

7. EUROPEAN PHYSICS OLYMPIAD LEIBNIZ NEWS

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JUNE

19th

The Day of Judgement

Today, the moderation and grading take place at the Pferdestall building in Leibniz University. Every student was given 10 minutes per problem to discuss the marking of the solution with the jury. There was a lunch break at the Mensa as well.

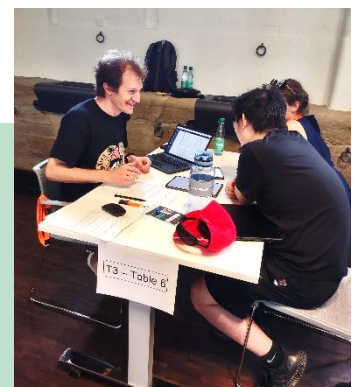
Team Italy was particularly happy with the moderation, and said that they were satisfied with their results. While many other students also finished their moderation quickly, there were quite a few who requested extra time to finish, or were expecting to score more. Saskia Põldmaa from Estonia was not particularly happy with the moderation. She said, "10 minutes is not really enough to devote to one problem. I require a lot more time to discuss my exam problems, because I think I can score more points."

Another highlight of this afternoon was the display of the labs of many Physics institutes such as The Hannover Institute of Technology and the Institute of Quantum Optics. Many students took the tour of the labs and were quite impressed with them.

After the moderation, there will be a farewell dinner in the Kaiserschänke, near the Youth Hostel where the students are accommodated.



Hmmm...
Was I right?
Or Was I
almost
right?



Daily Highlight

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Words From Dr. Stefan Petersen



Dr. Stefan
Petersen

Q1: As someone from the academic committee, and now this time from the organising committee as well this year, what do you think students should focus on more, not just for this Olympiad, but as a generally holistic approach to Physics?

My advice to students would be: Be curious, practice hard, do your best. But also, take your time to look around, get to know people, and enjoy the moment. Being excellent is important but that is not all what matters.

Q2: What defines 'elegance' in any physics problem? If there could be a comparison, then could this elegance be defined or showcased more in theoretical or practical physics?

To me 'elegance' in physics is more a feeling than a well-defined construct. Simplicity, universality, and beauty are aspects that comprise elegance. As a theoretical physicist I am maybe more inclined to see elegance in theory. Noether's theorem, which links symmetries to conserved quantities, is a good example for elegance, I think. On the other hand, clever experiments can also elicit a feeling of elegance. The idea to shift oscillation frequencies by magnetic interaction, that was used in the first experimental problem, is also a very elegant one in my view.

Q3: The role to gender equality in Physics is still a bumpy one. In what ways do you think the world can overcome the various factors to draw more girls towards STEM fields?

To give an exhaustive answer to this question would probably require a book. The gender inequality we see at competitions like EuPhO can certainly not be traced to a single origin. There are many factors affecting engagement in science - not only for girls. To make STEM more equally accessible and to encourage more people to engage in STEM, we need a holistic approach. We should ask ourselves: Why do persons feel they do not belong in STEM? How can we make engaging in STEM meaningful for them? How can we support them become a member of a STEM community? These are no easy question, of course. Still, it is important to search for answers.

Q4: Conducting Olympiads can be incredibly challenging. What were your hardest and best tasks respectively, so far in this Olympiad?

One of the tough parts was the day before the arrival of the delegations and the start of the competition. So many things still had to be done, so many people coordinated, so much stuff to be packed and stored. It was overwhelming for most if not all of us. But when the teams arrived the next day, we got repaid. So much positive excitement and warmth made us feel really good. We love to have you all here and hope that you enjoy the remaining part of EuPhO 23.

Q5: What are your expectations from this Olympiad?

Of course, I hope that everything runs smoothly to the end of EuPhO 23 and no unsurmountable challenges arise. I do believe, though, that we are a strong team of guides, organisers, markers and other helpers working together to bring the event to a good conclusion - a big thanks to you all. If students, leaders, observers and all other guests look back at EuPhO 23 with fond memories and also liked the problems, I will consider EuPhO 23 a success and my expectations met.

