the Stachelschützenhaus, Bernoulli collected many experimental instruments, used for research and lectures, and added to the collection of his predecessor Benedict Staehelin.

The **inauguration will take place on September 22, 2023**, the program is available [here](#). The work of Bernoulli and his activity at the Stachelschützenhaus will be the topic of the last talk of the session on [“History and Philosophy of Physics”](#), taking place on Wednesday September 6, during the joint Annual meeting of the SPS and ÖPG.

*Image: The Stachelschützenhaus in Basel.*

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## Scientifica 2023: what holds the world together

**Scientifica** is Switzerland's largest science festival and it started August 26, 2023, with events in the city of Zurich. On the **weekend of 2-3 September**, visitors can experience science up close and personal at interactive exhibition stands, shows and workshops and exchange ideas with researchers. Free tickets are available now and all the information is available [here](#).



*Image: impression from one of the previous editions of Scientifica, from ETHZ.*

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## WHAT'S UP IN EUROPE?

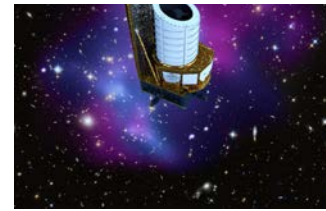
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### Launch of the Euclid satellite

On **July 1 2022**, ESA's satellite **Euclid** was launched from Cape Canaveral. Its mission is to map the geometry of the Universe to better understand the mysteries of dark matter



and elucidate the role of dark energy. The satellite will measure the shapes and redshifts of galaxies and clusters of galaxies to trace the evolution of the Universe back to 10 billion years ago and the role of dark energy in accelerating the Universe expansion.



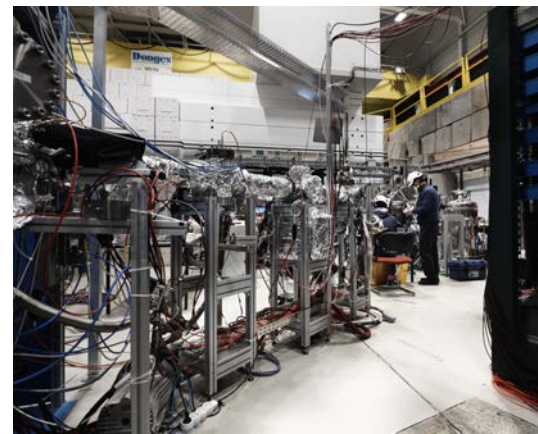
In a video recently published on Youtube, **Camille Bonvin**, Professor of Cosmology at the University of Geneva, explains (in french) the aim of Euclid's research: <https://www.youtube.com/watch?v=iO7r4-1Kuas>

*Image: Satellite Euclid, image from ESA.*

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## Experiment GBAR detects the first Antihydrogen atoms

**GBAR**, Gravitational Behaviour of Antihydrogen at Rest, is an antimatter experiment located in CERN's "Antimatter Factory", the Antiproton Decelerator hall. The experimental collaboration, involving 50 scientists from different countries, recently reported the **first detection of antihydrogen atoms**. This is a key step towards the goal of this experiment: to study the free-fall of antimatter to gain more insight into the asymmetry between matter and antimatter in our Universe.



More information about the GBAR experiment and these results can be found on the [CHIPP website](#).

*Image: a component of the GBAR experiment, picture from CERN.*

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## Understanding the Hall Effect using cold atoms

An international team of scientists, coordinated by the University of Florence, Italy, and including researchers from the Universities of Geneva and Grenoble, has studied the **microscopic origin of the Hall Effect** using cold atoms controlled by lasers to simulate an electronic system.



The experimental team from the Italian university succeeded in testing the theoretical predictions developed by the group of Thierry Giamarchi, at the University of Geneva, and Michele Filippone in Grenoble. These results shed light on the microscopic origin of the quantum Hall Effect, which was discovered 40 years ago but still lacks a complete theoretical explanation. The work has been published in [Science](#) at the end of July.

*Image: the experimental apparatus used for the study, picture from Carlo Sias.*

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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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