

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

WHAT'S UP IN SWITZERLAND?

Karl Schwarzschild Medal 2020 awarded to Friedrich-Karl Thielemann

Friedrich-Karl Thielemann, Professor Emeritus at the University of Basel, member of the [Platform MAP](#) and former MAP President was awarded the [Karl Schwarzschild Medal](#), the most prestigious German prize in the field of astronomy and astrophysics, in honour of his research at the boundary between nuclear physics and astrophysics.



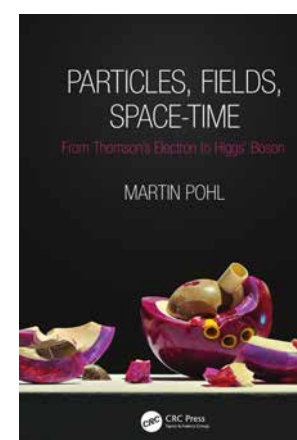
During his 40-year career, Friedrich-Karl Thielemann combined mathematics and physics to predict the nuclear cross sections and the reaction rates of nuclei across the nuclear chart, including highly unstable ones. His research contributed to the understanding of the stellar evolution and explosions, the formation of heavy elements, the resulting chemical evolution of galaxies, and, in general, of the most extreme events in the universe.

Dr. Thielemann currently continues his research as a guest scientist at the [GSI Helmholtz Centre](#) for Heavy Ion Research in Darmstadt.

Friedrich-Karl Thielemann, *Image from [MAP webpage](#).*

Martin Pohl, former head of the SPS board, publishes a book on elementary particle physics

On the 14th of September 2020, the book "Particles, Fields, Space-Time: From Thomson's Electron to Higgs' Boson" of [Martin Pohl](#) - professor emeritus at the University of Geneva, and former head of the SPS section "Astrophysics, Nuclear and Particle physics" - was published. The book explores the concepts, ideas, and experimental results that brought us from the discovery of the first elementary particle in the end of the 19th century to the completion of the Standard Model of particle physics in the early 21st century.



It concentrates on disruptive events and unexpected results that fundamentally changed our view of particles and how they move through space-time. It separates the mathematical and technical details from the narrative into focus boxes, so that it remains

accessible to non-scientists, yet interesting for those with a scientific background who wish to further their understanding. It presents and explains experiments and their results wherever appropriate.

This book will be of interest to a general audience, but also to students studying particle physics, physics teachers at all levels, and scientists with a recreational curiosity toward the subject.

Martin Pohl started his career on particle physics working with the Gargamelle neutrino experiments at CERN (Geneva) in the 1970s. Later, he worked at the collider PETRA (DESY, Hamburg, Germany), LEP and LHC (CERN), before turning to astroparticle physics in space. He has been the director of the department of nuclear and particle physics ([DPNC](#)) at the University of Geneva and head of the [physics department](#). Until his retirement in 2017, he led the Geneva team working on the cosmic ray observatory AMS, installed on the International Space Station since 2011. He is author of a text book on particle physics, as well as the main author of introductory online courses on the same subject.

Cover of "Particles, Fields, Space-Time : From Thomson's Electron to Higgs' Boson" by [Martin Pohl](#).

PhD prize of the Swiss Society for Astrophysics and Astronomy

The Edith Alice Müller Award 2020, the PhD prize of the [Swiss Society for Astrophysics and Astronomy](#), has been attributed to two young researchers: [Dr Ewelina Obrzud](#) (UniGE and CSEM) for her thesis on *High repetition rate laser frequency combs for astronomical spectrograph calibration*, and [Dr Gioele Janett](#) (IRSOL) for his thesis on *Numerical Methods for the Transfer Equation of Polarized Radiation*.



The thesis of Ewelina Obrzud contributes to the development of astronomical spectroscopy by offering perspectives for the improvement of existing and future extreme precision spectrographs.

The thesis of Gioele Janett deals with the numerical integration of the transfer equation of polarized radiation. It is a thorough numerical analysis of existing algorithms and it explores new veins for numerical methods capable of dealing with discontinuous and intermittent media.

Image from [MAP webpage](#)

The Science Gateway construction starts

On the 29th of September the Geneva Canton accepted the building permit of the [Science Gateway](#) submitted to the local authorities by CERN on October 2019. The construction works got a green light and are starting this autumn.



The CERN Science Gateway is a new facility, dedicated to science education and communication, it is in line with one of CERN's objectives, i.e.. education and outreach for the general public on the subject of science, as well as the transfer of knowledge and technology to society. Through exhibitions and hands-on educational activities, the Science Gateway will enable people of all ages and backgrounds to engage in CERN's discoveries, the science and the technologies of CERN, sharing the passion for knowledge and research. It will be a beacon to encourage young people to aim for careers in science, technology, engineering and mathematics (STEM).

The building has been designed by world-renowned [Renzo Piano Building Workshop](#) with support from [Brodbeck-Roulet architectes associés](#). It will consist of five different spaces to host exhibitions, educational activities, hands-on laboratories, a large auditorium, a shop and a restaurant, all connected by a bridge above the Route de Meyrin and tramway line. With more than 2000 square meters of solar panels and more than 400 trees being planted, the Science Gateway will have a net zero carbon footprint.

The full press release can be found [here](#).

Image: 3D representation of the "piazza" which will be located at the centre of Science Gateway (Image: © [RBPBW](#))

Science and art exhibition in Zurich about the climate change: Dear2050

[Dear 2050](#) is a Science and Art exhibition about the climate change and the human response to it. It presents original works from international scientists and artists on these topics and public-contributed slams sharing literacy in climate science. The event will also host plenaries featuring keynote speeches from scientists and artists discussing the science of climate change and views on possible futures.