Q6: Is there any advice that you could possibly give to the young physicists of tomorrow who are participating in this Olympiad?

Most of the students here already have a very concise idea of what they want to do and which steps to take to realize this. I can only encourage them to follow their ideas, to do something that is meaningful to them and to stay ever curious in mind.

Wonder Women in Physics

Women physicists the world over have made and are making enormous contributions in all branches of Physics. Although we need so many more, here are some German physicists and their famous discoveries:

NO.	NAME	KNOWN FOR
1	Maria Goeppert-Mayer	For discoveries about the shell nuclear structure, won the Nobel prize for this in 1963.
2	Annette Zippelius	Her research was on complex fluids and soft matter. These materials are intermediate between conventional liquids and solids, like gels and foams. In 1998 she was awarded the Gottfried Wilhelm Leibniz Prize. She is a full professor at the Institute of Theoretical Physics at the University of Gottingen.
3	Ida Noddack	She was a chemist and physicist. In 1934 she was the first to mention the idea later named as nuclear fission. With her husband Walter Noddack, and Otto Berg, she discovered the element Rhenium and was nominated 3 times for the Nobel Prize.
4	Agnes Luise Wilhelmine Pockels	She was a chemist whose research was fundamental in establishing the modern discipline known as surface science, which describes the properties of liquid and solid surfaces and interfaces. She became interested in fundamental research in surface science through observations of soaps and soapy water in her own home while washing dishes! She devised a surface film balance technique to study the behavior of molecules such as soaps and surfactants at air-liquid interfaces. From these studies, Pockels defined the "Pockels Point" which is the minimum area that a single molecule can occupy in mono molecular films. She was self taught and was not a paid scientist and had no institutional affiliation.
5	Hilde Levi	She was a German-Danish physicist. A pioneer in the use of radioactive isotopes in biology and medicine, notably the techniques of radiocarbon dating and autoradiography. In later life she became a scientific historian, and published a biography of George de Heves.
6	Cornelia Denz	She is a Professor of Physics at the University of Münster. She works in nonlinear optics and nanophotonics, and is a Fellow of The Optical Society and The European Optical Society.
7	Eleonore Trefftz	Eleonore Trefftz was a physicist known for her work on molecular and nuclear physics. She was appointed as a Scientific Member of the Max Planck Institute for Physics and Astrophysics in 1971.
8	Karin Jacobs	Karin Jacobs is a physicist specializing in micro-fluidics and adhesion at micro- and nanometer scales and a professor at Saarland University.
9	Christine Erbe	Christine Erbe is a German-Australian physicist specializing in underwater acoustics. She is a professor in the School of Earth and Planetary Sciences and director of the Centre for Marine Science and Technology (CMST)—both at Curtin University in Perth, Western Australia, Australia. Erbe is known for her research on acoustic masking in marine mammals, investigating how man-made underwater noise interferes with animal acoustic communication.
10	Maria V. Chekhova	A Russian-German physicist known for her research on quantum optics and in particular on the quantum entanglement of pairs of photons. She is a researcher at the Max Planck Institute for the Science of Light in Erlangen, Germany, where she heads an independent research group on quantum radiation, and is also a professor at the University of Erlangen-Nuremberg, in the chair of experimental physics (optics).
11	Janina Maultzsch	Janina Maultzsch is a physicist who is the Chair of Experimental Physics at Friedrich-Alexander-Universität Erlangen-Nürnberg. Her research considers the electronic and optical properties of carbon nanomaterials.
12	Elke Arenholz	Elke Arenholz is a German American physicist working in the field of magnetic materials and X-ray spectroscopy, where she pioneered the use of superconducting vector magnets to study X-ray magnetic circular dichroism (XMCD). She is the associate director of the Cornell High Energy Synchrotron Source (CHESS)
13	Christine Silberhorn	Christine Silberhorn is a physicist specializing in quantum optics. She is a full professor at the Paderborn University. In 2011, Silberhorn was awarded the Leibniz Prize and was the youngest recipient of the 2.5 million Euro prize at that time.
14	Marion Asche	Marion Asche was a physicist and professor of solid state physics. She is known for her pioneering work in semiconductor physics. ^[1]

German Food Habits



German Breads



Marble Cake

While describing the beauty and culture of any country, the cuisine and food habits of that place must be given due importance. After all, good food is what satisfies the body, gives contentment to the mind, and rejuvenates the soul!

