DESY inFORM.

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Newsletter of the
Research Centre DESY

Trainee's got talent – here at DESY!

Two DESY trainees excel in different trainee competitions

Women and technology – no way! Two female DESY trainees have just shown in a remarkable way that this old prejudice no longer holds. Josephine Krüger in Zeuthen and Manon Föse in Hamburg obtained top placements in the search for the nation's best trainees.

This year, Josephine Krüger finished her training as an industrial mechanic (precision toolmaking) in Zeuthen. The Cottbus chamber of industry and commerce honoured the 21-year-old as the best apprentice of her professional group. In this training year, 3477 young people of her district, from 140 different professions, took their final exam. 34 of them were distinguished because they had finished their training with grade A, with more than 92 per cent of the maximum 100 points.

The good results also paved the way for her future career: immediately after her training, Josephine was employed at the manufacturing facility Astro- und Feinwerktechnik Adlershof. "Although I would have liked to keep her at DESY, this is a fantastic opportunity for Josephine," said supervisor Jürgen Grote from the central mechanics workshop.

The trainee competition in Hamburg had a different approach. Here, the chamber of commerce, in collaboration with the chamber of trade and the newspaper "BILD Hamburg", searched for the "trainee of the year". For DESY, supervisor Sabine Marquardt nominated Manon Föse to enter the competition. A jury ranked the 22-year-old technical product designer in her third training year among the top 20 of trainees out of 125 enterprises. This is where the competition really started for Manon: she had to prove herself in various contests, e.g. a skills test, a Hamburg history quiz and a star interview, and she also had to produce a one-minute mobile video about herself and her occupation.

Manon did not come first at the competition but nevertheless she reached one of her main objectives: to prove that there is a place for women in technical professions.

Now she will consistently continue on this path: after finishing her apprenticeship, the enthusiastic football player plans to study engineering within the framework of a dual apprenticeship at DESY and the Hamburg University of Applied Sciences, and she hopes for a continuous strong support from DESY. *(tz)*

Josephine Krüger (3rd from right) and her training instructor Jürgen Grote (middle) at the award ceremony in Cottbus.

Manon Föse and her training instructor Sabine Marquardt.

100th birthday of Willibald Jentschke

On 6 December, DESY's founder Willibald Jentschke would have turned 100 years. From 1959, Jentschke had been the first director of this centre until 1970, when he became director at CERN. He always had strong ties with DESY. Every year, DESY honours its founder, who passed away in 2002 at the age of 90, with the Jentschke Lectures.

Photon Science Users' Meeting

There will be another European XFEL and HASYLAB users' meeting early next year. From 25 to 27 January, current and future research at the Hamburg X-ray sources will be discussed in the DESY auditorium. On the last day, a poster session and an industrial exhibition will take place from13 h to 18 h in the so-called Reemtsma-hall 80a.

DIRECTOR'S CORNER

Dear colleagues,

6 December 2011 is the 100th anniversary of the birthday of our founding father Willibald Jentschke. It was he who – with his charm and his legendary negotiating skills – combined his appointment as a professor at the University of Hamburg with a claim for a particle accelerator, squeezing out the at that time incredible sum of 7.5 million Deutschmarks, which eventually lead to the foundation of DESY. From the founding day until the end of 1970, Willibald Jentschke was Chair of the DESY Board of Directors. With his charismatic and visionary leadership style, he shaped DESY on its way to an international research centre.

"We must put our future plans on the basis of international collaborations – certainly within Europe and perhaps, if the circumstances allow this, also within a global framework." These were the words Willibald Jentschke wrote in 1975, then Director General al CERN. Jentschke's wise and anticipating words perfectly describe our current development: we have become a highly attractive partner and an energetic designer of strategic partnerships. Also this year, we concluded new strategic research partnerships which substantially increase the power of our research centre.

