

Auditorium accessible

The remodelling of the foyer is still in full swing. The auditorium, however, will probably be accessible again as of August 20 via the newly built emergency exit. As usual, call 1555 to make reservations.

DESY on air

A summary of the discussions at the Hamburg Science Forum will be broadcast by NDR 90,3 on August 4 at 19:05 h in "Abendjournal Spezial". The event was recorded end of June at DESY during the HERA Fest.

Festivity photos

Photos of the HERA Fest including symposium, colloquium and party are available on the DESY intranet: see www.desy.de → Internal → Photo archive.

XFEL short movie

The short XFEL film (trailer) produced on the occasion of the XFEL launch on June 5, along with some images of the launching ceremony, are ready for download from the web: www.xfel.net/de → XFELmediabank

Director's Corner



Pride of the success mixed with some melancholy into a memorable party at the end of June, honoring HERA, its team and the experiments. Nearly 1800 participants looked back on the achievements, acknowledged in a series of outstanding lectures. Even Goddess HERA, surrounded by slaves and a slave driver with a whip, took the opportunity to pay a visit. In spite of the typical Hamburg weather the party went on far beyond midnight. Immediately the following Monday, July 2, numerous diggers removed the shielding of the PETRA tunnel in the east, parallel to the preparatory work for the foundations of the new hall. Containers appeared at all PETRA access points that were quickly filled with cables and other old equipment. Many of the old PETRA components are being dismantled, overhauled and built in again. Some of the shielding walls of the hall are dismantled block by block in order to provide transport routes. DESY staff members are not able to do all this work alone, so they are getting support from external workers, who are often not familiar with DESY.

(continued overleaf)

Back in the Limelight

PETRA is getting completely remodelled

PETRA will be completely remodelled and return to the limelight as one of the brightest storage ring X-ray light sources worldwide. This will change its role fundamentally. In 1978 the storage ring PETRA took up operation at DESY and one year after celebrated its first results. The discovery of the gluon was the climax of particle physics at PETRA, but with the start of HERA operation, the accelerator took a place in the second row of DESY facilities and was "only" a pre-accelerator. Immediately after construction start of the PETRA III project, heavy-duty cranes started operating at various places around the ring. Excavators remove the mound at the site of the new hall which once was built with sand from the



No Problem Parking this: With the manoeuvrable transverse engine, nearly 200 dipoles weighing roughly 8 tons are removed from the tunnel.

Elbe tunnel excavations, and with forklifts and transverse engines, the whole PETRA accelerator is being upgraded. Cutting torches and bolt cutters are used at the construction site of the new experimental hall. Nearly all dismantled magnets will be equipped with new coils, some will be replaced completely. Beam pipes, water

and power supply have been completely remodelled. "Only one magnet will remain in the tunnel," explains Hannelore Grabe-Çelik, who coordinates the remodelling works, "the one located at the site where FLASH crosses the PETRA ring." As of end of October, the overhauled parts will be installed again, together with many new assembly parts. (tz)

Promoting International Networking

Wanted: Helmholtz and Humboldt Award Laureates

If you want to cope with the challenges of the future and at the same time promote the quality of research, you will probably try to establish excellent national and international partnerships. Since April 1 2004, Helmholtz scientists are getting support in the form of the Helmholtz-Humboldt Research Award. Up to six renowned scientists from abroad can receive this recognition every year. Apart from the sum of 60,000 Euros, the laureates

are given the possibility to do research at a Helmholtz research center for a period of 6 to 12 months. With the aim to strengthen cooperation between non-university research facilities and universities, at least one of the collaboration members should be a university partner. In case the laureate decides to accept the invitation to come to Germany, he or she will receive an additional 25,000 Euros. Candidates can be nominated

by the directorate or leading scientists of the Helmholtz centers, or by cooperating universities and former Helmholtz and Humboldt Research Award laureates. Proposals should be submitted to the Alexander von Humboldt Foundation, the nominations are evaluated twice a year by a selection committee. (cm)

www.humboldt-foundation.de/en
→ Fellowships and Awards →
Research Awards

Director's Corner

Some months ago, I have already pointed out the possible dangers. The warning was not just a wild guess: some accidents have already occurred in the first two weeks of remodelling. Even though luckily the persons involved have not been seriously injured, I would like to ask you once more to really take care that you and all your colleagues return home every evening safe and sound. Look before you leap, think first before doing something, and open your eyes to watch out for possible dangers. Attention and prudence are the best ways to master the upgrade successfully and unharmed.

