

Norman Conquests

Remember 1066? In a Bridfas talk about the Bayeux Tapestry Dr. Colin Bailey will discuss the history of the events and the famous work of art. Auditorium, June 14, 20 h. More info: www.bridfas.de → Programme

Physics with FELs

Daniel Zajfman from the Weizmann Institute of Science will give a talk in the Jentschke Lecture Series on 'Atomics and Molecular Physics with FEL: A New Opportunity for Laboratory Astrophysics'. Auditorium, June 22, 15 h

Alimentary Agony Aunts

If you have suggestions for the improvement of the canteen, please e-mail them to kantinen.kommission@desy.de. A new website will soon be online, too. <http://kantinen-kommission.desy.de>

Women's Meeting

The equal opportunities representative and the women's association will report about their work and the outcomes. All women are invited to an exchange of views: in Zeuthen on July 5 at 10:30 h, in Hamburg on July 10 at 10:30 h in seminar room 4a

Director's Corner



The end of HERA operation is also the end of a great era. For many colleagues, a considerable part of their working life consisted of designing, constructing and operating HERA; for me it was 25 years.

In the seventies, we actually planned an electron-positron storage ring at DESY with a circumference of 30 kilometers. Proposals for possible sites were already at hand, for example in the Lüneburg Heath. This project, however, was realized as LEP at CERN. The new HERA project seemed a bit suspect to many people, including me. Experience with protons already existed, but not with superconducting magnets. Moreover, the proton ring was supposed to be built by people from the research sector, an "amateur play group" with little accelerator experience, to which also I belonged. In case that this part of the project would be delayed, a positron injection was built to make positron electron collisions possible. As we all know, those fears were unnecessary. You should never underestimate 'newcomers'!

(continued overleaf)

World Class!

Minister Schavan at DESY for the official starting shot

"This is world class!" These words of Minister for Education and Research Annette Schavan marked the official launch of the European X-ray free-electron laser facility XFEL. On June 5, high-ranking representatives from the participating countries met in the Grand Elysée Hotel in Hamburg where the ECRI Conference took place. "With the XFEL, a brilliant research landscape will be established in Europe that will be a great attraction to talents from all over the world," said Schavan. The funding negotiations with the 12 interested countries have advanced so far that the construction of the XFEL can now begin. The partner countries are convinced that construction should start as soon as possible in view of international competition. In the signed communiqué they stated: "We have agreed to set up the first construction phase of the XFEL with construction costs of 850 million Euros." After the launch, Minister Schavan and EU Research Commissioner Janez Potocnik visited DESY. They were welcomed by around 1100 eagerly waiting DESY staff from Hamburg and Zeuthen. Schavan affirmed that "the European X-ray free-electron laser XFEL is a mile-



The start of the XFEL project will not only strengthen the research regions Hamburg and Schleswig-Holstein, but also Germany and Europe, said Minister Schavan in her speech.

stone, also for the development of DESY and a symbol for excellent work here." EU Commissioner Potocnik added: "The XFEL is one of the most exciting research projects in Europe and marks the beginning of the ESFRI roadmap." He praised the team spirit of the DESY crew by calling them a star team. After the speeches, the Ministers, Helmholtz

President Jürgen Mlynek and members of the DESY Directorate visited the free-electron laser FLASH and signed the DESY visitors book.

After the visit of the important guests, the DESY crew also celebrated the launch of the XFEL project. The beginning of the call for bids is the first step towards turning all plans that have so far only existed on drawing boards or as computer simulations into reality. (uw)

Info: www.xfel.net



Visiting the FLASH tunnel: Albrecht Wagner, Minister Schavan, Massimo Altarelli and the Russian Research Minister Andrej

Director's Corner

The status of DESY as one of the leading accelerator laboratories worldwide—established with the construction of PETRA—was consolidated with the construction of HERA and reinforced within the framework of the TESLA Collaboration, proving that it is possible to build large linear colliders with superconducting cavities. Last but not least, this status allowed DESY to build PETRA III and the XFEL. DESY has this role thanks to new ideas of individuals, their initiative to make their ideas reality and their willingness to take responsibility - with the support of the leaders of the laboratory. I hope that DESY will keep its drive in the future. The end of HERA operation is also the end of my professional life. I would like to send my greetings to all DESY companions and to thank all those people who have given me support and who worked together under my leadership. My best wishes for the future to all of you and to the laboratory.

