DESY inFORM.

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Staff Magazine of the
Research Centre DESY

Detector Assembly Facility starts operation

DESY is preparing the future of the LHC

DESY's new laboratory for detector development and the production of silicon modules for the LHC detectors: the Detector Assembly Facility (DAF) in Building 25c. Picture: Andreas Mussgiller

In its newly opened Detector Assembly Facility (DAF), DESY is currently preparing the future of the Large Hadron Collider (LHC) at CERN. Since May, work has started in Building 25c, the former HZG photon science research building, now converted to a cleanroom with lab, to build highly specialised key components for the two huge particle detectors ATLAS and CMS at the LHC. The remodelling of Hall 1 of historical DESY fame is also progressing well.

In a few years' time, the modernised detectors ATLAS and CMS will continue the scientific race in search of new particles, dark matter and other unexplored phenomena. At DESY, however, the two rival research groups are working side by side in the cleanroom and the lab. Over the coming years, the researchers will develop and build high-precision silicon detectors in the DAF. Comprehensive remodelling of the building began in June 2016, and after a construction time of slightly less than two years, the new facility opened in May.

The next phase of the LHC, the so-called high-luminosity phase (HL-LHC) in which the amount of data is to increase several times over, will begin in 2026 and require new, more efficient detectors. In collaboration with partners from Germany and abroad, DESY is building an endcap of the new silicon tracking detectors for both ATLAS and CMS. These tracking detectors, which are located very close to the collision point, have to record a huge number of particles and withstand a large amount of radiation. With their help, the scientists can determine very

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DIRECTOR'S CORNER

Dear Colleagues,

In particle physics, 2018 will be a year of strategy considerations: our DESY 2030 strategy defines the framework which in the coming years must be filled with life. Of particular importance are the ongoing strategic considerations of both the German and the European particle physics community. The Germany-wide strategy will be completed this year and the German particle physicists emphasise DESY's important role as a hub and facilitator.

Examples are our central contributions to the LHC upgrade and to the implementation of the Belle II experiment. The German strategy firmly supports DESY in the realisation of experiments on campus, such as MADMAX and IAXO, and in the efforts towards the implementation of future international large-scale projects of particle physics. The German strategy will be included in the update process of the European Strategy for Particle Physics, which starts now and will be concluded in spring 2020. This process will provide insights into the future development of the entire field.

A central building block for the implementation of our DESY strategy is the new Detector Assembly Facility (DAF). The DAF provides the necessary infrastructure for fundamental research and development work on modern detector technologies. The facility also enables integration and system tests of large detector components, such as the endcaps of the tracking detectors of the LHC experiments ATLAS and CMS.

The DAF extends over building 25c and 26 (the historic Hall 1). The cleanrooms and equipment in 25c are already in operation. The facilities in Hall 1, where the assembly and tests of the endcaps will take place, will be operational at the end of 2018.

We are facing exciting years in the data analysis from our current experiments, the construction of new detectors and the definition of new strategic directions.

Yours,
Joachim Mnich

precisely when and where which particles passed through the detector and so find out exactly what happened during the collision of the proton beams.

DESY will produce and test several thousand such silicon detector modules for the high-luminosity phase and afterwards install them in the mechanical structure of the endcaps, before delivering these to CERN, where they will be connected up with the remaining detectors and put into operation.

The preliminary work and the manufacturing of the modules with their highly sensitive silicon strip detectors calls for extremely clean surroundings without the slightest trace of dust. The structures on the sensors are so minute – measuring less than a tenth of a millimetre – that even the tiniest grains of dust could jeopardise the quality of the production. This is why the heart of the new DAF is an ISO Class 6 cleanroom, i.e. one with fewer than 35 000 tiny particles per cubic metre.

In addition to the cleanroom with a floor area of 250 square metres, building 25c houses further laboratory rooms for the preparatory work and for storing the finished modules.

After 22 months of remodelling, the first pieces of equipment have been installed. These include the thin-wire bonder for CMS and the probe station for ATLAS. Further equipment is due to arrive over the coming weeks, so that in the end the ATLAS and CMS groups will be able to simultaneously begin the preliminary work for manufacturing the silicon modules in the cleanroom.

During the peak production phase, a total of 3000 modules will be made for the two detectors over a period of 16 months. Up to 20 people will then be involved in the various stages of the production process, from the inspection of incoming sensors at the probe stations via the adhesive bonding of the modules' components and the connection of the electrical contacts with 0.02-millimetre-thick wires using the thin-wire bonder through to the final inspection and calibration of the finished modules.

