

FLASH Hits the Red Mark

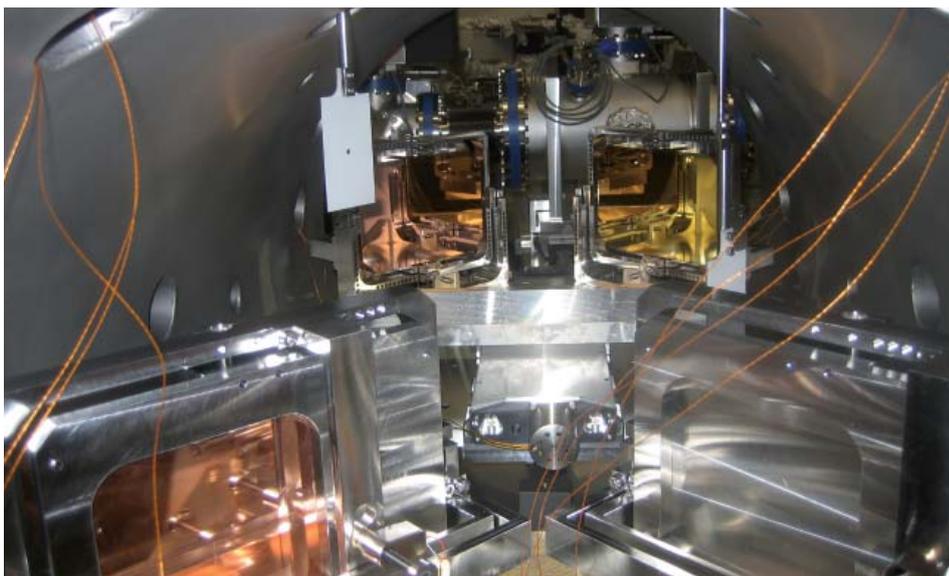
Successful commissioning of new far infrared beamline at FLASH

In February, a new beam pipe was successfully commissioned at FLASH. The nearly 70 metres-long beamline transports very long-wavelength radiation into the FLASH experimental hall. The radiation with a wavelength between one and 200 micrometres (so-called far infrared or FIR radiation) is generated in a special undulator installed in the accelerator tunnel.

In their experiment, a team of scientists from DESY and the University of Hamburg succeeded in overlapping the FIR pulses and the short-wavelength FLASH laser pulses. Already during the first shift, they managed to bring the two light bunches in the sample chamber together in the same place at the same time – which, considering the shortness of the pulses, is akin to the collision of two grains of sand shot straight at each other from a distance of 70 metres.

Previous measurements carried out by DESY in cooperation with BESSY, the research centre Rossendorf and the DLR had already shown that the FIR pulses did indeed exhibit the predicted wavelength and high intensity.

The undulator that generates the FIR pulses had initially been designed by the accelerator physics team of the University of Hamburg for the measurement of the electron bunches in the FLASH accelerator. It soon became clear, however, that the generated radiation could also offer very interesting prospects for so-called pump-probe experiments at FLASH. For this, the “only” challenge



Mirror trick: the arrival time of the far infrared pulse can be synchronised with a precision of a few ten femtoseconds to the FLASH laser pulse using a special mirror system, a so-called optical delay line.

was to convey the FIR radiation in a suitable way to the sample chamber in the experimental hall. A tremendous effort, since the transport of such long-wavelength radiation requires an especially large beam pipe with a diameter of 20 centimetres and many mirror chambers that had to be newly developed. The FLASH laser beam and the infrared beam are then brought together again inside the sample chamber.

There was not much time left for the construction of the far-infrared beam pipe. It took less than a year from the first design drawings to completion. “Such a quick installation and commissioning of the beam pipe was only possible thanks

to the great cooperation between the participating technical and scientific groups at DESY and the University of Hamburg,” says Michael Gensch, who is responsible for the beamline.

The physicists will use the coming months to further characterise the beamline and the undulator and prepare them for later user experiments. The accelerator physics team already carried out first very promising measurements on electron beam diagnostics. (tz)

Pooling Knowledge, Broadening the Mind

The next meeting of the Helmholtz Centres’ School Labs Network will take place at DESY in Zeuthen on 17 and 18 April. Twenty-two school labs in 15 research centres provide a means of fostering school students. For many years the school labs have joined in regular common activities. With the continued information exchange during

the upcoming meeting the network wants to strengthen the quality label “Helmholtz School Lab” for internal and external visibility and to contribute to science communication.



