DESY INFORM
03/2007

Just DoIt!

Diploma and PhD students-unite! Some of your fellow students have founded “DoIt” (for diploma /doctoral candidate initiative) to lobby for your interests.
Write to *DoIt@desy.de* for more information and to join the initiative.

Women's Day

The women's representatives invite all DESY women to celebrate International Women's Day in the Bistro. From 10 to 13 h, they have the opportunity to exchange information and experience. Program and registration: *http://fv-gb.desy.de→ Weltfrauentag*

New XFEL Film

In cooperation with PR/FEL, the University of Applied Sciences Wedel has produced the 12-minute film “Light of the Future—The European XFEL Facility”. DVD or VHS: gabriela.heessel@desy.de *www.xfel.net/XFELmediabank*

Open Access

Free access to scientific information becomes more important every day. On March 28, the DESY library will present this topic to all interested people and users.
16 h, DESY auditorium (lecture in English).

Director’s Corner

This summer, an era at DESY will come to an end: HERA will be shut down in the middle of the year, and the directorate would like to cordially invite you to the HERA party on June 29. For particle physics at DESY, a new and equally exciting phase is about to begin: to start with all data produced by HERA so far will be analyzed. We reckon that there will be enough data sets to last till 2010 and beyond, and that they will deliver interesting findings. Many HERA results are so fundamentaly that they will find their way into physics textbooks.
The HERA era will transition almost seamlessly into the LHC era. At the end of this year data taking will begin at the Large Hadron Collider LHC at CERN. With the unprecedented energies of the proton-proton collisions at the LHC, we are expecting ground-breaking discoveries at the ATLAS and CMS experiments. DESY staff are already now collaborating in key positions.

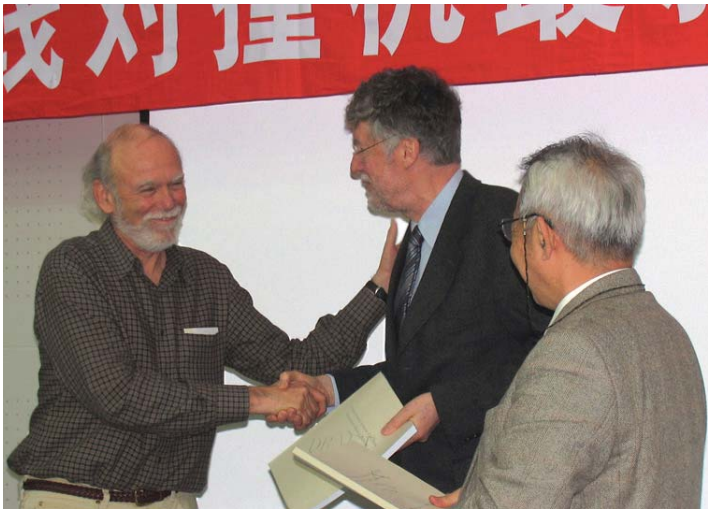
DESY expertise also flows into the other future particle physics project, the International Linear Collider ILC.

(continued overleaf)

Important Milestone for the ILC

ICFA supports design and costs

For the second time in three years, an important message about the International Linear Collider ILC comes from Beijing. After the technology decision in 2004, the Reference Design Report with a first cost estimate for the accelerator was released at the beginning of February 2007. On February 8, Barry Barish, director of the ILC organizing team GDE, presented the report to the International Committee for Future Accelerators (ICFA), chaired by Albrecht Wagner. In a press conference ICFA emphasized its full support for the ILC project.
The estimated costs of the ILC were calculated in ILC units that correspond to the US Dollar value of 2007. According to this, 4.9 billion units (roughly 4 billion Euros) are estimated for high technology and conventional components and 1.9 units (roughly 1.4 billion Euros) for site-dependent costs.



Barry Barish (left) handing over the draft RDR to ICFA-chair Albrecht Wagner and Shin-ichi Kurokawa, chair of ILC Steering Committee.