However, there is not enough room in the building to carry out the final assembly of the endcaps for the two experiments, each of which will be more than two metres across and boast 30 square metres of silicon detectors. For this reason, a further ISO Class 7 cleanroom is currently being set up in the historic Hall 1, which is to be available from autumn of this year for the assembly of the endcaps. In its previous life, Hall 1 served as a research hall for DESY's eponymous accelerator, the electron synchrotron. It looks completely different now: the vast space has been filled with two smaller, but still rather spacious halls. This is where the support structures will be equipped with the detector modules, culminating in the assembly of the complete endcaps. This includes integration, i.e. attaching, fastening, glueing, cabling and connecting to the cooling system. At the end of the assembly and integration process, the cooperating institutes will test the CMS endcap at its operating temperature of minus 20 degrees Celsius before the whole high-tech system is transported to CERN. *(baw)*

Construction of the cleanroom facility for detector assembly and integration in Hall 1. Picture: Barbara Warmbein

Strategy 2030

Strategy for research and innovation

On 20 March, about 1000 DESY employees and campus partners flocked to the Stage theatre at the Elbe river to attend the big DESY 2030 strategy kick-off event. In panel discussions, at information booths and in many relaxed discussions, representatives of the more than 400 contributing colleagues presented the key points of the DESY strategy. “The strategy is our answer to the challenges that both science and the requirements of society and politics pose to our centre and its employees,” said DESY Director Helmut Dosch. “The goal is to position DESY in such a way that it plays an active and successful role in shaping the future of Germany as a centre for science.”

In the Stage theatre at the Elbe, the DESY Directorate gave the starting signal for the implementation of the DESY 2030 strategy. Pictures: Marco Urban

With its strategy, DESY is setting priorities in science and innovation as well as in the future development of its large-scale research facilities. With PETRA IV, DESY is planning to build the ultimate 3D X-ray microscope, which will provide images of processes taking place in the nanocosm that will be 100 times more detailed than what is achievable today. Moreover, in collaboration with European XFEL, there are plans to fully expand the European X-ray laser and to further develop the corresponding free-electron laser technology, among others to increase the number of X-ray pulses from 27 000 to up to one million per second. On the Hamburg campus, several interdisciplinary research buildings will be established:

- The Centre for Data and Computing Science (CDCS) to meet the increasing demands made by data-intensive applications in research
- The Wolfgang Pauli Centre (WPC) for theoretical physics
- The Centre for Water Science (CWS), which will be established in collaboration with national and European partners

DESY’s Zeuthen site is being expanded to become an international centre for astroparticle physics, focusing on gamma-ray and neutrino astronomy. Together with its partners on the Hamburg campus, DESY will consolidate its role as a leading international centre for research into the structure, dynamics and function of matter using X-rays. As Germany’s most important centre for particle physics, DESY will continue to expand its leading position as a key partner in international projects and set up an attractive research and development programme for particle physics. Technology transfer and innovations in general are to be substantially increased to make DESY the starting point for further foundations and start-ups in the Hamburg and Brandenburg regions. DESY is also developing and testing new concepts for building compact particle accelerators of the future as well as for realising new generations of high-resolution detector systems that will enable unparalleled insights into the structure of matter.

Participants could sign on a large wall.

The starting shot on 20 March marked the beginning of the implementation phase of the DESY 2030 strategy. The 19 competence teams from the various DESY divisions have worked out milestones for the coming years that are now being discussed. The results and the current status of the strategy implementation will be presented on a website, which will also include a collection of all the questions asked by the DESY employees via smartphone app at the kick-off event – including the corresponding answers, of course. *(uw)*

INFO

https://www.desy.de/desy2030

Max von Laue Prize for Elena Bykova

Elena Bykova has been awarded the Max von Laue Prize 2018 by the German Crystallographic Society. The prize recognises the outstanding achievements of the 29-year-old scientist in the field of ultrahigh-pressure crystallography and the resulting unique scientific insights into novel high-pressure materials. The Max von Laue Prize is awarded annually to promising young scientists for outstanding scientific achievements in the field of crystallography. The award is endowed with a prize money of 1500 euros.

Horst Klein Research Prize for Hans Weise

Hans Weise has been awarded the Horst Klein Research Prize for Outstanding Scientists in the Field of Accelerator Physics for his scientific achievements in the further development of superconducting accelerator technology. Weise coordinated the international consortium that built the world's longest superconducting linear accelerator for the European XFEL X-ray free-electron laser. "Hans Weise's work sets worldwide standards for the development of superconducting linear accelerators for free-electron lasers," emphasised the prize committee of the German Physical Society (DPG) and Physikalischer Verein Frankfurt.

DPG Young Scientist Prize for Andreas Maier

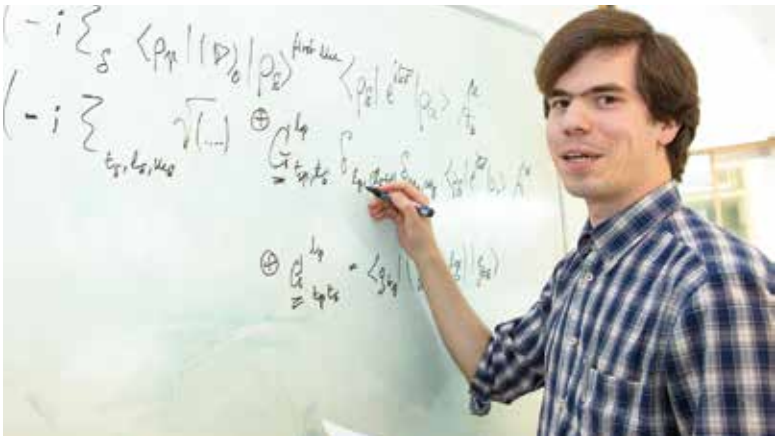
Andreas Maier has been awarded the Young Scientist Prize for Accelerator Physics by the German Physical Society (DPG). The accelerator physicist from the University of Hamburg received the prize for the further development of laser-driven wakefield acceleration in plasmas, which he investigated in the context of his doctorate and an initial research phase. This technology enables significantly higher acceleration levels and can thus pave the way for new applications. Maier is in charge of the LUX facility at the DESY Hamburg site in the context of the LAOLA collaboration between DESY and the University of Hamburg.

