

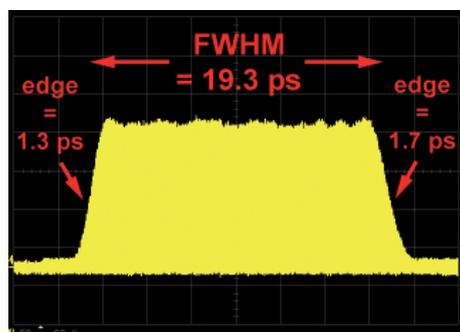
PITZ lights the way

New photocathode laser produces the proper light pulses

The operators of the European XFEL will once be able to say that their electrons originally came from Zeuthen. This is where a new photocathode laser has recently been installed in the photo injector test facility PITZ. This laser will help to optimise the sophisticated methods for the production of electron beams for the free-electron laser. Within the next months, the new laser will be submitted to extensive tests. To ensure that the highly intensive X-ray light will reach the experiments in the end, electron beams have to be produced which have an extremely small diameter and do not diverge. Experts call this transverse emittance – the less of it, the better! The trick, again, is light, although in another form: a laser shoots the high-precision light onto a cathode from which the electrons are emitted and accelerated. The better the light pulses, the better the particle beam. Next to a prototype in the Max Born Institute (MBI) in Berlin, this laser is the first one worldwide to produce these optimal



The laser room at PITZ with the new photocathode laser



The new laser system produces ultraviolet flat-top pulses.

light pulses – called flat-top pulses – with a time scheme according to the needs of the TESLA-type superconducting accelerators. The laser developed at MBI reaches much shorter rise and fall times than its forerunners and is able to emit various forms of pulses. The whole laser system occupies about five square metres of the new PITZ laser room.

The laser was installed during a PITZ shutdown. At the same time, the facility was equipped with a new electron source or “gun”. “First of all, the gun has to undergo conditioning,” says technical coordinator Jürgen Bähr. “It has to get

used to high voltages and improve its vacuum properties.” One good property is already there: it generates considerably less unwanted dark current. The PITZ team assumes that this is thanks to the new cleaning procedure: the vacuum properties of the built-in copper resonator improved notably after being cleaned particle free and with dry ice. (*baw*)

Tschüss and au revoir, Rolf Heuer

On 5 December there will be a colloquium honouring DESY Research Director Rolf-Dieter Heuer who becomes CERN Director-General in January. The open session starts at 2 p.m. in the auditorium and will be broadcast to seminar room 4 in Hamburg and to seminar room 3 in Zeuthen.

CheMagic Christmas

This year, DESY invites staff members and children of six and older to join the interactive “CheMagic” Christmas show. With a lot of humour and puns, biochemist and magician Oliver Grammel transforms red cabbage into “blue” cabbage and copper into gold. 17 December, 4 p.m., auditorium (in German).

DIRECTOR'S CORNER



Dear DESY colleagues in Hamburg and in Zeuthen,

first of all, I would like to thank all of you for a year full of commitment, ideas and action. The completion of PETRA III within budget and time frame is exceptional. These accomplishments strengthen the confidence our funding agencies and politics have in DESY and underline our outstanding performance.

Apart from the completion of PETRA III, there were some other important highlights this year:

FLASH continues to offer unique research possibilities worldwide and the plan is to extend it within the next years. With the discovery of a hidden van Gogh portrait, DORIS has attracted the attention of the whole world. The preparations for the construction of the European XFEL are entering a new phase; the commissioning of the civil engineering works took place on 24 November. Now work gets really started, since DESY will also coordinate the international consortium responsible for the accelerator construction. With PITZ and the new modulator test stand, Zeuthen is also in-

tensely involved in important components for the European XFEL. Next to the beautiful PETRA III hall, preparations for the CFEL building have started. The Free and Hanseatic City of Hamburg will fund this building with 50 million Euros. Construction is to begin in summer 2009.

In September 2008 the LHC started with breathtaking speed. DESY is involved in two of the experiments with great commitment and is responsible for one of the German computer centres as well as for a national analysis centre. Unfortunately, shortly after the successful start, a technical defect caused a problem that will take several months to solve. I wish the new CERN Director-General Rolf Heuer successful repairs, lots of data, groundbreaking insights and the fortune that favours the brave. All particle physicists around the world can't wait for the first LHC results. Work at the ILC is in progress, with the close collaboration of XFEL and FLASH. The Helmholtz Alliance "Physics at the Tera-scale" has substantially strengthened the cooperation of all German universities and institutes participating in HERA, the LHC and ILC.