Sincerely,
Dieter Trines

Thank You, Dieter!

Dieter Trines, head of the M-division, retires

by Albrecht Wagner

On June 30, after 13 years and one month, his term as director of the M-division will come to an end. Dieter Trines will then hand over the responsibility for the largest DESY division to Reinhard Brinkmann, his colleague for many years, and go into retirement shortly after his 65th birthday.

The pipe and the Rhineland spirit surely are two striking characteristics of Dieter. Born in Mönchengladbach, he began to study in Bonn. For one semester, he ventured to go far away, to Marburg, but the Rhineland was stronger. His diploma thesis in 1968 on experimental particle physics at the Bonn accelerator was followed by his PhD in 1972. He continued to do research at RWTH Aachen University, first as a scientific assistant, then as an Academic Council. During this time he worked at SLAC in Stanford for two years. Since 1975 in Hamburg, he collaborated in the construction of PETRA and

the TASSO experiment. He liked DESY so much that he took up a staff position at DESY in 1983. This was the beginning of his ever-increasing interest for accelerators. In 1984, Bjørn Wiik put him in charge of the vacuum system of the HERA proton ring; in 1992 he became head of the cryogenic and vacuum technology group. In June 1994 he was appointed head of the M-division and member of the DESY Board of Directors.

Many of you have got to know him in this role, have worked and discussed with him. It was always clear that he is an outstanding and imaginative physicist and a committed division manager with a great sense of responsibility. I will never forget the role he played in the preparation of the TESLA Technical Design Report, where he was mainly responsible for the cost estimate and construction planning. His work was trend-setting and played a decisive role for the further



Everybody knows him smoking his pipe ...

development of today's ILC project. We will miss him in the DESY Board of Directors, not least because of his judgement and his humorous remarks that are always spot-on. On the occasion of his 65th birthday and his retirement from the Directorate, and in the name of all of us, I would like to thank Dieter Trines very much for his commitment to DESY, and wish him all the best for the next stage of his life.

Interactions.org

Get a weekly fix

If you want to keep up to date with what's going on in particle physics around labs around the world, the website www.interactions.org is the place for you. It collects newspaper articles, press releases, selected talks and a vast image bank under one url. A new service called 'A Week of Interactions' delivers a compilation highlighting the news articles, press releases, images and features added to the website right to your mailbox—all you need to do is subscribe once. Interactions.org is run from NIKHEF in Amsterdam by the InterAction collaboration of the particle physics laboratories. (baw)

IT Community Meeting

HEPiX Workshop at DESY

by Knut Woller

More than 100 IT developers and decision makers from 31 European and American institutes have met from April 23 to 27 at the HEPiX-Workshop in the DESY auditorium. These meetings take place twice a year.

It is evident that in the future many laboratories have to cope with very high requirements in the field of photon physics. "It could possibly be 90 petabytes in five years, and perhaps we need 40,000 processors." In his report, Chuck Boehm



Participants of the workshop

quotes the current upper limit of computing requirements of future users of the free electron laser LCLS that is built at SLAC. Similar large numbers are under discussion for the XFEL.

Thus, storage and data systems solutions, the adminis-

tration of large and widespread computing farms as well as the benchmark test of new computing architectures were in the focus of the workshop. HEPiX workgroups are very much engaged in these three fields.

At HEPiX, the developers of Scientific-Linux from Fermilab, CERN, Paul Scherrer Institute and DESY, among other things defined and adapted the support to the requirements of the laboratories until 2010.