Award-winning master thesis

Inspired by the Stephenson Distinguished Visitor Programme

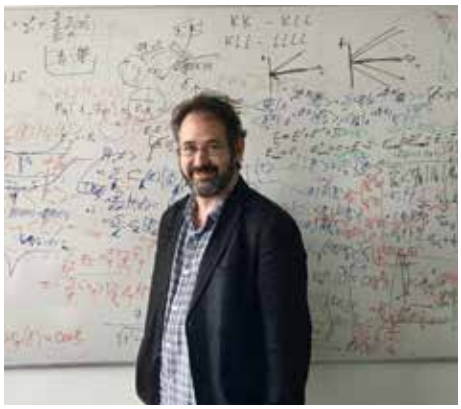
By Wiebke Laasch

Thanks to the James David Stephenson Fund for the promotion of young X-ray physicists at DESY, last year, David Reis from the Stanford PULSE Institute at the US research centre SLAC was able to come to DESY for a research stay as "Distinguished Visitor". During his stay, his cooperation with the group of Robin Santra at the Center for Free-Electron Laser Science (CFEL) laid the foundation for an award-winning master thesis.



Dietrich Krebs
Picture:
Marta Mayer

In 2015, Reis and his team had reported in the scientific journal Nature Physics on an experiment investigating how the so-called Compton effect behaves at high X-ray intensities. The Compton effect, which describes the increase in the wavelength of a photon as it is scattered by a charged particle, is important not only for quantum physics but also for various applications. Reis' experiment revealed a so-called non-linear X-ray Compton effect with surprising properties. The normal Compton effect in the material investigated in the experiment can be quantitatively understood by treating the electrons involved in the Compton process as free particles, i.e. particles that are not bound inside the material. This model fails in the observed non-linear X-ray Compton effect, however. In their article, David Reis and his team speculated that the explanation could be found in the interaction of the electrons with the atomic cores.



Stephenson Distinguished Visitor David Reis
Picture: Robin Santra

During his stay at DESY, Stephenson Distinguished Visitor David Reis discussed this issue in Robin Santra's group, and it was then explored by master student Dietrich Krebs in his thesis. For this purpose, Krebs developed a mathematical model based on non-relativistic quantum electrodynamics, which he solved using a sophisticated computer program he wrote. As a result of his research, it could be shown that the concrete properties of the observed non-linear X-ray Compton effect have nothing to do with the existence of atomic cores in the investigated material.

For his work, the Association of the Friends and Sponsors of Physics of the University of Hamburg awarded Dietrich Krebs the Otto Stern Prize for the best master thesis of the department of physics.

INFO

http://photon-science.desy.de/research/stephenson_foundation/

“Convincing development”

Federal Minister of Education and Research Anja Karliczek visits DESY

Hamburg’s Second Mayor and Science Senator Katharina Fegebank and Federal Research Minister Anja Karliczek have DESY Director Helmut Dosch and DESY’s Administrative Director Christian Harringa explain the plans for campus development in Hamburg (from left to right). Picture: Marco Urban

Anja Karliczek, the German Federal Minister of Education and Research, visited DESY in May during her inaugural visit to Hamburg. Minister Karliczek, who was accompanied by Hamburg’s Second Mayor Katharina Fegebank, learned about DESY’s current projects, its knowledge and technology transfer activities and the plans to expand the centre into the “International Science Park Hamburg”, which DESY is pursuing together with its research partners.

Among other things, Karliczek visited experimental stations at the high-brilliance light source PETRA III as well as the school lab “physik.begreifen”. “The insights gained at DESY benefit society in wide-ranging ways,” said Karliczek. “The science location around DESY has developed very convincingly.” As one example, the minister cited the European XFEL X-ray laser, which was inaugurated last year.

“DESY demonstrates that fundamental research can also provide important impulses for the economy and for start-ups,” said Karliczek. “This is why the German federal government invests some 250 million euros at DESY every year.” DESY Director Helmut Dosch accompanied Minister Karliczek on her tour. “We are very pleased to have the opportunity of introducing the minister to our ambitious projects for the future, which we intend to realise together with our trategic partners on the campus.” *(tz)*

Learning with fun: visit of the school lab “physik.begreifen”. Picture: Marco Urban

AWARDS

Prize for Theoretical Physics for Hirosi Ooguri

This year’s Hamburg Prize for Theoretical Physics has been awarded to the Japanese scientist Hirosi Ooguri from the California Institute of Technology (Caltech) in Pasadena (USA). Ooguri is one of the world’s leading experts on topological string theory, which addresses mathematical aspects of superstring theory – an important path towards an all-encompassing theory of the nature of our universe. In 2018, the Hamburg Prize for Theoretical Physics has been endowed with 100 000 euros for the first time. It is awarded by the Joachim Herz Stiftung, the Wolfgang Pauli Centre (WPC), the Hamburg Centre for Ultrafast Imaging of the University of Hamburg, and DESY. It is one of the most valuable science prizes in Germany.