In February, we concluded an agreement with Sweden on their participation at the PETRA III X-ray source. With the so-called "Swedish Materials Science Beamline", a very sophisticated experimental facility will be developed, using the extremely brilliant PETRA III beam for materials and nanoscience experiments. In May, we agreed on the establishment of the Ioffe Röntgen Institute (IRI) with Russia; this puts the cooperation between German and Russian scientists on a new strategic level, strengthening it on a long-term basis. Finally, we signed an agreement on the participation at PETRA III and FLASH with India, to facilitate the Indian scientists' community the access to our sources. Brazil could become another promising partner. A first declaration of intent was signed in the presence of Germany's Federal President and Brazil's President Roussef. Only recently, our good connections in the field of particle physics were extended with DESY´s participation in the Belle II experiment at the KEK laboratory in Japan.

We must not forget to mention the regional and national collaborations. The Centre for Structural Systems Biology, established with partners from national universities and research facilities from Northern Germany, is gathering speed. Here, too, the excavators will soon take up operation to erect a new building.

Jentschke was both DESY director and professor at the University of Hamburg. Cooperation with the University has always been an important matter for us. Therefore, at the beginning of this year, PIER – the strategic Partnership for Innovation, Education and Research – was established. The joint PIER office, opened up in summer, promotes cooperation with the University. First actions as the fund of ideas have already been kicked off.

Also this year, a lot of building activities left a mark on our campus. The European XFEL entered its third year of construction. Meanwhile, about 80 per cent of the tunnel system has been completed and the injector complex with the modulator hall at the DESY construction site has been erected. Groundwork for the construction of FLASH II has started – an extension to secure the badly needed research capacities at our top class facility. The futuristic CFEL building with its modern architecture will be concluded next spring; creating enough room at last for the ideas and visions of this unique research platform.

In the course of succession planning for Zeuthen, we gained Christian Stegmann – a leader personality who will significantly strengthen our astroparticle physics activities. Let me take this occasion to express our heartfelt gratitude to Ulrich Gensch, his great achievements for Zeuthen being awarded with the Federal Cross of Merits.

Dear colleagues, we have achieved a great deal together this year. I wish you a pleasant Christmas season and I am looking forward to seeing you again – safe and sound – after New Year.

Yours,
Helmut Dosch

Safety first!

Andreas Hoppe, head of the DESY occupational safety department, in an interview with DESY inForm

A serious accident has shocked the DESY community: a vacuum vessel weighing several tons toppled over in the PETRA III experimental hall, with two colleagues buried underneath and one injured. The three injured persons are now on their way of recovery – for some of them this will take a long time. The cause of the accident is still being analysed. In his interview with DESY inForm, Andreas Hoppe, head of the occupational safety department at DESY, appeals to all DESY staff members to always be aware of possible dangers in order to minimise the risk of accidents.

DESY inForm: *Mr. Hoppe, is DESY a dangerous place to work?*

Andreas Hoppe: Just look at all the equipment you find here. We deal with different items every day. They are round, pointed large, heavy – there are no uniform tools like those in a car factory, where the same kind of engine block is processed in always the same manner. At DESY, the situation changes continuously, and therefore it is extremely important that each and every one of us considers first: what is the right way to do this? So once everybody is aware of the possible danger and takes care of the appropriate safety measures, DESY is a safe place to work.

Even so, accidents occur. What are the main problems?

The cooperation among the institutes is very important in this respect! Guests from umpteen countries come to DESY. They get instructions, of course, before they start research work at our site. However, we do not know in which way they are working with others – different institutes, many different nationalities, all in one experimental station – not all are aware of who is skilled to do something and who is doing what.

What can people do in this case?

We can only recommend: be careful, be sensitive, look for advice and help if needed. Don't hesitate to ask, especially when you have no experience. Have the courage to say: I am not capable to do this, can anyone help? Planning ahead is very important too! How do I get a certain instrument to my experimental station safely? If this happens, there is enough time to organise this. Remember the appeal of the directorate: safety has top priority.

Who may I contact when I think that there is a safety problem?