Infos: <http://hepix2007.desy.de>

Particle Physics bundles its power

The new Helmholtz Alliance will strengthen Germany's research potential

In Berlin, on May 15, the Senate of the Helmholtz Association decided to support the Alliance "Physics at the Terascale" for the coming five years, with a grant of 25 million Euros. The draft, developed under the leadership of DESY, was acclaimed by the evaluators. Jürgen Mlynek, President of the Helmholtz Association, said approvingly: "This alliance of particle physicists may serve as an outstanding model for other alliances". We interviewed Director of Research Rolf-Dieter Heuer, one of the coordinators.

What is the Helmholtz Alliance?

It is a union of DESY, Forschungszentrum Karlsruhe, 17 universities and the Max-Planck-Institute for Physics in Munich, with the aim to make German particle physics more competitive. In the current competition for the elite, we also have to work on our



Acting in concert: Rolf-Dieter Heuer (fourth from the left in the front row) and representatives from all 20 institutes at the first workshop

profile to clearly gain more visibility in the global research structures at the LHC and ILC.

How, precisely, is it possible to bundle the competences?

The backbone of the Alliance is DESY, with its competence and infrastructure for the development of accelerators and detectors, computing, and the analysis of physics. Karlsruhe contributes with its experience in Grid computing and the Grid-Ka infrastructure. The alliance, however, is only complete with the competence of the universities

and institutes. In this concentrated way, we systematically want to promote the analysis of physics and technological development at the LHC and the planned ILC.

How do you manage to balance 20 institutes?

Science management is like a large international collaboration. At the first workshop on May 25 in Frankfurt, we agreed on all personnel and organizational structures within five hours. This is record-breaking, and it shows the motivation of all parties involved!

What is going to change at DESY?

DESY will be an important platform for the Alliance. A center for LHC data analysis will be set up, Grid computing will be further developed and detector R&D and accelerator technology will get more support. The upgraded infrastructure will be open to all partners and form a basis for a lively campus.

Junior scientists have small salaries and put off with temporary employment. What is the Helmholtz Alliance going to offer them?

Of course, the Alliance will create an instrument to offer attractive career opportunities to young talents in Germany and persuade expats to return. We want to create good conditions for top male and female scientists, e.g. with the offer of child care or jobs for the spouse. Ten new jobs will be created at DESY alone. (she)

Excellent pass

New test bench breaks records

The new Cryomodule Test Bench 'CMTB' has only been in operation for a few months, but it is already running at full speed. Module 6 and module 7 have already gone through the test stand; the next one is standing ready. "These are record times" said Kay Jensch, expert for FLASH accelerator modules that will be used—with only small modifications—at the future XFEL and ILC projects. "With module 6, everything has been put into operation and even a test with a lot of warm and cold cycles has been carried out, so the test of module 7 was extremely quick." Moreover, it is expected

that module 7 will reach so far unmatched accelerator gradients of more than 28 MV/m in FLASH operation. Without tests you cannot build accelerators. Obviously cavities, couplers, magnets and other 'large' components need to be tested—not so obvious is the fact that even vibrations of a fraction of a millimeter inside a cryomodule can cause the reduction of beam quality. Members of the vibrations study group have recently studied such vibrations. With sensors in and above the module, they have measured how much the parts move relative to each

other, first at room temperature, then at 4.5 Kelvin, thereby specially observing the quadrupole inside the module. The result: at room temperature, the vibrations are so minimal that they had no influence on the beam. At 4.5 Kelvin there was a peak at 30 Hertz which needs to be investigated more thoroughly. It is clear that the suspension of the modules make sure that external excitations do not cause vibrations of the accelerator structures. "The modules have an excellent design" said Ramila Amirikas, a member of the vibrations study group. (baw)

HERA Fest

Please register

Don't miss the two-day event at the end of June to celebrate the end of data taking for HERA - all DESY staff are welcome! Guests from around the world come to reminisce about 15 great years. On June 28 starting at 2 p.m. there will be a symposium on HERA highlights, followed by a public lecture in German by Ralph Eichler (Paul Scherrer Institute) and a science forum on the topic 'HERA and beyond.'