Medal of Honour for Johannes Knapp

Johannes Knapp has received the Medal of Honour of the Yerevan Physics Institute (YerPhI) for his many years of contributions to the local education and training of young Armenian scientists in astroparticle physics. The medal was presented in June by YerPhI Director Ashot Chilingarian. The participants raised a glass of the best Armenian cognac to the 26-year-old personal connections, the even longer partnership between YerPhI and DESY and the further good cooperation.

Start-up wins Laser Focus World Innovators Award

The DESY spin-off company Class 5 Photonics is a gold-level honouree of the Laser Focus World Innovators Award 2018 in the laser category with its Supernova OPCPA product. The prize recognises companies that have made major contributions to advancing the field of optics and photonics through recently launched products or services. It is awarded yearly during the CLEO conference and tradeshow in San Jose, California, USA. The Supernova OPCPA is the company’s flagship product, allowing researchers to conduct experiments ten times faster than previously. Class 5 Photonics has already received the PRISM AWARD in January.

What the DESY employees would like

Great response to campus survey

By Carmen Schüler und Tobias Piekatz

The campus survey in Hamburg and Zeuthen has elicited great response. A total of 1736 persons (1588 in Hamburg and 148 in Zeuthen) took part in the survey and used the free-text questions in particular to actively participate in shaping their working environment. The proposals made at the DESY Strategy 2030 event, which took place in the Stage theatre at the Hamburg harbour, will also be included in the decisions of the directorate and the involved divisions and will be integrated as far as possible into the campus projects.

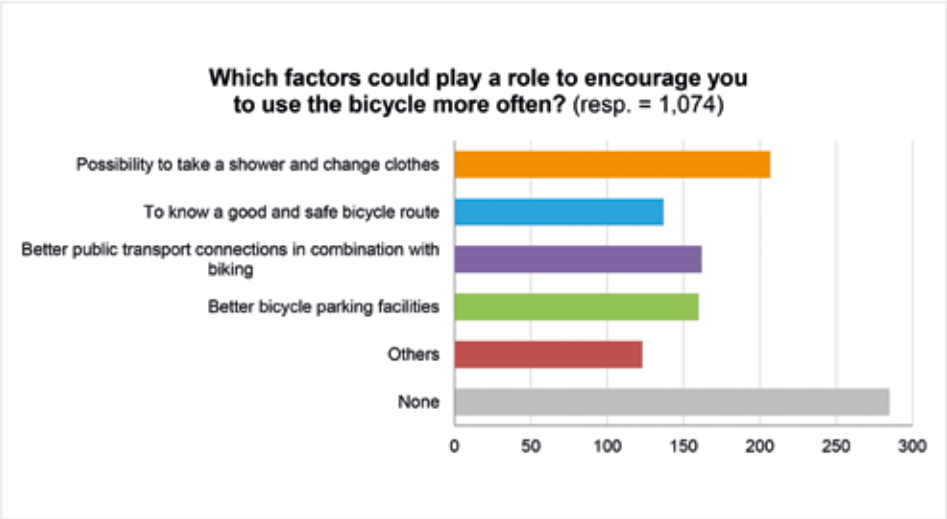
The survey and feedback from the strategy event have already resulted in first changes at both DESY locations. In Hamburg, a DHL package station has been put into operation. The idea of a bakery has already been included in the overall campus plan and found great approval among our campus partners. In the short term, the Hamburg cafeteria will increase their choice of bakery products. Moreover, a new coffee supply line in the cafeteria and an ice cream cart that regularly stops by have contributed to significantly enlivening the area in front of the canteen. In Zeuthen, there are plans to set up a bicycle repair system and a charging station for electric cars in the near future.

The survey has shown that a majority of staff members attach great importance to the campus design and see considerable potential for improvement in this respect. The questionnaire answers and the small flags used to mark proposals on the campus map presented at the strategy event on 20 March emphasise the approach of an environment close to nature, but also suited for work, communication and recreation. The proposals will be incorporated into an outdoor concept that will, among other things, include the often requested entrance for pedestrians in the northwest of the Hamburg campus.

The feedback with regard to mobility showed that many employees come to DESY by bicycle or public transport. There were many suggestions on how to make the campus and the driveways towards it more bicycle-friendly and more easily accessible by public transport. These proposals have been considered and will be taken into account in the discussions with the responsible authorities in politics and local transport as well as in the structural planning of the campus.

Word clouds are one possibility of evaluating free-text responses. The evaluation shows extra services that the DESY employees at both locations would like to use. More frequently mentioned services are displayed in a larger form (e. g., barber shop, post office, gas station, bakery, laundry service, additional ATMs, bike workshop (planned), packing station (already implemented), gym).. Further word clouds will be available on the new campus website.