Dear 2050 will take place at the St. Anna-chapel in Zurich between October the 24th and November the 6th 2020. The detailed program and further information about this event can be found [here](#).

Wright Colloque 2020: The Art of the Maths

Maths: for some, a stimulating discipline, an exciting mental game, for others, a complex, opaque and difficult world. But whatever our perception or view might be, mathematics is fascinating. As a fundamental discipline at the interface of natural sciences, philosophy and the arts, mathematics deserves its place in the [Wright Colloquia for science](#). The 19th edition of the Wright Colloquia will take place between November 2 and 6 at the [University of Geneva](#), in the building of Uni Dufour.



During this week, every evening at 18h30 five of the most eminent mathematicians of our time (including three Fields medal awardees) will discuss topics such as the butterfly effect, the strange observation that it is easy to mix two liquids but almost impossible to separate them once they are joined together, so-called toy models, and the music of shapes. The talks are open to the public, upon registration [here](#).

The 2020 Wright Colloquium has set itself the goal of unveiling some of the secrets of this fascinating discipline and offering the public a glimpse of what they might have missed since their last maths lesson at school. On top of the public talks, [the program](#) includes an exhibition, activities for younger people and a sound and light show.

WHAT'S UP IN THE WORLD?

The Nobel Prize in Physics 2020 awarded to Penrose, Genzel and Ghez

The [Nobel Prize in Physics 2020](#) was announced by the [Royal Swedish Academy of Sciences](#) on October the 6th and it has been awarded to Roger Penrose, professor at the [University of Oxford](#), UK, Reinhard Genzel, professor at the [University of](#)



[California Berkeley](#), USA, and Andrea Ghez, professor at the [California Institute of Technology](#), Pasadena, USA. The prestigious prize recognizes the discoveries of Penrose, Genzel and Ghez about the black holes. Roger Penrose won half of the prize for "the discovery that black hole formation is a robust prediction of the general theory of relativity", whereas the other half is shared between Genzel and Ghez for "the discovery of a supermassive compact object at the centre of our galaxy" (quotes from [Nobel Prize in Physics 2020 - summary](#)).

Roger Penrose applied ingenious mathematical methods on the Albert Einstein's theory of general relativity and showed that general relativity leads to the formation of black holes. These objects are space-time regions where the matter collapses toward a central point of immense density, a singularity. Everything within a certain distance of the singularity becomes gravitationally trapped, even light, making these objects invisible.

Reinhard Genzel and Andrea Ghez each lead a group of astronomers who have focused on a region at the centre of the Milky Way since the early 1990s. With increasing precision, they have mapped the orbits of the brightest stars that are closest to the centre. Both groups found something that is both invisible and heavy, forcing this jumble of stars to swirl around. This invisible mass has about four million solar masses squeezed together in a region no larger than our solar system. What is it that makes the stars at the heart of the Milky Way swing around at such astonishing speeds? According to the current theory of gravity, there is only one candidate – a supermassive black hole.

More information about the scientific contributions of Penrose, Genzel and Ghez can be found at these links: [theoretical background](#), [popular science background](#).

Image: Roger Penrose, Reinhard Genzel and Andrea Ghez (©Nobel Media. Ill. Niklas Elmehed)

International Cosmic Day 2020

[The International Cosmic Day \(ICD\)](#) is an astroparticle physics outreach event for high-school students. ICD is now at the 9th edition, and it will take place on the 4th of November 2020. It is organized by [DESY](#) (Hamburg, Germany) together with [Netzwerk Teilchenwelt](#) (Germany), [IPPOG](#), [QuarkNet](#) (USA) and [Fermilab](#) (USA).



During this day, whose format has been adapted to face the current pandemic situation, students, teachers and scientists get together to talk and learn about Cosmic Rays. Questions that can be discussed are:

- What are cosmic particles?
- Where do they come from?
- How can they be measured and what can we learn from them?

If you want to participate, get more information [here](#).

Science Days digital - a German digital science festival

Over 20 years the science days have been taking place in Germany's largest theme park: Europa-Park. This year for the first time this free science festival will be a full online event, and it will take place from the 19th of October until the 29th of November. Many different institutes offer a wide variety of programs spanning from workshops to science shows. CERN is also contributing with a DIY (do-it-yourself) particle detector workshop, talks, science shows, virtual visits and much more.



More information and registration [here](#).

Women Physicists' conference 2020

[The Women Physicists' Conference \(PT\)](#), which has been held annually since 1997, focuses on scientific exchange and networking among women in physics. It aims at bringing together all the different career stages, from bachelor students to doctoral candidates, from professors from different universities to female physicists from different areas of industry. The conference is not only about getting to know women from one's own discipline, but also aims to create networks beyond the discipline itself.

During the conference, there are various opportunities to build networks, to participate in soft skill courses, to present one's own work as a poster or talk, to hear keynote speakers talk about their careers and work, to get to know possible career paths for female physicists and to make contacts in industry.

The conference is for physicist as well as people interested in equal opportunity and diversity regardless of gender.

This year edition will take place from the 5th to the 7th of November 2020 and it will be full Online with BigBlueButton (BBB). The registration is open [here](#). Most sessions have a

dedicated BBB room, which can also be reached via the [conference timetable](#). For the plenary events, this [BBB room](#) will be used.

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.

[Unsubscribe](#) | [Manage profile](#) | [About](#)

[Subscribe as new user](#)

© Swiss Physical Society, Klingelbergstr. 82, CH-4056 Basel, info@sps.ch, www.sps.ch