The GDE members estimate is about 2000 employees per year in 7 construction years. Three sample sites have been studied for the cost estimate, with an accelerator running in 100 meters or more below the surface. Other possible types, including shallow sites, will follow in the next phase of ILC planning. Thus, the decision for the construction site will only be possible in a couple of years’ time. *(baw)*

Fot the RDR, a summary and more information, see: www.linearcollider.org

Big Deal for Small People

DESY kindergarten plans expansion

Important events will also occur this year regarding the youngest “researchers”. In the future, about 50 children will have the opportunity to rampage and learn in the kindergarten, 30 more than now. Hence the buildings with theme and relaxation rooms will be enlarged. Moreover, the garden will be extended towards Notkestrasse and the future entrance will be there as well. When the Directorate agrees to the financial concept, the remodelling is planned for the summer break. Extension of the opening hours (probably 7 - 17 h) would suit the needs of many working parents. Day nursery for children from one year and older and after school care will provide a favourable age mix for the concept of openness. *(she)*

Round of talks for parents on March 21.
Contact: Nicole Meyer
http://kindergarten.desy.de

Director's Corner

Also there our colleagues have key positions and make important contributions to research and development concerning machine and experiments. An important milestone has recently been reached in Beijing with the publication of the Reference Design Report. The next meeting of the international community will take place end of May at the LCWS07 workshop at DESY.

All this is done in close cooperation with particle physics groups from German universities. Joint projects and new collaborations are a proof of this. I am looking forward to the exiting future that awaits us–I hope you are, too!

Cordially yours,
Rolf-Dieter Heuer

Don't hide your ingenious ideas!

Interface between science and industry: technology transfer

by Karsten Wurr

DESY is developing advanced technologies that are continually optimized and redesigned. And many smart colleagues invent and build prototypes that have patenting potential. The DESY point of contact for patent questions is the technology transfer department (TT). A central task of this team of four people is to secure and market the intellectual property of DESY through patents and licences. A team of DESY colleagues Peters, Sahling and Hansen from the MIN department already went through this procedure. Their invention underwent a novelty and applicability test with positive results, and the directorate made use of the patent.

The developments of Peters & Co. to optimize an H^--source (for particle injection into an accelerator) make it the most efficient one of its kind worldwide. The particle source is used to improve the performance of synchrotrons. But it could also be used in the industrial sector, for example for radioscopy equipments or in semiconductor production. This invention is a good example for the substantial innovation potential that basic research developments may have for the economic sector. To increase the spin-off value of DESY research, it is necessary to communicate this know-how directly to industry. In case of a patent application, the inventors receive an acknowledgement fee and have a share in the income from licence agreements with companies.

Left to right: Ingo Hansen, Jens Peters and Hans-Hinrich Sahling next to their optimized ion source.

Industry also benefits from the technology transfer service. For example, the coordination of 1200 DORIS measuring station hours per year for industrial users is done by DESY TT–together with the HASYLAB service group.

Additional tasks are international projects linked to industry, like the organization of the European industrial forum EIFast.

More Information:
http://tt.desy.de

Faster, higher, further

Scholarship for former DESY trainee

First pain, then gain: For good results of the final examination ex trainee Stefan Bujack received an advanced training scholarship from the chamber of commerce. The 24-year old IT officer now has the chance to go through special advancement training for higher professional qualification. The scholarship programme runs in all of Germany and is meant for all trainees–from electricians to medical assistants. Promotion is possible for all aged under 25 years and with a German grade average better than 2,0. Depending on the branch, the scholarship holder may choose special in-service training courses. Stefan Bujack, for example, may choose between certified IT developer and qualified tradesman. Other scholarship holders come from the Zeuthen talent factory: Anja Sandmann, currently at ESRF, and Sebastian Philipp. Stefan Bujack, currently working in the IT operations team, still wants to gather information about the advancement offers. He already knows one thing for certain: "I clearly opted for IT and I want to get a higher qualification in this sector". *(she)*