So what's next? Currently, the survey is still being evaluated; the results will gradually be made available online. This double page features first examples. As the wishes and suggestions of the employees at both locations are broadly similar, most of the evaluation concerns



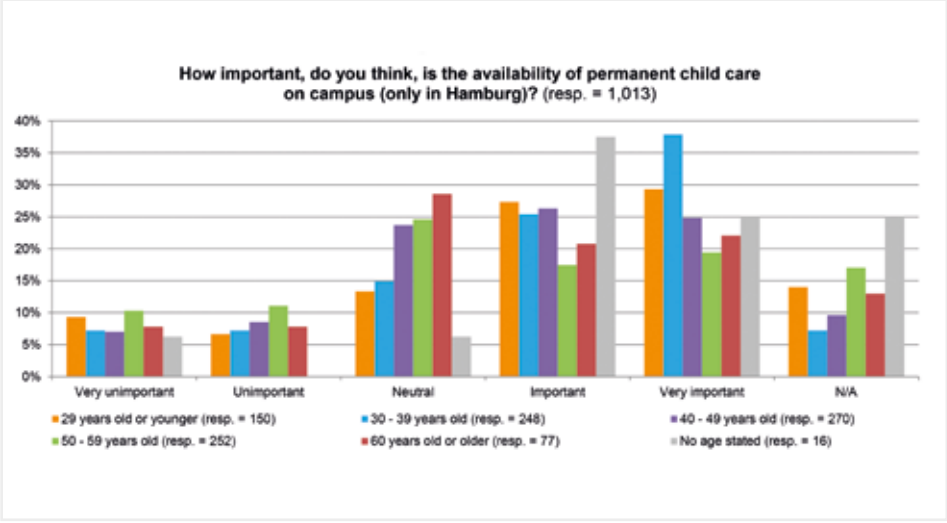
More than 200 respondents stated that better shower and clothes changing possibilities would encourage them to go to work by bike more often. Under "Miscellaneous", there was room for additional proposals; these included in particular the extension of the cycle routes, of the winter road clearance and of the StadtRad (city bike) services (in Hamburg). The latter is already in progress; a second StadtRad station has been established on the campus.

At the DESY 2030 strategy event, many DESY employees pinned small flags on the campus map as a means of making suggestions for the campus structure. Picture: Marco Urban

both Hamburg and Zeuthen. Only aspects that are specific to just one location will be appraised individually. First results will be made available on the new campus website as from the end of June, and new insights will continuously be added. Besides serving to inform the DESY staff, the data will be used intensively in the DESY strategy process and the dialogue with our funding agencies as well as with political and research partners. It is planned to repeat the survey in a stripped-down version at regular intervals.

INFO

https://www.desy.de/campus_portal



Particularly among younger respondents, the number of those who regard child care as important or very important is very high. The bars add to 100 percent within one age group.

Going to DESY by bicycle

Would you like to go to DESY by bicycle, but you don't know how? Are you unsure about the distance or the exact route? Do you only have some questions about appropriate clothing, the best bicycle bag or whether it is possible to take a shower at DESY? Or do you just need a motivator?

A new initiative on the Hamburg campus aims at encouraging colleagues in their decision to go to work by bicycle more often. The idea is to network cycling DESY staff members with those who are still hesitating. They will form "tandems", without any pressure or obligation. The most important rule is that the slower partner determines the speed. All scouts have agreed to this rule.

At a first meeting at the end of May, seasoned and aspiring cyclists got together in the foyer of the Hamburg auditorium to discuss possible routes and meeting points. Anyone who is looking for a scout or who has questions or suggestions may contact Cerstin Barmbrock at: **cerstin.barmbrock@desy.de, phone -2191.**

Helmholtz Association supports ATHENA

ATHENA (Accelerator Technology HElmholtz iNfrAstructure) is a new research and development platform focusing on accelerator technologies and drawing on the resources of all six Helmholtz accelerator institutions (DESY, Forschungszentrum Jülich, HZB, HZDR, KIT and GSI with the Helmholtz Institute Jena). The Helmholtz Association has now decided to fund ATHENA as a strategic development project with almost 30 million euros. "This decision demonstrates the Helmholtz Association's strong commitment to developing and supplying groundbreaking new accelerator technologies for solving the future challenges faced by society," said DESY Director Helmut Dosch, who is also the spokesperson for the Helmholtz Association's research division "Matter".

Together, these centres want to set up two German flagship projects in accelerator research based on innovative plasma-based particle accelerators and ultramodern laser technology: an electron accelerator at DESY in Hamburg and a hadron accelerator at HZDR. At both facilities, a range of different fields of application are to be developed, ranging from a compact free-electron laser, and novel medical uses to new applications in nuclear and particle physics. As soon as they have reached the necessary level of maturity to be put to practical use in a particular area, new compact devices could be built for use in other Helmholtz centres, as well as in universities and hospitals.