Sincerely,
Albrecht Wagner

A Picture-Book Kindergarten

New rooms, new garden, new concept

After the summer, everything will be a great deal bigger for the small ones. The DESY kindergarten is currently being completely remodelled. The amount of space will double, the existing 'elementary group' (age 3 to 6) will include a day-care for toddlers and an after-school care. In the future, it will become a care center for 50 children instead of the current 20 and the grounds will be twice as large. The tried and popular concepts among the parents, however, will not be changed: English remains 'official language' and the scientific technological orientation does, too. Officially, the kindergarten now belongs to the



Children will have more than twice the space they have now.

Hamburg KiTa system and is open to all Hamburg children. However, 30 places are reserved for DESY. Billing will

be handled by Hamburg authorities, but there will be special regulations for DESY children from surrounding communities and from guest scientists.

The list of new rooms looks like the wish list of a five-year-old. Inside there will be a water playground, a three-meter high climbing room and a children's restaurant. Outside, hilly landscapes, a fruit and vegetable garden, an amphitheater and a low ropes course are planned.

End of construction is planned in October, and then the small ones can move in. (baw)

Modern-day Pile Dwellings

Unusual construction design for the PETRA III experimental hall

Among the numerous projects currently coordinated by the DESY construction division, the PETRA III experimental hall stands out. A concrete slab of one meter thickness will bear the experiments in the future. Climatic conditions like wind or snow exert traction and pressure forces on the foundation, which may be harmful for beam operation. Thus, the concrete slab will be separated from the hall superstructure. Previous seismographic measurements at 57 km/h wind speed have shown vertical movements of 2.6 micrometers. The load will be carried by so-called tubular cased piles below the foundation.

"These piles have a diameter of one meter and a length of 20 meters, with the upper 15 meters separated from the adjacent ground by a sliding layer. This is new for us, too," explains Professor Thomas Richter, the underground engineering special-



Pile construction: Installation of the steel case and the steel cage (reinforcing cage), followed by concrete casting.

ist of the planning firm GuD. Beginning of July, two test piles were inserted into the ground at hall northeast. According to calculations from GuD, 96 tubular cased piles are necessary to reduce ground deformations to a minimum. Instead of conventional construction methods, a clay water suspension was pressed into the open drill hole, reinforcing the surrounding soil and protecting it from ground water.



Test preparations: Lots of measuring instruments are fixed to the reinforcing cage.

This suspension also avoids contact between drill hole embrasure and concrete core of the pile. Thus, unwanted pressure is transferred deeply into the ground. The opposite is wanted at the pile footing: in the lower five meters, concrete was poured directly against the drill hole wall, and during setting, a cement suspension was injected with high pressure to obtain additional stability. Moreover, the sliding layer at the second



Load test: Propped up against a steel girder, the hydraulic press presses on the pile.

test pile was replaced by an "artificial ground." Mid-July, both piles were submitted to a load test.

"I have never seen any test piles equipped with so many measuring instruments like here," said Professor Hans-Georg Kempfer, the appointed independent surveyor. After evaluation of the load tests, serial production of the piles is going to start. (she)

Safe Construction Sites

Watch out on the DESY campus

Things have changed since the beginning of July. It isn't only the scientists who notice this because they do not have to work night shifts any more. With the upgrade of the PETRA ring, suddenly there were many changes on the campus. The roundabout at the main gate has been cleared for better visibility, diggers dig for the new hall, trucks remove soil and scrap, and with special machines and traverses, DESY and external company workers giving a major overhaul to the PETRA tunnel and halls. All these changes often cause confusion, and in order for them not to cause accidents as well, the security and environmental protection group D5 is committed to accident prevention. Members of this group make surveys of work situations, job-site inspections, organize and hold training courses and carry out tests. If an accident does happen, it is



Sparks from the cut-off wheel—please take extra care in unfamiliar situations.

documented and examined to determine the cause. Since the beginning of the PETRA III remodelling, some incidents have happened, but so far no patterns were discernible. "The remodelling has started more event-

fully than desired," says Annette Nienhaus from D5. "Of course, unusual jobs bear unusual risks, but this does not necessarily mean more accidents." The group has safety-trained all persons involved. External

workers often get two safety trainings: one from their company and one from DESY. Nienhaus wishes that "safety should come automatically, in the same way you automatically put on your seat belt in the car."