The responsibility is always with the supervisor or the person in charge of the experiment. For special questions, please contact D5, the safety and environmental protection department.

What can DESY do?

We are in the process of finding out if it is necessary to centrally register all unusual equipment, so that the responsible person for the hall or for the experiment gets informed about dimensions and weight to have the possibility to assess the time needed for installation. Here, the information flow between the various institutes on the DESY campus can be optimised. Sometimes, we only get short notice of the delivery of heavy equipment. Other kinds of information are important too, for example when dangerous substances are being handled. In case of emergency – perhaps in case of a heart attack – this information is vital for us.

DESY has a self-defined goal: 100 days without an accident. Why is it so difficult to achieve this?

Well – first of all you must know that we only count accidents that cause more than three days' absence. When analysing these accidents it becomes evident that they seldom occur because of technical failure but in most cases due to human error. Moreover, we record a large number of commuting accidents, mostly bicycle accidents.

So, what is your appeal?

Watch out! Watch out! Watch out! Switch on your brain, plan in advance, be prudent. Don't be afraid to ask for help – even if it takes more time. Safety first! *(tim)*

Open Day 2011

13 600 visitors, 850 helpers, 70 activities and – last but not least – a "Golden October" day contributed to a fantastic atmosphere at the DESY Open Day in Hamburg.

WHAT'S ON AT DESY

December

6 **Employee's Meeting**
DESY, Hamburg, auditorium, 9:30 h

7 Science Café DESY (http://sciencecafe.desy.de)
Myonen – Spione im Nanokosmos
Michael Birke, DESY Bistro, 17 h

14 DESY's Christmas show
Die Kopfball Experimente-Show
Kopfball-Team, WDR Köln,
DESY, Hamburg, auditorium, 19 h

January

11 Science Café DESY (http://sciencecafe.desy.de)
Auf der Überholspur – Gerät Einsteins Relativitätstheorie ins Wanken?
Gotthold Fläschner, DESY Bistro, 17 h

17 Dolt and PIER (http://doit.desy.de)
The PHD Movie!
DESY, Hamburg, auditorium, 20 h

25 Science Café DESY (http://sciencecafe.desy.de)
Die Physik des Knotens
Volker Schomerus, DESY Bistro, 17 h

25 Informationsveranstaltung Gesund Bleiben
Übergewicht
Manfred Dreyer, DESY, Hamburg, Sem. Rm. 1, 16 h

26 Public Lecture
Die abgedrehte Welt der Sternenrotation
Marc Hempel, DESY, Hamburg, auditorium, 19 h

25-27 Users' Meeting
HASYLAB Users' Meeting
DESY, Hamburg, auditorium

25-27 Users' Meeting
European XFEL Users' Meeting
DESY, Hamburg, auditorium

31 Symposium
DESY in Brandenburg – 20 Jahre Staatsvertrag
DESY, Zeuthen

All current events: www.desy.de/events

Hardware gone – Password gone ?!

What to do when your laptop is stolen?

by Carsten Porthun

Everybody knows: if you lose your mobile or it is stolen, it is important that you have your SIM card blocked immediately to prevent excessive phone bills later. However, this is not all you should have to have in mind if a mobile or your notebook gets lost.

Your password, for example, is saved in these tools. Although it is encrypted; in the era of cloud computing, it can easily be reconstructed from the information stored in these tools. Therefore, in case of loss of electronic equipment with your passwords, you should immediately change all passwords, including web services in case you save these passwords in the web browser.

In case you use the so called private/public key procedure, you should follow the certificate policies and block your certificate.

In case your lost tool was registered for access to internal DESY networks, you must inform your respective administrator. He or she will prevent that unauthorised persons visit the DESY network, possibly causing considerable damage. If mobile phones and computer have a SIM card, you must immediately contact the network provider to block this card.

As a preventive measure, you should not store sensitive data and information on equipment you are carrying with you. Use the central DESY storage systems and use the remote access if needed. Do not save passwords in applications and think twice before you configure the access to the DESY network on each electronic tool available to you.