"The funding of the ATHENA project, which is coordinated by DESY, is an important milestone in the ARD (Accelerator Research and Development) programme, which was set up by the Helmholtz Association in 2011," said ARD initiator Reinhard Brinkmann, Director of the Accelerator Division at DESY. "Channelling the competencies of the various Helmholtz accelerator centres promises to lead to ground-breaking developments and new applications for ultracompact particle accelerators."

MicroTCA Technology Lab opened

Flagship for successful technology transfer

Cake at the start: DESY Director Helmut Dosch (left) and Martin Kamprath from the Helmholtz Association at the opening of the MicroTCA Technology Lab. Picture: Marta Mayer

At the beginning of April, the MicroTCA Technology Lab, or TechLab for short, was opened in the presence of several DESY directors and numerous industry representatives. The TechLab team of currently six members, which is still closely linked to the Machine Beam Control (MSK) group, is a flagship for successful technology transfer at DESY. As one of a total of seven Helmholtz Innovation Labs, the TechLab is designed as an open exchange place for science and industry. Research institutions and industrial partners will have the opportunity to commission contract developments, measuring services, consulting services for the compilation of new systems, training, test runs and quality checks. "The MicroTCA Technology Lab at DESY shows how much science and industry can learn and profit from one another," said DESY Chief Technology Officer Arik Willner.

On the basis of the communication standard MicroTCA.4, MSK and the TechLab are developing versatile, precise and extremely reliable electronics. This can be used not only for particle accelerators such as the one driving the European XFEL X-ray laser, but also in many industrial fields, among others in telecommunication, logistics or industrial automation. The advantage of this open standard is that it can be used when fast response times are essential or when immediate maintenance and troubleshooting are difficult because of geographical limitations. Moreover, the standard is modular and flexible enough to tailor it to almost every control electronics application.

DESY has long been cooperating with numerous partners in Germany and abroad in designing, commissioning, testing and improving systems for accelerator beam control and diagnostics. With the TechLab, there is now an instrument to also implement such projects commercially. The team is currently designing such a system for the Turkish Accelerator and Radiation Laboratory (TARLA).

The TechLab is located in Building 3 on the Hamburg campus. *(mb)*

The open electronics standard has many possible applications. Picture: Heiner Müller-Elsner

Picture: Denny Droßmann

DESY at Hannover Messe

As in previous years, DESY was one of the 5000 exhibitors at the Hannover trade fair for industrial technology in April. At the joint booth of Hamburg Invest, various exhibitors from research and industry presented technology solutions for industrial applications on a total of 120 square metres under the heading "Future Hamburg". Apart from many other visitors, Hamburg's Second Mayor and Senator for Science Katharina Fegebank came to gather information at DESY's fair presentation (the picture shows her in discussion with DESY Chief Technology Officer Arik Willner, Eva Crossas and Sarvenaz Saadat). DESY presented itself at the leading international trade fair for industry as an innovation driver both for industrial enterprises and in the regional context. *(mb)*

Strengthening cooperation

Large delegation visits partners in Israel

DESY and several Israeli research institutions intend to cooperate more closely in the future, as was agreed by representatives of the respective institutions during the visit of an 18-member DESY delegation to Israel. "We have a long and fruitful cooperation with a number of Israeli partners," said Helmut Dosch, DESY Director and head of the delegation. "This success story will be expanded by strengthening the existing cooperations and establishing new ones."

The delegation visited the Weizmann Institute of Science in Rehovot, the Technion – Israel Institute of Technology in Haifa, Tel Aviv University and the Hebrew University of Jerusalem, among others. "There is great interest from numerous DESY groups in expanding the cooperation with Israeli partners in all DESY research areas," emphasised Dosch. The spectrum of topics ranges from particle and astroparticle physics to nanosciences, the life sciences, photon science and accelerator physics. Representatives of the Centre for Structural Systems Biology (CSSB) on the DESY campus, the Centre for Hybrid Nanostructures (CHyN) at the University of Hamburg and the European XFEL X-ray laser also took part in the visit. *(tim)*

NEWS

The new DESY Generator Programme

Inventions, new technologies and innovations with potential for technology transfer can now be promoted right at the beginning of their development. This is the aim of the newly created DESY Generator Programme. This new instrument gives the directorate the opportunity to promote projects or inventions with innovation potential in such a way that external funding can be applied for, and first contacts with potential industrial partners can be established.

The Innovation & Technology Transfer (ITT) group manages this programme on behalf of the directorate and makes recommendations. The promotional instrument should be easily accessible, so there will be no submission deadlines. DESY employees can make applications at any time. However, market benefits and possible transfer potentials should be listed right from the start.

The DESY Generator Programme thus has a clear goal: the freedom to try out and develop new ideas in order to transfer them from basic research to application. The programme will be financed with funds from the Innovation Fund, which was set up in 2017. The money stems from uncommitted funds obtained from industrial services and sales.

