

Annual Meeting of the Swiss Physical Society 2024



Monday, 9 September 2024 - Friday, 13 September 2024
ETH Zürich

Scientific Programme

Abstracts can be submitted for all sessions listed below. The choice between an oral or a poster presentation of your contribution is possible. Further instructions are available in the abstract submission form.

Info on talk lengths

The standard length for a contributed talk is 15 min (12+3), for an invited talk 30 min (25+5). The session organisers might extend or shorten talks where necessary. Refer to the schedule once it will be available.

Theoretical Physics

As in the previous years, theoretical contributions are highly encouraged and will be included directly in a corresponding topical session. This way, the sessions will profit from a broad range of experimental, phenomenological, and theoretical advancements that are relevant in the specific topical field and thus can engage in broader and deeper discussions.

Please submit your abstract to the session which best matches your topic. You can optionally mark your contribution as "theoretical" in the submission interface.

Contact: Philippe Jetzer

Accelerator Science and Technology

Particle accelerators play an important role in high energy physics, materials and life sciences. They are used to create a very special state of matter — beams of particles (protons, electrons, photons, neutrons, muons, neutrinos etc.). Contributions are encouraged on all aspects of accelerator development for future high energy frontier electron, proton and muon colliders, high brightness synchrotron light sources as well as high intensity neutron sources.

Contact: Leonid Rivkin, Mike Seidel

Applied Physics; Plasma Physics

In the frame of the Applied Physics session, a special sub-session **Physics applied to Medicine** is planned. This session aims to reflect the crucial role physics plays in medicine, providing essential tools and principles that aid in diagnosis, treatment and understanding of physiological processes.

Contact: Leonid Rivkin, Mike Seidel, Laurie Porte

Atomic Physics and Quantum Optics

Biophysics and Soft Matter

This session is organized in collaboration with *LS2 - Life Sciences Switzerland*, and the *Swiss Soft Days*, a key organization for the soft matter community in Switzerland.

Numerous advances in the **understanding of living systems** are based on interdisciplinary research conducted by people with backgrounds in molecular biology, chemistry, materials science, physics, and nanotechnology. We welcome contributions on **physics-based research to the study of living systems**.

Numerous advances in the **life sciences** are based on interdisciplinary research conducted by people with proficient scientific backgrounds in molecular biology, chemistry and chemical synthesis, materials science, physics, and nanotechnology. We welcome contributions on **engineering physics and materials for new methods and applications for use in biology and medicine, both from the academic and the industrial sector of the life sciences**.

A **special focus** of the *Biophysics and Soft Matter* session is the **transition of research topics from 'basic' to 'applied'**, including biotech start-ups and the interactions between the academic and the industrial sector of the life sciences in Switzerland. For young talents, the meeting is a great opportunity to get in touch with professionals working in this fascinating field of research.

Oral and poster contributions are welcome.

Contacts: Christof Aegerter, Christof Fattering (SPS Section chairs), Sahand Rahi (representative of LS2, Systems Biology Section), Lucio Isa (representative of the Swiss Soft Days)

Condensed Matter Physics (KOND)

The condensed matter program welcomes contributions from all topics within Condensed Matter Physics, including magnetism, superconductivity, semiconductors and more. Investigations by advanced experimental techniques, e.g. by using synchrotron radiation, are highly welcome. Where relevant, we encourage participants to submit their abstracts to the respective focus sessions described below.

Contact: Henrik M. Rønnow, Ilaria Zardo

Electron and photon spectroscopies of quantum materials

Angle-resolved photoemission spectroscopy (ARPES) and resonant inelastic x-ray scattering (RIXS) are powerful techniques to measure the momentum-resolved electronic structure of materials. In the recent years, the development of high brilliance synchrotron facilities, X-ray free electron lasers, as well as stable laser technology, have allowed new possibilities like micro- and nano-ARPES and in-operando experiments on tiny devices, as well as versatile time-resolved studies to cite a few of them.

This session is dedicated to highlight recent results in the field of quantum materials, correlated systems, and complex devices. It will bring together research groups using photoelectron, x-ray and optical spectroscopies, and serve to elaborate novel perspectives and collaborative development.

Contact: Claude Monney, Felix Baumberger, Luc Patthey

Gravitational Waves

For this special session contributions covering all aspects of gravitational wave physics are welcome, in particular those connected with the Einstein Telescope (ET), the LISA mission, and the ongoing LIGO-Virgo detectors.

Relevant topics include data analysis, theoretical aspects, and experimental challenges of ET and / or LISA.

We particularly encourage PhD students and postdocs to submit abstracts and to join the meeting. Depending on the number of proposed contributions, the session will take place on one or two afternoons. Poster contributions are also welcome.

Contact: Steven Schramm, Philippe Jetzer

History and Philosophy of Physics

Magnetic fields for materials research

The generation and use of high magnetic fields enable the investigation of novel materials ranging from superconductors to 2D van der Waals compounds. The European Magnetic Field Laboratory (EMFL) extends the range of fields, both continuous and pulsed, accessible to researchers, by developing state-of-the-art facilities in several European laboratories and in collaboration with large scale facilities, like the Paul Scherrer Institute. This session aims to present advances in the generation and use of high magnetic fields in materials research.

The session is sponsored by the EU project ISABEL.

Contact: Stefano Gariglio

Neutron Science

Neutrons produced at large-scale research facilities offer valuable insights into a wide array of subjects, spanning from particle physics and quantum materials to food science. The Swiss Neutron Science Society invites abstract submissions covering any topic where neutron experiments have played or may play a significant role. We are excited about creating an excellent program for this session, and eagerly anticipate your contributions.

Contact: Viviane Lutz-Bueno, Romain Sibille

Nuclear, Particle- and Astrophysics (TASK)

Photon Science

This session is devoted to the application and technology of large-scale photon science infrastructures and related laboratory based efforts for research in all fields of physics where photon science tools take a center stage. Examples include the physics and application of free-electron lasers and synchrotron sources, the development and application of ultrafast photon science methods and many more.

The session is organised in collaboration with the SSPh.

Contact: Lukas Gallmann

Spintronics and Magnetism at the Nanoscale

This focus session concerns the latest advancements in the fabrication, measurement, and exploitation of novel functionalities in spintronic and nanomagnetic materials. We aim to showcase recent work conducted by experimentalists and theorists from Switzerland who are researching the magnetic properties of thin films, interfaces, and nanostructures. Pietro Gambardella (ETHZ), Alberto Morpurgo (Uni Geneva), Cinthia Piamonteze (PSI), and Martino Poggio (Uni Basel) will present invited talks during this session.

Contact: Jeffrey Brock, Lauren Riddiford, Laura Heyderman

Startups: The role of physics and physicists in developing a product?

Physics and engineering have often played a major role in the development of new technologies and products. For instance, the birth of semiconductor technology led to nowadays ubiquitous products such as radios, televisions, computers and smartphones. In the Physics in Industry session of the annual meeting, we want to collect examples of how physics contributed to the development of a new product and bring together presentations from companies in Switzerland focusing on Quantum, AI and Optics. This session will be of interest to the attending young physicists because they can learn about their professional role after university. For the speakers from industry, it will be a great opportunity to get in touch with young talents.

If you are interested in presenting a talk in this session please contact the section heads.

Contact: Valeria Bragaglia, Gian Salis