The deskbound DESY staff can do their part—this is how to prevent accidents: watching out for truck and forklift drivers can be of great help, for the dense traffic on the campus is unfamiliar to everyone. The driver of a loaded forklift only has a restricted view ahead and if you do not want to be forklifted on the way to the canteen you better pay attention. It goes without saying that, you have to wear hard hats and safety shoes in construction areas. Take extra care in unusual situations, which does also apply in case a job has already become routine. Above all: always stay calm and cool-headed —safety first! (*baw*)

Resting in pieces

The future of HERA and its detectors

Now that protons and leptons have stopped circling the HERA tunnel, the HERA machine is retiring to a well-earned rest (but stays tuned for possible future use). Most parts will remain in the tunnel, protected against corrosion from the inside: the vacuum vessels inside the high-tech machine will be flooded with dry nitrogen. "This stops humidity or oxygen from entering, which would be fatal not only for the cavities," explains HERA coordinator Bernhard Holzer. The warm electron ring is already full of nitrogen; the cold proton ring has to be warmed up carefully first. The climate in the tunnel itself

must stay warm and dry. Only few parts—some electronics, controls or power supplies, for example—move from the tunnel to a new home. For many parts of the three detectors H1, HERMES and ZEUS retirement is not in sight. Different components come from different institutes around the world, who are now starting to take them apart and ship them back their home institutes. Some will be used for new detectors, some for student experiments, and some might even end up in exhibitions. (*baw*)



XFEL

What will now happen after the launch?

The XFEL was officially launched on June 5 in the presence of politicians and the press. On June 6 already, a simple mouse click sent the Europe-wide call for tender for the underground constructions over the Internet. The ground-breaking ceremony to mark the start of the civil engineering work is now foreseen for spring 2008. By then, a second goal will also have been reached: the signing by the participating nations of the convention for the foundation of an independent European XFEL GmbH (Limited Liability Company). Until then, the international XFEL steering committee will continue its work under its new chairman Professor Dr. John Wood from the United Kingdom. (*pf*)

Physicists of the Future

DESY projects help pupils in their vocational orientation

It is never easy to choose the right subject to study without knowing what to expect. However, six pupils from Gymnasium Oberalster in Hamburg and Ludwig-Meyn-Schule in Uetersen already know what they will do after leaving secondary school: Physics is their favorite subject, and DESY has played an important role in this. In cooperation with DESY, the secondary school pupils enhanced their physics knowledge at HASYLAB during term which might even improve their grades in final exams. The stage was organized by Karen Ong from the 'physik.begreifen school lab' and HASYLAB scientist Karen Rickers. "This project meets pupils at a stage where school is not able to help any more," Karen Ong explains. The experience of being on campus

and experimenting at real experimental setups is more valuable than any vocational guidance counselling. However, this means that the pupils have to work hard. In the physik.begreifen quantum physics lab they practised with experiments to prepare themselves for the great experiment for absorption spectroscopy at the C beamline. With sufficient basic knowledge and with the help of Karen Rickers, the pupils planned their own experiments. They wanted to test leather from a tannery for poisonous chromium, a stone from Alaska for traces of lead and soil from the school garden for iron and titanium oxide. At the same time, basic experiments were carried out with metal foils, copper oxides, titanium oxides and chromium oxides. "The group had respect for the beamline but nevertheless they were proactive, explained correlations to each other and worked with great motivation," Karen Rickers remembers. For half a year, she met with the group at HASYLAB every month for half a day—which was still compatible with her full schedule. Anyway, it gave the pupils the opportunity to get an idea of the life of a scientist. At the moment, every pupil is writing an individual scientific-style term paper that will be part of the grade for their final exam. Since 2004, the school lab in Zeuthen is equally committed to fostering the next



At HASYLAB, a group of pupils arranges the measurement of their prepared samples at the C beamline.

generation by offering experiments in the field of cosmic rays. For the first time, one of the partner schools, Friedrich-Schiller-Gymnasium in Königs Wusterhausen, had integrated this into a specialized physics course. This was carried out by sharing the work load: scientists and student assistants were in charge of specialist supervision whereas the teacher had the task of moderator

and formal consultant. At the end, each group presented their papers, websites and posters in a lecture. One of the groups that had been involved with measuring the lifetime and frequency of cosmic particles with the help of the Kamiokande experiment took the opportunity to present their work at the Long Night of Science in Berlin. (she)

Info

Opportunities at DESY:

Information on Hamburg physik.begreifen courses:
karen.ong@desy.de

Information on Zeuthener physik.begreifen courses:
adelheid.sommer@desy.de

Fascination Physics, workshop for senior high school pupils
faszination.physik@desy.de

Information for pupils and teachers:
www.desy.de → work and study → offers for pupils and teachers



In a final paper, each group of pupils outlines the results obtained, for example, here, a lecture on "cosmic rays".

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