The programme focuses on DESY developments and know-how from the following technology fields, with a high potential for application:

> Medical technology and diagnostics
> Laser-based technologies
> Nanotechnologies
> Electronics and communication technologies, automation
> Detector and sensor technologies
> Accelerator-based technologies
> New and complex materials

INFO

https://dgp.desy.de

DESY networks with the Hamburg start-up scene

DESY cooperates with the Hamburg Investment and Development Bank (IFB) and with the Health Innovation Port (HIP), an incubator of the company Philips for start-ups in the field of the life sciences. Thanks to this cooperation, DESY start-ups have access to information, counselling services and offers of both partners through the Start-Up Office located in the ITT group. Start-ups from HIP can also profit from cooperation with DESY. The goal is to bundle the complementary strengths of DESY, IFB and HIP and to further promote start-ups through networking. In addition, this cooperation will have a favourable effect on Hamburg as a location for start-ups.

European XFEL's first open day in Schenefeld

Great public interest in the new X-ray laser

By Rosemary Wilson

More than 2500 visitors attended European XFEL's first Open Day on the campus in Schenefeld. The visitors were able to see the underground experimental hall and the tunnels and find out about the function and applications of the world's most modern X-ray laser in short presentations and hands-on experiments.

There were also numerous activities for children: Girls and boys could test their knowledge in a quiz, have surprise eggs scanned or try the extracold ice cream of the X-ray laser vacuum group. Also present were the European XFEL partners: Its main shareholder DESY, for example, demonstrated the operation of the electron accelerator in a replica control room and offered tours through underground supply tunnels. In addition, the young firefighters Schenefeld demonstrated fire-fighting exercises for children, while the NABU nature conservation association explained the fauna and flora of the Feldmark on the edge of the research campus. In addition, there were lectures by European XFEL and DESY employees, music and the explosive science show of the science entertainer Magic Andy, accompanied by presenter Insa Backe.

Science entertainer Magic Andy inspired the visitors. Picture: European XFEL

Meanwhile, European XFEL has successfully commissioned the third light source – exactly one year after the first X-ray light was generated in the European XFEL tunnels. The third light source will provide X-ray radiation for the MID (Materials Imaging and Dynamics) and HED (High Energy Density Science) instruments, scheduled to start user operation in 2019.

Kick-off for EU project ACT

Networks to promote equal opportunities in science

On 17 May 2018, the kick-off event of the EU-funded project ACT, in which the DESY-APPEC group is involved, took place in Barcelona. For three years, under the leadership of Universitat Oberta de Catalunya, 17 partners from 10 European countries and Argentina will collaborate in a kind of large-scale group work on transferring into science the knowledge gained from gender studies about equal opportunities and talent promotion. This transfer of knowledge will be made possible through the creation of Europe-wide networks.

Picture: ACT

DESY's task in the project will be to establish a network in the field of physics together with interested physics-related institutes and to create interdisciplinary links with groups in other fields of science, e.g. engineering and life and social sciences. Lia Lang, Lisa Kamlade and Thomas Berghöfer, who are working together on this project for DESY, expect that this special kind of knowledge transfer will generate an interesting interdisciplinary exchange of experience and solutions that the participating institutes may share. Among other things, a balanced gender ratio can have an innovation-promoting effect. *(red)*

Protection against sexual harassment

DESY and University of Hamburg start information initiative

Together with the University of Hamburg, DESY has decided to hold information events on sexual harassment. In the meantime, nearly all staff members have been informed at the annual safety briefings in Hamburg and Zeuthen. In addition, the HR department has informed more than 100 executives at corresponding information events.

"I would like to once again emphasise the attitude of the directorate on this issue: Sexual harassment will not be tolerated at DESY!", said DESY Administrative Director Christian Harringa. The directorate is planning additional information measures in the near future. Moreover, the HR department, the equal opportunities officer, the women's representative and the Partnership for Innovation, Education and Research (PIER) network are jointly preparing information events, which will address especially female PhD students and scientists. All the events will be offered both in German and in English.

"Sexual harassment does not begin with an unwanted touch or an indecent proposal," stressed Sonja Gebert, head of the HR department. "It may also include insinuating jokes, comments about clothes, appearance or private life, indecent glances and unwanted e-mails."

Anyone who feels sexually harassed may get information on how to take action from the equal opportunities officer, the works council, the works doctor, the disabled persons' representation or the social and addiction counselling. The second step would be a formal complaint to these institutions or to the supervisor, the head of the HR department or the directorate; this will in any case entail an investigation. "All complaints will be pursued and of course treated confidentially," said Harringa. *(tim)*

Photo: EUCALL

EUCALL's final annual meeting

By Graham Appleby

The participants of the EU project EUCALL met at ELI Beamlines in the Czech Republic at the end of May for the project's final annual meeting. Since 2015, EUCALL has been helping synchrotron, free-electron laser and high-power optical laser facilities collaborate on solutions to common technical and operational challenges. The project will be concluded this autumn.

EUCALL (the European Cluster of Advanced Laser Light Sources) has resulted in several concepts for increased research infrastructure efficiency, new cooperations and novel technologies. Examples of the latter include simulation software that models experiments from source to detector, high-repetition sample delivery prototypes, a suite of diagnostics and timing tools as well as firmware for ultra-fast data transfer.