Stefan Bujack (right) in conversation with his supervisor Michael Behrens

More information: www.hk24.de
Document search: 26472

Masterclasses

Particle Physics Taster Course

Again, in March, universities and institutes worldwide give more than 5000 senior high school students the opportunity to become a particle physicist—for one day. "Hands on Particle Physics—European Masterclasses" goes into a new round. Both DESY Hamburg and Zeuthen take part on March 27. After an introduction to particle physics and a DESY tour, the "young scientists" evaluate real data from LEP experiments at the PC. In the evening, they participate in a video conference to exchange the results with participants from other universities. *(tz)*

Registration for Hamburg is still possible: desypr@desy.de

Masterminds

Research Courses for young scientists

For many people research with free-electron lasers is new scientific territory. A series of Research Courses on New X-Ray Sciences at HASYLAB offers insights into applications –a kind of school for young pioneers or pioneer candidates. The focus is on changing topics that do not require specialist knowledge.
Technologies and experimental methods to study ultrafast processes are on the agenda of this year's course ("X-Ray Investigation of Ultrafast Processes", 28 February to 2 March). The school imparts basic knowledge to diploma students, PhD students and post docs in the field of physics, chemistry and life sciences. The idea is to show young scientists new ways and to make them interested in the new research fields. (she)

For information, contact and next course "New Materials in New Light", see: www.desy.de/new-xray-sciences

Exciting First Meeting of Future XFEL Users

Worldwide interest in the planned European X-ray laser facility

"We are very happy about the overwhelming attendance from scientists coming from all over the world–after all the commissioning of the XFEL is only due in almost seven years' time," said Massimo Altarelli, the leader of the European XFEL Project Team, after the first European XFEL Users' Meeting which took place at DESY on January 24 and 25.
"This clearly demonstrates the worldwide interest in the planned X-ray laser and the excitement with which the realization of the facility is awaited within the international scientific community."
The first users' meeting marks the beginning of a series of regular workshops and meetings between the scientists interested in the research opportunities at the XFEL and the planners of the facility.
"We wanted to include the future users in the planning already in this early stage,"

Around 260 scientists from 22 countries gathered at DESY at the end of January for the first meeting of the future users of the European XFEL.

said Thomas Tschentscher, HASYLAB physicist and member of the European XFEL Project Team. "The facility itself is ready to be built. Now we have to start the detailed planning of the experimental stations and the development of new measuring methods and detectors. The close cooperation with the users allows us to fully take their wishes and requirements into consideration."
With great dedication, the participants joined in the four workshops on "Materials Sciences", "Atoms, Molecules, Clusters, Chemistry", "Life Sciences" and "High Energy Density Science", in which they drew up the details of the required experimental stations and determined priorities. *(pf)*

First Accelerator Module on the New Test Stand

Prototype tests now also possible outside the FLASH tunnel

Hidden between buildings 28 and 55 is a blue hall, which houses the new Cryomodule Test Bench. For the first time, the 12.20-meter-long superconducting modules can now be tested and conditioned for operation in one piece before being put in place in the FLASH linear accelerator. This saves "machine time" and creates "user time" at FLASH. It also allows fast prototype tests for the European XFEL facility. Another advantage is that the experts can gain operating experience for the 116 required XFEL modules, for which a 4200-square-meter module test hall comprising three such test benches is planned.

Module 6 in the new test stand. Soon it will be installed in the FLASH linac—an important step towards the wavelength design value of 6 nanometers.

The new test stand premières with cryomodule 6, which is currently being put through its paces by cooling it to minus 271°C and heating it up again to room temperature in a total of ten cycles.