Although it varies from region to region, a perfect German breakfast would be an elaborate healthy bowl of cereal, fruit, slices of meat or Bratwurst (sausages). Yoghurts contribute as a tasty sider. There is a lot of variety in German breads. Hot cross buns, white and wheat bread, hash browns, multi grain bread, sprout grain bread, rye bread are usually very fibrous. There is often a boiled egg on the plate and a variety of bread spreads having cream cheese as the base ingredient, which is often amalgamated with cold vegetables or meat. A cup of steaming black coffee is always seen adjoining the breakfast plate.

Other than this, the Germans might just occasionally have a slice of marble cake, a waffle or croissant to complete their breakfast. The marble cake is a must try - a simplistic yet beautifully shaped cake that looks like a serrated dome on the outside and has chocolate swirls on the inside. It is so delicious that it can be eaten after any meal of the day and not just restricted to breakfast.

Lunch is more of an 'on the go' meal. You will often see Germans walking past you, engrossed in work, and quickly taking a bite of one of these foods. Deep-fried Schnitzels are particularly popular and have thin slices of meat coated with bread crumbs. However, the döner also has a place in the German appetite. It consists of

fine slices of your favourite meat, lots of flavoured sauces and mayo, spicy chilly powders, salad topping and French Fries. All this comes in a concise box called döner box. A 'Berliner' can be a perfect way to conclude the meal. It is a German doughnut that is one without a hole in it, and is sprinkled with a layer of powdered sugar, making it look like a snow-capped ball of cake.

If you are in the mood of eating spicy and wish to tingle the taste buds, then currywurst is the ideal option. It is a cut sausage with red chili sauce poured on it. In some restaurants, this chili sauce has levels of spice from 1 to 9. 1 being the lowest and 9 being the highest. It is fun to see which one you can tolerate!

Desserts include lovely cake pastries having flavours such as apple, cinnamon, banana, strawberry, plum, coffee, and more. They have soft and delicious layers of cake and cream. Of course, the conventional puddings, ice creams, brownies, dumplings, trifles, muffins and cupcakes never lose their charm!

Last but not the least - German beer! This beverage is an extremely important part of Germany's food culture. Germans relish it at any time of the day and during any meal. Many folks are seen walking on the sidewalks with a mug of beer in their hand, sipping it as they stride along. Real justice is done to these beverages at the time of weekends or holidays, as a mark of celebration. Beer huts are a part of carnivals as well, where people forget all worries and just want to be themselves.

Cheers!



Currywurst



The Berliner



Döner box

Germany Offers Unique Insights into Research with Voluntary Year in Science (FWJ)

The Voluntary Year in Science (Freiwilliges Jahr in der Wissenschaft - FWJ), is a German speciality. It opens doors for high school graduates interested in studying or training in the natural sciences. For one year, participants gain insights into the work of universities and other scientific institutes and learn the basic steps of research. The year enables the participants to take confident decisions about their studies. PhoenixD supports the Voluntary Year in Science and offers several positions each year. The application deadline for the next intake is 31 January 2024.

The FWJ starts in September 2024.



You can learn more about this here:

<https://www.phoenixd.uni-hannover.de/en/phoenixd-research-%20school/voluntary-scientific-year>

Hannover Gets a New Optics Centre – The OPTICUM



The OPTICUM

Leibniz University Hannover (LUH) is getting a new research building: the OPTICUM – Optics University Center and Campus. The construction of the four-story building will be funded half by the Federal Government and half by the State of Lower Saxony with €54.2 million in total. According to plan, more than 120 researchers in optics will work together under one roof starting in 2026 in the Science Area 30X.

The OPTICUM is managed by the Leibniz School of Optics & Photonics (LSO), which was founded in spring 2020. The LSO is closely linked to the Cluster of

Excellence PhoenixD and is equivalent to a faculty in its structure. “Our OPTICUM will be the research building for all scientists from the disciplines of physics, mechanical engineering, chemistry, electrical engineering, mathematics, and computer science working together on the digitalisation of optics research and optics production,” says Uwe Morgner, spokesperson of PhoenixD and the LSO.