"The partners are very pleased, highlighting a wealth of advanced results coming out of the project as well as instruments and tools that can be used at the light sources participating in EUCALL," said EUCALL coordinator and European XFEL Scientific Director Thomas Tschentscher. "During the next weeks, we will complete any remaining tasks in EUCALL and prepare for the future of our collaboration."

Belle II detector starts research programme

Since April, particles have been colliding again after years of refurbishing in the SuperKEKB accelerator at the KEK research centre in Tsukuba, Japan. SuperKEKB is meant to produce more particle collisions than any other particle accelerator before it. The collisions between electrons and their antiparticles, the positrons, occur inside the completely redesigned Belle II particle detector, in which DESY and other German research groups are also involved. Belle II is specifically designed to look for physical phenomena that go beyond the physics landscape explored so far.

SRI conference to return to Hamburg in 2021

DESY and European XFEL will host the International Conference on Synchrotron Radiation Instrumentation (SRI) in Hamburg in 2021. The two partners have won the bid to host the next SRI, as was announced during this year's meeting, SRI2018 in Taipei, Taiwan. After nearly 40 years, the established conference will thus return to Hamburg, where the first meeting was held in 1982. Rotating between Europe, America and the Asia–Pacific region, the conferences are held every three years. The SRI conference is the most significant and largest international meeting in the synchrotron radiation and free-electron laser community. SRI2021 will be the 14th edition of the conference and take place at the Congress Center Hamburg (CCH) from 31 August to 3 September 2021. It is expected to attract some 1000 participants.

Topping-out ceremony at MPSD

The Max Planck Institute for the Structure and Dynamics of Matter (MPSD) celebrated the topping-out of its new building on the Hamburg campus in June. The building provides space for two new MPSD research departments and several junior research groups. It is due for completion in 2020. The City of Hamburg is contributing 37 million euros towards the new building. It offers 6300 square metres of floor space and room for 160 workplaces. The completion of the building shell was celebrated with a traditional topping-out ceremony under blue skies, after which a crane lifted the topping-out wreath high above the five-storey building.

Researcher Miriam Barthelmeß with two girls in the cleanroom. In her evaluation, a girl later wrote: “In the week after the Future Day, I saw the world a bit differently than usual.” Picture: Marta Mayer

Sparking enthusiasm for science

On Future Day, girls and boys got a glimpse behind the DESY scenes

By Amina Edzards und Carmen Schüler

On this year’s Future Day at the end of April, a total of 130 pupils came to the two DESY locations in Hamburg and Zeuthen. The girls and boys had the opportunity to get to know the various professions in a research centre and to look behind the scenes of the exciting world of basic research in the natural sciences.

Whereas the participation of both boys and girls has long been established in Zeuthen, it was the first time that 26 boys took part in Hamburg alongside 74 girls. The girls were introduced to professions in research and technology. The boys got an idea of the administrative tasks in a large research centre. “What I liked the most at the Future Day at DESY was the new perspective that was offered to me,” wrote one participant after the event.

Without the active support and voluntary commitment of the many DESY employees who, as mentors, provided the young people with insights into their profession or helped in other ways, this event would not have been possible. This is a good opportunity to thank all those involved for their efforts.

In both Hamburg and Zeuthen, the day began with a fascinating overview of DESY and its research tasks. Afterwards, the full-day mentoring programme started in Zeuthen, while in Hamburg, workshops on “Gender roles in work and family life” were offered for the first time in addition to the shortened mentoring programme. Prepared from an educational perspective, the aim of these workshops was to make clear that vocational orientation should be free of gender stereotypes. The girls and boys had a great day at DESY, and some of them already asked for a pupil internship.

The evaluation of the event in Hamburg has shown that the next Future Day 2019 should again include the new workshop concept. Applications for Hamburg will be possible as from January 2019. Information on applications for Zeuthen will be available in due time.

INFO

www.desy.de/schule/special_events

HELMHOLTZ

RESEARCH FOR GRAND CHALLENGES

Fast Food makes the immune system more aggressive

Cheese burger, chips and soft drinks by the litre – it is well known that fast food is fattening. But this kind of unhealthy food may even have worse effects on our body than hitherto expected. Scientists of the University of Bonn and the German Center for Neurodegenerative Diseases (DZNE) discovered that our immune system reacts similarly to junk food as to a bacterial infection. Especially alarming is that unhealthy food makes the immune system more aggressive.

For their study, the scientists placed mice for a month on a fast food diet: high in fat, high in sugar and low in fibre. The animals consequently developed a strong inflammatory response throughout the body, almost like after infection with dangerous bacteria. A further problem was that after the junk food diet, when the mice were again offered their typical cereal diet, the acute inflammation disappeared – but not the genetic reprogramming of the immune cells. Many of the mice genes that had been switched on during the fast food phase were still active.

“After an infection, the body’s defences remain in a kind of alarm state, so that they can respond more quickly to a new attack,” said Eicke Latz, Director of the Institute for Innate Immunity of the University of Bonn and a scientist at the DZNE. “The immune system consequently reacts even to small stimuli with stronger inflammatory responses.” With dramatic consequences for our health: These inflammatory responses can accelerate the development of vascular diseases or type 2 diabetes.

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