Great progress was made last winter with the further upgrade of IceCube. The next round of work has recently started. Zeuthen has delivered the optical modules and thus completed its hardware contribution. Our scientists are already thinking about the next step: they plan to participate in the Cherenkov Telescope Array (CTA).

DESY's scientific projects demand a great deal of technical and administrative infrastructure, which is essential for DESY to be functional. For this reason, the Directorate has decided to evaluate the infrastructure in the same manner as this has always been done with our scientific projects. The goal is to optimise the performance of the infrastructure with regard to the requirements.

A lot of work was invested in the preparation of the research programmes for the years 2010 to 2014. They define DESY's strategy in the field of photon science and particle and astroparticle physics. With their critical advice and a great deal of commitment, our councils helped us to design the programmes in the best possible way. The international evalu-

ation is scheduled for spring.

The strong cost increase in accelerator operation forced us to cancel or postpone a series of planned investments. Saving must continue, but our funding agencies are looking for solutions to finance accelerator operation in a cost-effective way.

"DESY is a brand name that stands for top research worldwide," Helmut Dosch, who will assume the leadership of DESY on 1 March 2009, recently said. I would like to thank all those who contributed to make DESY the brand name it is.

I wish you and your families Merry Christmas and a healthy and prosperous Happy New Year.

Sincerely yours,
Albrecht Wagner

As of 12 January 2009 an ESTA (Electronic System for Travel Authorization) approval will be required for everybody who does not need a visa to enter the US. Personal and travel data have to be registered online no less than 72 hours prior to travel, i.e. prior to boarding a carrier to travel by air or sea. The ESTA approval is valid for up to

two years or until the traveller's passport expires, whichever comes first. Until 11 January travellers must still fill out the I-94W entry from en-route. Further information: <http://guest-services.desy.de> → International Office → News oder <http://germany.usembassy.gov/esta/index.html>

Change at the top

On 1 March 2009 Professor Helmut Dosch will become Chair of the DESY Directorate.

What is on top of your to-do list?

DESY is facing great challenges. One of these is the construction of the European X-ray free-electron laser. DESY has had to cope with a difficult overall financial situation, which will force us to take strong measures. Moreover, we have to find organisational solutions for DESY's increasing networking activities, for example with CERN.

What do you associate with DESY?

DESY is an international brand name for fundamental research at its best and stands for all those questions that made me study physics when I was 18 years old: what are the alphabet and the grammar of the universe and of the world that surrounds us?

How do you set the priorities for DESY's future?

DESY's unique position relies on three pillars: accelerators, photon science and particle physics – this will also be our basis in the future. In the field of large facilities, DESY will concentrate on innovative X-ray sources. We will extend our own research with photons and our cooperation with the University of Hamburg. Another priority will be the collaboration between DESY and CERN and an improved interaction with Zeuthen.

What is your vision for DESY?

DESY will extend its leading international position in the design, construction and operation of modern accelerators for the research of the structure and function of matter and become a meeting point for young scientists and top physicists worldwide.



With scooters to the next meeting: Frank Scholz (left) and Dirk Samberg from the PETRA III project.

Scooter on the home stretch PETRA III ring soon complete

The content of the wooden box delivered to the PETRA III hall mid October is heavy and costly – and unique. This is why four employees from the Japanese Kohzu company came to Hamburg to unpack their work in person: an eight-circle diffractometer weighing six tons and costing 350 000 Euros.

The colleagues from Japan placed the custom-made product into beam line P08 and tested it for two weeks. Before crystal specimens can be measured with this compact and high-precision equipment, a great deal of work still needs to be done in the PETRA III hall. “We are still well on schedule,” says Hermann Franz, coordinator for the experiments at PETRA III. Six of 26 experimental huts have already been installed.

The two kilometres of accelerator outside the experimental hall were completed within 16 months. All machine