DIRECTOR'S CORNER

DESY operates and uses its accelerator facilities together with 3000 scientists at home and abroad who realise their research programmes with the help of DESY. The operating costs for these facilities follow the general price increase which amounts to approximately three percent per year. Actually, DESY obtained about 1.5 percent more annual funds since 2002. Thus, the divergence between grants and costs has increased more and more

in the past years. This means that we have to economise systematically in the coming years. However, the situation is unbearable in the long run. Now we were able to make our position clear to our funding agencies and jointly efforts are being made trying to find appropriate funding for our tasks for the next funding period 2010 – 2014. The active participation at the Open Space meeting was an important contribution to the economisation discussion. It

made it clear that everyone is willing to make constructive contributions to use the existing potential more effectively.

The directorate is working through the proposals and will take concrete measures. We all want to and have to save resources, implement innovations, prevent double work and ask ourselves whether anything in our area of responsibility might be improved. Important prerequisites to achieve this are

motivation and a good working atmosphere, though the latter is being put to the test with the strain of the economisation programme. It is not easy to master more tasks in a high quality with less money. Nevertheless, we have to cope with the problems that are ahead of us and solve them together. I am sure we will succeed.

Yours, Christian Scherf

International Amaldi Conference at DESY

Scientists discussed security policy and peace research

by Frank Lehner

From 14 to 16 March, the 17th International Amaldi Conference organised by the Union of the German Academies of Sciences took place at DESY.

Around 60 experts from all over the world discussed questions of global security policy. The focus of this year's conference were scientific questions concerning nuclear arms control. Topics like the counterproliferation of nuclear weapons with simultaneous utilisation of civilian nuclear power stations or how to deal with plutonium produced at these stations played an important role, just like the potential danger of nuclear terrorism. The conference participants are acknowledged experts in



Richard L. Garwin, long-time companion of Wolfgang Panofsky, at the Amaldi Conference

disarmament questions and have been nominated by national academies of sciences. They see themselves as independent expert counsellors of their governments.

At the beginning of the conference the scientists commemorated Professor Wolfgang K.H. Panofsky, who died last year at the age of 88 years. The former Hamburg resident and co-founder of the Amaldi conferences had been Honorary Senator of the University of Hamburg and advisor to several US governments. In a special "Panofsky Lecture", his long-time companion and friend Professor Richard L. Garwin, USA, recapitulated the life and work of Wolfgang Panofsky and recognised the important role the famous particle physicist played in nuclear disarmament policy.

Happy Birthday, Max Planck

On 23 April, Max Planck would have been 150 years old. Exactly on his birthday, DESY will celebrate the famous scientist with a public evening lecture. With his "Thoughts on Max Planck," Dr. Jost Lemmerich from Berlin will give a review on the physicist's long life, from his family environment and his work

history to Planck's law of black body radiation which – initially not understood by his physics colleagues – made him world-famous. It was the foundation of quantum physics, the basis of nearly all modern science. Auditorium, 23 April, 7 p.m. (in German).

DESY's EU Projects

EUROFEL

In the EUROFEL project, 16 European universities and research centres jointly developed key technologies for the construction of free-electron lasers (FELs). Ute Krell and Nina Dahlke from the EU Project Office coordinated the project together with HASYLAB physicist Josef Feldhaus and machine physicist Torsten Limberg during the project's three-year term until the end of 2007.

The European Commission supported EUROFEL with nine million Euros – DESY received about a quarter of this sum, primarily for the construction of the cryomodule test bench (CMTB), the cryomodule assembly studies for industrial series production, for working at the photo injector test facility PITZ in Zeuthen and for various important developments for the benefit of FLASH and the European XFEL.

The DESY activities were embedded in a large-scale and successful programme with subjects like synchronisation of all components with an accuracy range of 100 femtoseconds, the time a light flash needs to cover a distance of 30 micrometres, less than the width of a hair. For the first time EUROFEL has successfully pooled and coordinated diverse local activities for the preparation of various FEL projects on a European level.

This is a good basis for the follow-up project named IRUVX-PP starting in April and also coordinated by DESY. (she)

INFO

www.eurofel.de



Gerhard Grübel gives a talk on "New Materials in New Light", the motto of this year's research school.