More advice and tips at http://rsr.desy.de

Long pipe for deepfreeze tests

Mounting of helium pipeline for the AMTF hall

The European XFEL accelerator module test hall will soon become one of the coldest places in the universe: a new helium pipe will supply the test stands with the necessary cooling. Assembly started at the end of November and weather permitting, the first transfer line modules will be mounted on the bridge before the end of the year.

The bridge for the 168-metres-long transfer pipe was already erected.

The 168-metre-long special pipe to the DESY helium cryogenic plant is a contribution of Poland for the X-ray free-electron laser European XFEL. The modules were produced by the specialist firm KrioSystems in Wroclaw. The pipes transfer cold helium with a temperature of 4 kelvin (-269 degrees centigrade) to the Accelerator Module Test Facility (AMTF).

In the hall, the helium is cooled down to 2 kelvin – this is colder than outer space. As in the X-ray laser FLASH, the superconducting accelerator modules of the European XFEL only work at these frosty temperatures. Prior to the start of the module tests, the cryostats must be delivered in April 2012; another contribution of Poland for the European X-ray laser. *(tim)*

German-Japanese Workshop

Modern Trends in Quantum Chromodynamics

For decades, intensive science and high-technology relationships exist between Germany and Japan. Japanese colleagues work at several research projects at DESY. In October, a DFG funded German-Japanese Workshop "Modern Trends in Quantum Chromodynamics" on current research in the field of theoretical physics took place in Zeuthen. The goal is to intensify in both countries the relations between different research groups in the field of strong interaction.

Honouring 150 years of diplomatic relations between Japan and Germany, Satoshi Odoi, 1st Embassy Secretary for science and technology opened the conference. Photo: Vogel *(ub)*

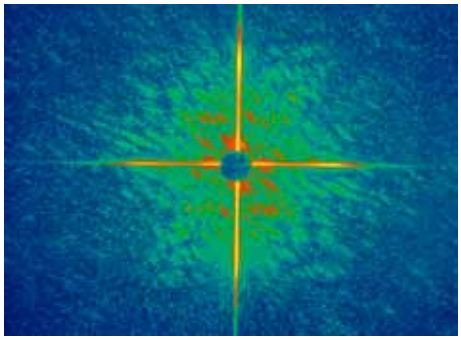
FLASH II gets under way

Workshop on new science opportunities at DESY's free-electron laser

Measuring time at FLASH, DESY's unique free-electron laser worldwide, is a scarce resource. The measuring stations are heavily overbooked and demand is likely to rise even more. The FLASH II extension, currently under construction next to the original FLASH tunnel, will double the capacity of the facility. To be on the safe side, plans also include space for a third undulator line in the new tunnel, as the 150 participants of a user workshop recently held in Hamburg were informed.

The FLASH II extension follows an ambitious schedule. End of 2012, the new tunnel and the additional experimental hall will be completed and ready for equipment. Beginning of 2013, the connection to the FLASH accelerator will be made and the laser beam pipe will be fed through the PETRA III ring. Later that year, FLASH II could start operation with a first measuring station.

Initially, up to six experimental stations are planned for the new hall, as



FLASH II is to be equipped with specialised experimental stations, for instance for diffraction experiments.

experiment coordinator Elke Plönjes-Palm informs. However, FLASH II will do much more than only doubling the measuring time. With the extension, the facility will also become more flexible; variable gap undulators will allow the modification of wave lengths during operation. Currently, this can only been done by altering the electron beam energy, which makes necessary a new adjustment of the accelerator.

"Moreover, it is envisaged to build up long-term specialised experimental stations at FLASH II," Elke Plönjes-Palm reports from the „New Science Opportunities at FLASH" workshop. A chamber, for example, which is especially suited to take good diffraction pictures, or a special pump-probe experiment station, which allows experiments with extremely high time-resolution in the femtosecond range. The advantage of this is not only the avoidance of time-consuming installation and de-installation; it also improves the possibility to further develop and optimise these stations.

