

HL 27: Focus Session: Wissenschaftskommunikation / Outreach (joint session HL/O/TT)

Im wissenschaftlichen Umfeld wird Maßnahmen der Öffentlichkeitsarbeit eine zunehmend größere Bedeutung zugemessen, - aus der Gesellschaft heraus und auch durch die großen Fördereinrichtungen und die DPG. Dabei geht es nicht nur um die Ergebnisse der Forschung, sondern auch darum, Prozesse und Methoden von wissenschaftlicher Arbeit transparent abzubilden – eine Aufgabe, die prinzipiell alle Forschenden übernehmen können. In diesem Symposium sollen erfolgreiche Projekte der Wissenschaftskommunikation, insbesondere aus dem Bereich der Festkörperphysik, vorgestellt werden. In ihrer Gesamtheit sollen sie das Spektrum der Wissenschaftskommunikation hinsichtlich des finanziellen und zeitlichen Aufwands aufzeigen und Methoden für unterschiedliche Zielgruppen vorstellen.

So dient diese Session sowohl als Ideengeber und Inspiration als auch als eine Art Netzwerk-Treffen zum Austausch über die Wissenschaftskommunikation in unterschiedlichen Kontexten.

Time: Wednesday 15:00–18:30

Location: POT 81

Invited Talk HL 27.1 Wed 15:00 POT 81
experimentamus! Forschendes Lernen von Physik und Chemie in der Grundschule — ●SEBASTIAN SCHLÜCKER — Universität Duisburg-Essen, Campus Essen

Der Sachunterricht in der Primarstufe ist ein Konglomerat aus allen Natur- und Gesellschaftswissenschaften, erst in der Sekundarstufe findet eine Aufspaltung in die einzelnen Fächer statt. Zudem unterrichten viele Grundschul-Lehrkräfte fachfremd. Auch der Zeitaufwand für die Vorbereitung von Experimenten ist nicht unerheblich. Wie also kann man trotz dieser Hürden kindgerechte physikalische und chemische Experimente bereits in der Grundschule einführen?

Ich berichte aus 10 Jahren Erfahrung mit dem Projekt experimentamus!. Dabei handelt es sich um einen Kanon aus ca. 40 Experimenten für die Klassen 2 bis 4, welcher die Themen Licht, Wärme, Magnetismus, Wasser, Luft, Feuer und Elektrizität mit einem kindgerechten Alltagsbezug abdeckt. Anstelle des darlegenden Lernens wird auf das Forschende Lernen gesetzt: Frage - Hypothese - Experiment - Beobachtung - Erklärung; diese fünf Stationen des wissenschaftlichen Erkenntnisprozesses werden immer wieder durchlaufen. Ganz im Sinne Martin Wagenscheins wird dabei nach der exemplarischen und sokratischen Methode vorgegangen. Die praktische Implementierung umfasst 1. Materialkisten für alle Themen, 2. kompakte und leicht verständliche Informationshefter für die Lehrkräfte, sowie 3. Lernheften für alle SuS. Am Ende möchte ich über Erfahrungen und Herausforderungen im Rahmen dieses Projektes berichten und Ideen für eine mögliche weitere Verbreitung vorstellen.

HL 27.2 Wed 15:30 POT 81

Internal interfaces - goals and realisation of a scientific image film — ●ULRICH HÖFER^{1,2} and MICHAEL DÜRR^{2,3} — ¹Fachbereich Physik, Philipps-Universität Marburg — ²SFB 1083, www.internal-interfaces.de — ³Institut für Angewandte Physik, Justus-Liebig-Universität Giessen, Germany

Funded by the German Science Foundation (DFG), a professional film maker has produced an image film about the research conducted in the Collaborative Research Center SFB 1083 "Structure and Dynamics of Internal Interfaces". The six-minute video clip takes the non-specialist on a journey down to atomic scale to show the progress at the forefront of research at solid/solid interfaces. It is not a demanding educational film. Rather, it is a visually stunning piece that looks like science fiction taken straight out of a movie, with tracking shots that take the viewer down to the nanometer scale, with flights through luminous molecules, exotic excitons, and space-filling laser labs. The film also has a very impressive soundtrack. Gustav Holst's (1874-1934) composition "The Planets" was re-orchestrated especially for this film. It is available on the youtube channel of the DFG (https://www.youtube.com/watch?v=_-mDt0NzHrc). Visitors of Chemikum Marburg can watch the German version on a 4K OLED screen, a device actually based on microscopic processes at interfaces investigated by SFB 1083.

The idea behind the creation of a professional film, its conceptual design and the necessary steps towards its realization will be outlined.

HL 27.3 Wed 15:45 POT 81

Outreach activities of SFB 1083 @ Chemikum Marburg — ●CHRISTOF WEGSCHIED-GERLACH, LUISE CLERES, INA BUDE, KARL-HEINZ MUTH, and MARION ENSSLE — Chemikum Marburg / SFB1083

The diffusion of concepts, methods, and visions of the SFB 1083 on

Structure and Dynamics of Internal Interfaces into the general public is our general goal. To this end project Ö makes use of the institution Chemikum Marburg e.V., whose basic idea is to fascinate the public excited about natural sciences. The experiments offered here, stand for chemical, biological, pharmaceutical, and physical subjects related with daily phenomena or beyond. We will give an overview about the introduction of basic ideas and methods of SFB 1083 to the public as well as the institution Chemikum Marburg. The contents of the individual offers, such as experiments within the regular workspace, the workshops for the Girls' Day and the compilation of special workshops that are offered to give high-school students an understanding of the research content of the SFB 1083 are presented. An additional topic is the linking of basic research to applications for regenerative energy resources. Hydrogen fuel cells are well-known to the general public and rely on functional internal interfaces. An additional workshop which was prepared in cooperation with the district Marburg-Biedenkopf gives an overview about production, storage, and application of hydrogen as a new energy resource. We will also share various occasions at Chemikum Marburg where further outreach activities represent SFB 1083.