June 29 is dedicated to celebrations: in the morning, renowned scientists gather for a Fest Colloquium and from 1 p.m. there will be a big party to celebrate HERA. For planning reasons, all DESY staff and guests are asked to register at: <http://hera-fest.desy.de> (baw)

Good Perspectives

New concepts for PETRA III beamlines

by *Hermann Franz*

For 12 PETRA III beamlines, the so-called double crystal monochromator is an essential optical component. It specifically filters single wave lengths from an intensely bundled X-ray beam, which the user needs for his experiments. The DESY-FS Beamline Technology Group, together with ESRF, has started to further develop this component.

The so far unrivalled quality of PETRA III undulator beams demands increased requirements for the X-ray optical components like the double crystal monochromator. In this component, silicon monocrystals isolate



Exposed: the central mechanism of the monochromator

the required wavelength from the spectrum. Characteristic of silicon: at a temperature of 124 Kelvin (-149° Celsius), the coefficient of thermic expansion is exactly zero and the optical properties are not affected by distortions. To avoid heating by the concentrated power of the X-ray beam, liquid nitro-

gen is used to cool the crystal. Nevertheless, it is a technological challenge to couple the nitrogen cooling to the crystal without causing disturbing vibrations that would enlarge the beam cross section.

These high requirements for mechanical and thermic stability for the double crystal monochromator made the development of two prototypes necessary. Starting midyear, both ESRF and DESY will thoroughly test one of the systems. This will help to refine the specifications of the series-production systems and to gain operation experience for the PETRA III run.

DESY-SLAC collaboration

First workshop on future opportunities at the FELs

For two years now, the free-electron laser FLASH at DESY has been enjoying ever-increasing popularity with its users. The Linac Coherent Light Source (LCLS) at SLAC in California will take up operations in 2009, the European XFEL will follow in 2013. These FEL light sources in the soft and hard X-ray range open up unprecedented research opportunities for the users. To assist them with these challenges, the photon science centers PULSE and XLAM will be set up at SLAC, and the Center of Free Electron Laser Studies (CFEL) on the DESY site—a good reason for the two research centers to start a collaboration in order to pool their interests and resources already at this early stage.

A first two-day workshop took place at DESY from May 24 to 25. The eight sessions focused on the new research areas and experiments at FLASH and its successors. "Our goal was to bring together the scientists who seriously envisage to get involved in the new research opportunities at the FELs at DESY and SLAC," said Jochen Schneider, one of the initiators of the new DESY-SLAC collaboration. "These two days were a big success, and more workshops and meetings will follow." (pf)

Stellar matter produced in the FLASH hall

Research team publishes pioneering result

Highly charged ions of various chemical elements can be found in large amounts only in the cosmos, for instance as a component of stellar matter. Due to the lack of appropriate light sources for laser spectroscopy at very short wavelengths, their structure is deduced mostly from theoretical models. What is more, this form of matter can be produced only in incredibly small amounts and at temperatures of nearly one billion degrees, which makes their investigation extremely tricky. FLASH is the first light source to provide the light pulses necessary for detailed mea-



Investigation of highly charged iron ions in the FLASH hall. Courtesy: MPI Heidelberg

surements, and the physicists of the Max-Planck-Institute in Heidelberg have thought up an ingenious experimental setup. They constructed a mobile Electron Beam Ion

Trap (EBIT) in which highly charged positive iron ions were trapped in a volume corresponding to that of a five-centimeter-long hair and then excited by the FLASH pulses in order to study their reaction.

The experiments delivered precise information about the structure of this largely unknown stellar matter. In the near future, the accuracy will be improved by a factor of a hundred. The results, published on May 1 in the scientific journal Physical Review Letters, are considered as pioneering experiments for future FEL generations. (pf)

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