The new tunnel offers enough space to build up a future third undulator line as an optional supplementary extension. It would serve further measuring stations in the new hall and rather cover the longer wavelengths between 8 and 80 nanometres, whereas already today, FLASH is able to generate 4 nanometres. *(tim)*

LHC "Weltmaschine" Day

First science slams at and by DESY

Two years of proton-proton collisions at the LHC – on this occasion, universities and research centres in 15 cities in Germany celebrated the "Weltmaschine" Day. At this day, DESY presented two science slams, one in the Urania event hall in Berlin and the other one in the DESY auditorium in Hamburg. At the science slams, scientists compete against each other with short talks. In only 10 minutes, they had to convince the audience and the jury as well. And they have succeeded: the enthusiasm of the audience could be felt – and heard – in both locations.

In Hamburg, also the Science Café and the particle physics exhibition (photo) were well attended. *(gh)*

The Bonn particle physics show gives an impression on how the DESY physics show will present science with fun.

Show stars wanted

Physics show in the making at DESY

The audience is fully in action: a huge Mexican wave is travelling through the auditorium as the spectators are jumping off their seats. We know this scenario from pop concerts football games, but soon it'll also happen at the DESY auditorium. The physics show, planned by Humboldt laureate Brian Foster and PhD student Marc Wenskat, will illustrate how accelerators work. This is done, for example, with balls hovering over a Mexican wave: "Only when the wave is moving correctly, the balls that are placed on the wave will move forward," Wenskat explains. This is also true for a real accelerator. With two Mexican waves travelling in opposite directions, it is also possible to simulate particle collisions.

With a lot of fun and entertainment, the show will provide simple explanations for phenomena centred on accelerators. "First, we want to present the show at DESY," Wenskat explains, "but once everything is well-practised we will try it outside." The idea is that it can be booked as an event, bringing science to the people.

The development of a concept has just begun. It requires planning for the presentation of experiments, acquisition of the experimental set-ups and practising of the individual stages of the show. The planning team already has a lot of ideas on what to present – after all they travelled around to see what others do. However, two decisive factors are still missing – more volunteers and a name for the show. *(gh)*

INFO

Contact: marc.wenskat@desy.de

HELMHOLTZ ASSOCIATION

Two Galileo satellites now in orbit

The first two fully operative Galileo satellites now orbit the Earth at about 23 222 kilometres altitude. On 21 October, they departed from the Kourou spaceport in French Guiana aboard a Russian Soyuz rocket. This means that the building of an independent European satellite navigation system in space has finally started.

Until 2020, a total of 30 satellites will orbit the Earth and provide geopositioning data which are considerably more precise than those made available for civilian use by the American GPS system. Operation and control of the satellites is carried out under the responsibility of the Galileo Control Centre of the German Aerospace Centre (DLR) in Oberpfaffenhofen. Construction and operation of the system is funded by the European Union.

The Galileo system is also supposed to provide data for research purposes. The experts expect more precise measurement data of the movement of tectonic plates; this could improve the risk assessment of earthquakes and other natural disasters. The signals transmitted by the Galileo satellites also allow for the measurement of vapour and temperature in the Earth's atmosphere. These data are of high significance for both weather forecasts and meteorological and climatological research.

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LHC 2011 with data record

The Large Hadron Collider (LHC) at CERN surpassed all expectations this year. The world's largest particle accelerator registered about 400 billion proton collisions, thus reaching nearly six inverse femtobarns of data. Originally, the goal had been to reach one inverse femtobarn to in 2011.

Seeking Paul Ewald fellows

The Volkswagen Foundation offers a second round of postdoc fellowships for research at free-electron lasers. These Paul Ewald fellowships allow young researchers to test the latest research methods at the LCLS at SLAC in California. The Foundation has issued a new call; the deadline is 25 January 2012.