Resulting from this endurance test is a detailed knowledge about the behavior of all the components inside the module–for example the eight niobium cavities, special cables, helium pipes, radio frequency couplers or the focusing magnet. After passing the test, module 6 will be installed in the FLASH tunnel. *(pf)*

Workshop

Virtualization is the Future

It seems that DESY is a hub for news on the Grid. After the positive outcome of the dCache workshop (see previous issue), the more than 40 participants at a workshop held in February decided that a new technology called "Virtualization" is going to change the Grid. It allows multiple operating systems to run on one computer, thus giving users more security and potentially greater efficiency in scientific programming. "The response was so great that all participants requested follow-up Virtualization workshop in six months' time," said Owen Synge, a dCache team member. (baw)

DESY INFORM

Watching and listening at the South Pole

The IceCube team takes a retrospective look at a successful season

by Christian Spiering

The South Pole has not become any warmer since, 11 years ago, physicists from the United States, Sweden and DESY started to install the first components of a neutrino telescope. But it has become more comfortable! At that time, it was cold enough to freeze your nose off at biting minus 35 degrees when lowering long strings with glass spheres containing optical sensors into the ice. These days, operating from a container, the team needs only 12 hours to deploy a string of 60 spheres. In 1996, it took 45 hours for one string. At first, pressurized hot water is melts holes into the polar ice crust. Then, the spheres are lowered to a depth of 2.4 kilometers, where they freeze. In the extremely transparent ice, the sensors "see" the light emitted by charged particles produced by high-energy cosmic neutrinos. Their sources are far distant regions of the universe from where no light, only the sought-after, extremely elusive neutrinos are able to escape. The cosmic messengers provide information about their origin to IceCube physicists. This season, thirteen strings have been frozen into the ice–one more than scheduled. IceCube will be completed in 2011. Even now it exceeds the performance of the previous AMANDA telescope by a factor of three. So much for "watching". But why "listening"? Because interacting neutrinos in the Exa electron volt range (EeV) do not only emit light but also an infinitesimal crack. One EeV is one million times as much as the proton energy at HERA (one Tera-electron volt). No terrestrial accelerator but only the universe is able to produce such missiles. Since sound waves are less muffled in ice than light is absorbed, it would be possible to place the acoustic sensors over greater distances than the optical sensors. Thus, the volume would be larger and capture more neutrinos. The new SPATS (South Pole Acoustic Test Setup) consists of roughly 80 acoustic sensors and transmitter modules, all built at DESY. The array will be used to measure the attenuation length of acoustic signals and the intensity of background noise and reveal to neutrino astronomers whether the "eyes" of IceCube could possibly be complemented by "ears".

In front you see the red IceCube drilling and installation container, in the background the steaming flow heater for the drilling water.

Tuesday Seminar: C. Spiering, "The European Roadmap for Astroparticle Physics", March 20, 17 h, Auditorium

HERA Shutdown Party

Colloquium on the success of a unique machine

"I still remember it as thoght it was yesterday". Many DESY colleagues will say this with a sigh and remember the HERA launch on November 8, 1990.
Mid–2007 HERA will go into retirement. Within the framework of a festive colloquium on June 28 and 29, DESY and its users will celebrate HERA history and results. HERA has produced groundbreaking results which have changed the image of the proton and will have a strong influence on the future of particle and nuclear physics, e.g. at the LHC at CERN. Development, construction and operation of HERA have given new insights in the field of accelerators and detector technologies. Moreover, with HERA, DESY established itself as a nationally and internationally recognized particle physics center.
The festive colloquium will last two days. DESY staff and celebrity guest lecturers will talk about the machine, experiments and physics. Moreover, on Thursday evening at 20 h, there will be a science forum with the Hamburg radio station 90.3 and the "Hamburger Abendblatt" newspaper on the future of particle physics at DESY. On Friday, all DESY staff are invited to a great HERA party. *(mro)*

PETRA III

Main contractor commissioned

The directorate, the project management of PETRA III, ZBAU, MKK and technical consultants made a joint resolution: the construction of the experimental hall and adjacent buildings were commissioned on February 23. The contract for the planned enlargement south of PETRA hall east has not been commissioned yet.
At the beginning of May, the main contractor will start clearing some of the buildings that are not located directly on the PETRA wall. The removal of the wall is scheduled at the beginning of July. *(she)*

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