To learn more about the OPTICUM, see:

<https://www.phoenixd.uni-hannover.de/en/opticum>

The Passing of two Stalwarts

A Dedication to Dr. Bojan Golli

We all know Professor Dr. Bojan Golli as the Honourable Chairperson of the EuPhO 2022 conducted in Slovenia. Sadly, Professor Golli passed away due to cancer in March this year. Bojan Golli graduated in 1973 at Ljubljana University, and in 1976 he was already fully involved with the national high school competitions in Physics in Slovenia. In 1984, he participated in his first IPhO as the leader of the Slovenian students, and they were a part of the then-Yugoslavian team. A year later, he was one of the organizers of IPhO in Portorož. Bojan was known for his kind cheerful character and good instinct about physics problems. He made a lot of friends in the IPhO community during his 15+ years of active participation as the leader of the Slovenian team. He was also responsible for Portugal to join IPhO, as he persuaded one of his Portuguese friends to organize their first team of students.

Besides his involvement in IPhO, he was the pillar of Slovenian national physics competitions. Being the president of the national academic committee for more than 20 years, he was actually discussing the problems of the national completion in 2023 just a week before his death. He was actively involved in the preparation of



Dr. Bojan Golli

EuPhO 2022's experimental problems, particularly in the wording of the questions and the necessary theory that the students must know or use to solve individual parts of the problem.

Unfortunately, his optimism and the will to live could not overcome the illness. May Dr. Bojan Golli rest in peace.



Dr. Adrian Dafinei

In the Memory of Dr. Adrian Dafinei

In the world of physics, Professor Dr. Adrian Dafinei was known as the architect of success for the Romanian teams at the International Physics Olympiads.

He was a man with a vast and profound cultural value, an exceptional professor, and a remarkable physicist. Professor Dr. Adrian Dafinei surprised and pleased the students every time with clear explanations that highlighted the essence of physical phenomena.

Professor Adrian Dafinei was known for his brilliant solutions to all kinds of problems, and would approach any situation with fairness and modesty. He had a tireless desire to provide unconditional help.

With the passing away of Dr. Adrian Dafinei, the world has lost an exceptional man and a great physicist.

People's Specials



Majra Sisic Caluk, Leader of Team Bosnia

Majra Sisic Caluk, Leader of Team Bosnia

"This is my first time as a leader in an Olympiad held physically. I'm enjoying the responsibilities for my team and I'm really happy that I got this chance. I'm exploring a new country, a new culture, and happy to see people practicing a very different kind of Physics. It doesn't matter to me what kind of prize my students win, as I only want my students to meet their own expectations. Unfortunately, we don't have any girls in our team. And I really hope that more girls in Bosnia and world over start getting included more in STEM."

Hendrik Maas and Annika Koop, Helpers at EuPhO

Hendrik: "It's been really tough and hectic, but it's been a great experience. It's my first time at a Physics Olympiad. It's great to meet so many different cultures at one place!"

Annika: "I hope that all the guests and the participating students had a lovely time. It's so heartening to see so many people learn physics, it's cool to meet them all!"



Hendrik Maas and Annika Koop, Helpers at EuPhO

EVENT SCHEDULE

June 20

Students' program

7:00 - 8:30	Breakfast
8:45 - 9:30	Transfer by public transport with guides
10:00 - 12:30	Closing Ceremony
12:30 - 14:00	Lunch
14:00 -	Individual Departures

Program Leaders and Observers

7:00 - 9:00	Breakfast
9:00 - 9:30	Walk to LUH
10:00 - 12:30	Closing Ceremony
12:30 - 14:00	Lunch
14:00 -	Individual Departures

EDITOR-IN-CHIEF

ASIRA LELE

WRITERS TODAY

ASIRA LELE
SONJA SMALIAN
JUI ATRE

LAYOUT

JUI ATRE

DESIGN CONCEPT

KARIN VIERK

WEBSITE DEVELOPER

AKSHAY KULKARNI