Physics and School

Tuesday, 19.08.2025, Room HS 27

Time	ID	
		Physics and School I *Chair: Alexander Strahl, Universität Salzburg*
14:00	**71 A-E**	**Preisträgervorträge der ABA-Preisträgerinnen und -Preisträger der ÖPG 2025** *NN* Schülerinnen und Schüler können ihre abschließenden Arbeiten mit Bezug zum Unterrichtsfach Physik bei der ÖPG einreichen. Im Jahr 2025 gab es 57 Einreichungen, aus denen 5 Preisträgerinnen und Preisträger ermittelt wurden.
14:50	**72**	**Vorstellung des IYPT Tournament** *NN* Das österreichische Team des International Young Physicists' Tournament präsentiert seine Beiträge. Das IYPT zeichnet sich durch Teamarbeit bei der Präsentation von Lösungen physikalischer Aufgaben aus. Der Beitrag wird in englischer Sprache gehalten.
15:05	**73**	**Vorstellung der Physikolympiade** *NN* Bei der internationalen Physikolympiade treten Schülerinnen und Schüler gegeneinander an, um theoretische und experimentelle Aufgaben zu lösen. Die diesjährigen Teilnehmenden geben einen kurzen Einblick.
15:20		
15:30		***Coffee Break***
		Physics and School II *Chair: Alexander Strahl, Universität Salzburg*
16:00	**74**	**Understanding of Nature of Science and Dealing with Errors** *Rahel Schmid, Pädagogische Hochschule St. Gallen, Switzerland* Errors are not only made at school, but also in scientific work. In both areas, they represent important learning opportunities if they are used appropriately. For example, errors make it possible to reflect on scientific practice or represent a source for the falsifiability of scientific knowledge. However, little attention has been paid to errors as an aspect of the Nature of Science. In this study, the connection between the understanding of NOS and the handling of errors was examined. To this end, secondary school students (grades 7 to 9) from eastern Switzerland were surveyed in an intervention study using a mixed-methods design. The results show, among other things, that the understanding of NOS aspects influences the error learning orientation and that this also mediates the effect on the affective-motivational reactions to errors. The results indicate that an adequate understanding of NOS aspects favours a constructive approach to errors.

16:30	**75**	**Schrödinger's cat in basic physics instruction - Sketch of a learning path for the Swiss Gymnasium** *Hans Peter Dreyer, Kantonsschule, Wattwil, Switzerland* Quantum physics only recently became a part of the curriculum for basic physics instruction in Swiss secondary school (Gymnasium). Schrödinger's cat is popular even among students who arn't in favor of STEM-topics. The promise to understand the cat may motivate them to dive into a demanding topic. - A partially tested path will be presented how to overcome classical preconcepts while aiming at Schrödinger's Psi and the superposition of "life and death" states. The observed decoherence of cat-states helps to clear some ideas. Finally, analyzing the measurement process in real experiments leads to Schrödinger's concept of entanglement which goes back to the 1930s and has consequences in today's basic and applied physics.
16:45	**76**	**PPLUS: Project-based Physics Lab for Undergraduate Students** *Andreas Eggenberger, Daniela Rupp, Barbara Schneider, Linos Hecht* *ETH Zürich, Departement of Physics, Zürich* We present the development and implementation of PPLUS, the novel Project-based Physics Lab for Undergraduate Students at ETH Zürich. In this inquiry-based format, students choose their own research question, design and build an appropriate setup, and conduct their own experiments. We discuss the challenges and successes encountered during the first three semesters of its conduction. The students' self-perceived skill levels associated with a set of learning goals was tracked. All learning objectives are achieved in the new format at least equally well as in the traditional lab course. In addition, students benefit from increased collaboration, a structured approach to project development, and the opportunity to explore their interests, which leads to exceptionally high motivation, a key factor for efficient learning.
17:00	**77**	**Making physics matter - Strategies for science communication** *Henrik Siboni, Pharmaceutical Technology and Biopharmacy & Single Molecule Chemistry, University of Graz* Science communication is no longer just a fun side project, but an essential part of research. But how do you share complex physics with non-physicists? In this talk, we will cover the key steps to getting started: choosing your message, finding your audience, and picking the right format. I will share a collection of practical examples, tools, and resources to help you grow and build your confidence. Whether you are curious about getting started or want to exchange ideas with fellow communicators, this is the talk for you. Join us and discover how to make your physics matter!
17:15	**78**	**PLANCKS Austria: Competing, Connecting, and Changing Physics Education** *Christian Binder, Oxford University, Oxford, United Kingdom* PLANCKS is an international physics competition for undergraduate and master's students. We share our journey from last place in 2017 to 9th place at the international finals in Milan 2023 — and how that experience led us to found PAULI and organize PLANCKS Austria. Our goal is to bridge the gap between coursework and research by designing problems inspired by active research areas such as quantum computing or fusion physics, solvable using first principles. We aim to show students that research is approachable and engaging early in their studies. With initiatives like "Students vs. Professors," we foster a collaborative, low-barrier physics culture. Our long-term goal: bring the PLANCKS finals to Graz in 2030 and build a lasting physics community.

17:30	**79**	**Empowering Youth Through Physics by Three Innovative Approaches in Hands-On School Outreach: Iridescent Chocolate, Iridescent Kombucha Vegan Leather and Complex Mycelium Shapes** *Ille C. Gebeshuber, Institute of Applied Physics, TU Wien* Empowering curiosity in young minds is a central goal of effective science outreach. To foster an intuitive and playful approach to physics, we developed interdisciplinary workshops that appeal to young people's fascination with colour, texture and transformation. Core elements include the transfer of iridescent diffraction patterns from compact discs onto chocolate and self-produced kombucha-based vegan leather, as well as the growth of bio-based and biodegradable complex mycelium shapes. These workshops were realized in collaboration with student teachers from the University of Applied Arts Vienna. By integrating physics with aesthetic and tactile experiences, this approach builds bridges between science and creativity, encouraging engagement and empowerment.
17:45		***END***
		Transfer to ÖAW *Doktor-Ignaz-Seipel-Platz 2, 1010 Wien*
19:00		***Public Lecture***