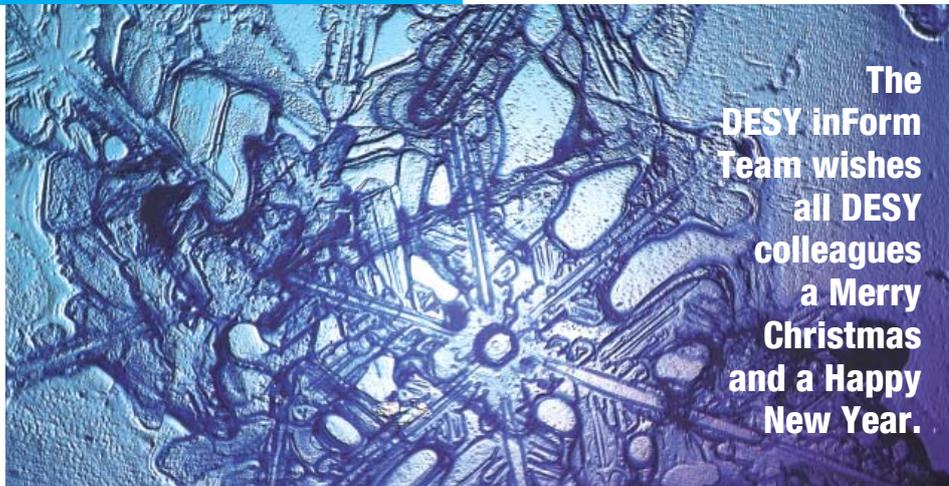
elements were removed, reconditioned, partly replaced, and then built into the refurbished tunnel. At the moment work is done on the last eighth of the tunnel in the hall: now the tunnel wall is finished, first roof elements are laid, the air conditioning conduits are mounted and the control electronics will be installed. The only delay is in the assembly of the girders because some vacuum chambers had not been delivered in time. “However, with a little bit of luck, the last girders will be assembled beginning of December,” says Hermann Franz. To accelerate things, some DESY colleagues are now using a scooter to dash down the 280 metres long “office corridor” in the hall’s first floor. *(jde)*

Season's Greetings

Christmas again! As of now, DESY Christmas cards are available at the PR office in building 1. And the envelope is included.

“Weltmaschine” soon on tour

With a record-breaking attendance, the exhibition “Weltmaschine” in Berlin’s subway station Bundestag has come to an end. In the exhibition, co-created by DESY, more than 31 000 visitors came to learn more on particle physics and the LHC. A travelling exhibition is planned.



The
DESY inForm
Team wishes
all DESY
colleagues
a Merry
Christmas
and a Happy
New Year.

Research in the future

The new Helmholtz funding period at DESY

The Helmholtz Association funds research with its programme-oriented funding (PoF). The central idea is to increase the cooperation between the independent research centres within programmes. This makes it possible to pursue strategic research programmes and to further strengthen the centres' competencies.

The Helmholtz Association focuses on six major research fields. Several programmes developed by scientists working in the centres are assigned to each field. DESY does research in the field "Structure of Matter" and cooperates in three of four programmes. This year, the applications were elaborated for the next funding period 2010 to 2014.

The future scientific programme of DESY in the area of "Particle Physics" is oriented on the HERA and LHC experiments and on the future ILC, assisted by a theory group and computing. The programme is in line with the goals of the Helmholtz Alliance "Physics at the Terascale". Within the "Astroparticle

Physics" programme, DESY wants to participate in the planned Cherenkov Telescope Array (CTA) for high-energy gamma radiation in addition to the Antarctic IceCube project. DESY's central elements of the "Large facilities for research with photons, neutrons and ions (PNI)" programme will be the operation and upgrade of FLASH, the operation of PETRA III and participation in the construction of the European XFEL. Moreover, DORIS III operation will be continued and DESY's own research strengthened – for example with the setting up of CFEL.

The applications were submitted to the Helmholtz Association on 14 November. In spring 2009 they will be reviewed by international experts. The resulting funding recommendation forms the basis of DESY financing. (cm)

INFO

<http://hgf.desy.de>

<http://www.helmholtz.de/en> →

Research → Promoting research

Farewell DESY inForm



With this DESY inForm issue, I have to say farewell because my contract runs out in December. I would like to take the opportunity to say thank you to all of DESY inForm's loyal readers. In the nearly two-and-a-half years that I have been responsible for editing DESY inForm, many of you have made suggestions and contributions for topics, turning DESY inForm into a nice and round monthly newsletter – please keep doing this. With our newsletter we have managed to improve the internal flow of information. Current news have always been my most important concern and I hope that this will also continue in the future of DESY inForm.

I would also like to thank you for all your personal best wishes!

Sincerely yours,
Sandra Hesping

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New website

As of 1 December, DESY has a new website. The homepage will regularly offer the current news from the research centre. The websites directed particularly to the general public will also have the new DESY design.

This is only the first step. As of January 2009, the sites of the DESY sectors and groups will also be remodelled,

with the collaboration of the parties involved. There are also plans for a central calendar of events on the homepage informing about the most important workshops, seminars and talks at DESY.