Back to School

Young scientists take lessons at DESY in new research fields

Gerhard Grübel has exchanged the desk in his office with a blackboard, at least for three days. In lectures for his "class", the HASYLAB researcher presented the scientific perspectives of research with free-electron lasers. In the "Research Course on New X-Ray Sciences", diploma students, PhD students and postdocs get research straight from the laboratory, including the latest results from the unique free-electron laser FLASH. With new topics every year, the research school is intended for young scientists from various fields of natural sciences and it is already well established. With these research schools, DESY supports junior scientists.

In each case, the schools concentrate on one research topic and thus help the students choose a specialisation area in their studies or for their future scientific career. Moreover, they bundle the expertise of one research field.

Some students immediately ask about topics for a doctoral thesis. For exam-

ple, the "Terascale Accelerator School" in March yielded a subject for a doctoral thesis on which work is expected to start in April.

This school was intended for young physicists who want to learn the basics of accelerator physics. In the morning, the 25 participants acquired basic knowledge in areas like LHC, ILC, CLIC and other technological concepts for the future, which they applied in practical training in the afternoon. For example, they calculated the beam dynamics for a small accelerator.

This is followed by the "Terascale Monte Carlo School" with the same schedule: lectures in the morning and in the afternoon computer simulations for the data analysis of future LHC events. With the use of Monte Carlo simulations, the scientific know-how at DESY is specifically passed over to the young scientists. (she)

Girls' Day and Future Day for Girls and Boys

DESY in Hamburg and Zeuthen will again take part in the Girls' Day and Future Day for Girls and Boys this year. On 24 April teenage girls (as well as boys in Zeuthen) will explore technical and scientific jobs at DESY. Hamburg is still seeking for volunteer tutors! If you are interested please contact betriebsrat@desy.de or call 2404.

"Flowers in the Garden"

The DESY Choir invites you to a Spring Concert in the canteen annex on Friday, 25 April at 8 p.m. Under the theme "Flowers in the Garden", the choir will perform numerous a-capella songs highlighting the most beautiful season of the year.



Wolf Benecke examines a feeding site for birds. They are very popular, as are the nest boxes.

Animals at DESY

The large grounds offers shelter for many species

by *Violetta Sefkow-Werner*

At DESY you can not only observe around 3000 representatives of the human species people working at their office desks on physics problems; you also find a lot of animals species on the site that feel at home on trees, in earth walls and in or around the ponds next to the FLASH tunnel. Apart from cats, pigeons and ducks, also a beech marten and a fox live on site.

Particularly birds that visit DESY every year for nesting or for a migration stop-over are looked after with loving care by some DESY staff. Wolf Benecke, surveyor and hobby hunter, is one of these animal lovers. He and some other people from DESY take care of these feathered friends, especially during wintertime.

Among the birds there are birds of prey, for example a sparrow hawk that had

three fledglings in 2007 and a kestrel that hatched four chicks in a nest above the heads of the theorists in building 2. Until 2006, even a kingfisher pair enjoyed living at the pond next to the FLASH tunnel (at the expense of the fish living in the pond).

To help the feathered crowd to start a family, nest boxes are being distributed all over the DESY site and cleaned every year in November. "We call it the 'merry nest box campaign'. Five people with two ladders go from nest box to nest box and clean them up," Wolf Benecke explains.

The feed, a special grain mix, is distributed in ten-litre containers at special feeding grounds; one at the edge of the pond next to FLASH and another shelter next to the PETRA III hall.

M Division Reorganises Itself

Last year the M division underwent reorganisation in some sectors. After the HERA shutdown the group MHE, formerly responsible for HERA operation, was closed.

The former groups MST (software/accelerator control technology) and MVP2 (vacuum control) merged to one group called MCS (control system). The new group is responsible for software, computers and network for the accelerator facilities' control as well as processor-driven controllers and provides information portals for accelerator operation.

The former vacuum groups MVA and MVP1 also merged to form a new group called MVS (vacuum systems).

The structure of the large MKK group, responsible for energy supply in DESY buildings, accelerators and experiments, has been extended from four to a total of seven sub-groups (MKK1 – MKK7).

For more details see:

<http://m.desy.de/organisation> (she)

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Pay a Visit to the DESY Doctor

Last year, after extensive remodelling, the DESY medical practice moved into a new, closed-off and very functional centre. With the help of the appropriate facilities the medical staff can now carry out consultations, emergency service and examinations simultaneously. The new practice will also provide a pleasant start for new employees

at DESY. The DESY medical team invites all DESY staff to an open day to inform about the range of services and show the new premises on Monday, 21 April, from 10 a.m. to 3 p.m. in the basement of building 1.