Invited Talk HL 27.4 Wed 16:00 POT 81
Under the Microscope – spotlighting materials and nano science — ●SVENJA LOHMANN and PRANOTI KSHIRSAGAR — The Science Talk, Germany

Real Scientists Nano is a science communication project dedicated to materials and nano science. Despite the widespread relevance of materials science to everyday life, we feel that dedicated science communication in this area is much rarer than in other fields. Our aim is to provide a platform for active materials and nano scientists to directly communicate their science and life as a scientist to the public. The use of social media thereby provides a very low threshold to science communication as basically the only requirement is to have an account. We have the goal to showcase the scientific community in all its diversity, and so far (12/2022) had guest scientists from more than 30 countries of origin as well as various fields and career stages. The two main pillars of the Real Scientists Nano project are the @RealSci_Nano Twitter account and the Under the Microscope podcast. Our guest scientists are interviewed for one podcast episode, and subsequently get to tweet from the account for one week following the rotation curation concept. We let curating scientist decide for themselves what they would like to tweet about. The form and content therefore vary greatly. Many of our scientists report from their everyday life, and are for example live-tweeting from a conference, uploading videos or photos from the lab or sending the occasional "stuck in meetings, will return later" tweet. Science communication on social media thus gives the opportunity to open a direct and real-time window into the scientist's life.

30 min. break

Invited Talk HL 27.5 Wed 17:00 POT 81
Phyphox – A pocketful of physics — ●CHRISTOPH STAMPFER — JARA-FIT and 2nd Institute of Physics, RWTH Aachen University, 52074 Aachen, Germany — Peter Grünberg Institute (PGI-9), Forschungszentrum Jülich, 52425 Jülich, Germany

Most smartphones are used to make phone calls, to write short messages, surf the Internet or check e-mails. However, they can do much more: With the help of the integrated sensors and the free app "phyphox" (abbreviation for Physical Phone Experiments), pupils, stu-

dents, and teachers and interested others can independently perform and develop physics experiments. For example, the app can use the accelerometer to record pendulum movements and determine the rotational acceleration in a salad spinner, or the air pressure sensor to determine time-resolved differences in altitude and thus the speed of an elevator. The didactic potential of the app is great, as the students are picked up on ground that is very familiar and attractive to them (smartphones) and are introduced to experimental natural sciences in a playful way and with an extremely low barrier (zero cost, i.e. only one click away). The app helps to get students excited about scientific and technical questions and contexts at an early age. The app is available free of charge for Android and iOS (more information can be found at www.phyphox.org). In my presentation, I will go into the concept of phyphox, introduce the range of functions and show a number of application examples.

HL 27.6 Wed 17:30 POT 81

Chair PR representative as a doctoral student's secondary task: A field report — ●PAULA M. WEBER, FELIX FRIEDRICH, and MANUEL SEITZ — Physikalisches Institut, Experimentelle Physik II, Universität Würzburg, Am Hubland, D-97074 Würzburg, Germany

Especially in recent years, it has become more important to communicate one's scientific work and methods to the public in order to show that in the scientific world, knowledge can only be created through research and the scientific process. Yet, extra time besides research is often limited and it is thus difficult to get into science communication. In this talk, I would like to present how PhD students can use their interest in science communication to benefit their own research group as a part-time PR representative.

In the first part of my talk, I will report on our efforts to attract new bachelor and master students. This advertising is focused on an audience with a scientific background, such that lab tours and advertising posters may contain scientific language and references. The second part is about communication with the general public, who usually know physics from their school days. Here, I will report on how we presented our research activities at the Night of Science in Physics and at the "Highlights der Physik" in Würzburg.

Working part-time as a PR representative could encourage doctoral

students to try their hand at science communication and develop the associated communication skills.

HL 27.7 Wed 17:45 POT 81

Real or Fake - A format in science communication that encourages critical thinking — ●TOBIAS LÖFFLER — Institut für Angewandte Physik Düsseldorf

The outreach format "Real or Fake" aims to train the audience in an critical approach to credible-sounding facts.

It is aimed at the general public and specifically at young people. At the same time, it offers an easy introduction for scientists to audience-oriented communication of science on stage. The format can be performed in front of a live audience or as an interactive online event. It has been proven to work as implemented into science festivals, nights of sciences, as a public individual event and also as part of events with constrained settings - such as outreach events at schools or as part of conferences.

"Real or Fake" was developed in 2017 by scientists around the Berlin March for Science who later founded Besserwissen e.V. with the goal to promote the format and support new organisers. I do cooperate with them since 2019 and have organized more than ten "Real or Fake" events since then.

In my talk, I will present the concept and its origins, give an overview of successful events and show what to do and what support one can get, if one wants to organize a "Real or Fake" event.

Invited Talk

HL 27.8 Wed 18:00 POT 81

Physics for school and the public at the LMU — ●DR. CECILIA SCORZA-LESCH — Fakultät für Physik der LMU, München

Germany lives from research and technology. Physics, as the basis of all empirical sciences and technologies, has a very special, fundamental role to play. The Faculty of Physics at LMU, the largest in Germany, comprises nine research areas, three centres and two excellence clusters. In this talk we will present the approach we use to successfully communicate our various topics of modern research, the role of physics in our daily lives and in the fight against global warming to the schools and the public in a participatory way.