DESY inFORM.

06/2008
Newsletter of the
Research Centre DESY

Particle Physics Marketplace

The Analysis Centre at DESY will support communication and cooperation

The Analysis Centre of the Helmholtz Alliance “Physics at the Terascale” is currently being established at DESY. “It supports particle physicists at German universities working on data analyses at the LHC experiments and those working on the preparation of the planned International Linear Collider,” said Klaus Mönig, interim head of the new Analysis Centre. Already now a tight network is being woven for the scientific community. The qualification of future physicists plays an important role in the project.

“The ‘Terascale Monte Carlo School’ was the first major event of the Analysis Centre,” said physicist Hannes Jung, who organised the school. The participants were mainly diploma students, Ph.D. students and postdocs from German universities and institutes, but attendees from abroad were equally welcome. In the week from 21 to 24 April, lectures and practical exercises taught about 90 participants how to use these important physics analysis tools at the LHC. Another two schools covering statistics and parton distribution functions will take place in the second half of the year. With these special training courses, the Analysis Centre supports members of the Helmholtz Alliance to ensure the lasting competitiveness of young German scientists in the international scientific community.

In addition, young scientists (as well as established and experienced ones, of course) can use the Analysis Centre for part of their research work, particularly for initial training to enhance their knowledge. Embedded in the attractive scientific environment and the concentrated expertise of experienced experimentalists and theorists, the Analysis Centre offers the optimal service for Alliance members to strengthen and expand their scientific know-how.

The applications of Monte Carlo simulations deepen the theoretical knowledge of future physicists.

Expert‘s help: Professor Torbjörn Sjöstrand, Lund University, is explaining the practical exercises.

This infrastructure also includes the so-called “National Analysis Facility”, which provides computer resources for physics analyses to all Alliance members. This, of course, is also for the benefit of the Analysis Centre.

Together with the other pillars of the Helmholtz Alliance – Grid computing, detector and accelerator development – the Analysis Centre guarantees that German particle physics continues to play an important role on the international scientific stage and that DESY will always be a favoured meeting place for physicists. *(she)*

Open Space

Open Space goes on – after gathering ideas to increase efficiency last year, the next steps were announced in a second meeting at the end of April. Almost all ideas were accepted as a basis for possible actions. These are now being worked upon before they are submitted to the Directorate. The first action items will be ready for approval in two to four months. Subsequently, it is planned that the approved projects go through a two-step implementation phase of six months each, watched over by a project officer.

More information (in German):
www.desy.de/verborgene-schaetze

DIRECTOR'S CORNER

The construction of the new PETRA III experimental hall has progressed with spectacular speed from the very beginning. When most of the facade was completed, industrious work continued inside the hall. At the beginning of April, the experimental area could be handed over to DESY almost on time. This surely is a good result achieved by the employees of the firms involved, even if some technical equipment is still not running smoothly. The commissioning of the complete facility is scheduled for 30 June. Other remodelling work, for example in the tunnel, is proceeding quickly. On 20 May, the last magnet was re-installed into the old sector of the PETRA storage ring. Parallel to this, the gauging and construction of the tunnel shielding have started. Planning at the beamlines and experiments have progressed so far that assembly will start immediately after the completion of the preparatory work.
Because remodelling work is being done at the intersection point of FLASH and PETRA III at the moment, FLASH is currently shut down. The facility's recent measurement period was very successful. Because of the strong user demand, several groups had to form a collaboration to organise operation effectively. We are looking forward to the evaluation of the data.
There is also good news coming from Fermilab concerning the advancement of the FLASH accelerator: Tests have been carried out successfully with the 3.9-Gigahertz cavities for FLASH. They will be installed during next year's shutdown in order to improve the electron bunch diagnostics. This will help FLASH to keep its leading position in the world.

Sincerely,
Edgar Weckert

LHC in a Subway Tunnel

PR Events in Germany for CERN and the LHC

2008 will be an exciting year for particle physicists. At CERN in Geneva, the LHC, the machine of superlatives, will start racing protons around the tunnel this summer. Germany plays a leading role in the LHC project and at CERN in general and DESY offers its expertise and experience not only to particle physics but also to communication. A project as exciting and at the same time as complex as the LHC must be communicated adequately to the public. This is why communication expert Katrin Voß has been working at DESY-PR since April. She coordinates all communication activities in Germany for CERN and the LHC. Apart from day-to-day public relations and cooperation with the CERN press office, there will be many exciting events in the start-up year 2008. These are planned and carried out in cooperation with a team of physicists from all the German institutes involved in the LHC, the Federal Ministry for Education and Research (BMBF) and the advertising agency Scholz & Friends.
The highlight will be an exhibition in the "Bundesstag" subway station in Berlin. From 15 October to 16 November, gigantic photographs and genuine LHC exhibits will be staged effectively at that location. The team plans a festive event on 21 October, the date of the official LHC inauguration. The exhibition will be advertised during the "Long Night of Sciences" with a city train transformed into the "LHC Express", circling around Berlin for one night on 14 June. The team is also preparing a central website, a press event on the occasion of the first injection in summer and other events that will be announced in DESY inForm. *(baw)*

LHC communicator Katrin Voß at the CMS detector

INFO

www.dieweltmaschine.de (in German)

PETRA III Beamline at the PSC

Next to news from FLASH, an important topic at the May meeting of the Photon Science Committee (PSC) was the current status of the PETRA III project. The design of six additional beamlines was presented, with two to follow in the October session. A special approach for establishing the beamline design was supported by the PSC. All of the fourteen PETRA III beamlines, also those from GKSS and EMBL, had been planned in workshops with the strong participation of the future experimenters in order to implement user requirements in the best possible way. Recommendations from external experts were also considered.

DESY's EU Projects

IA-SFS

The abbreviation IA-SFS (Integrating Activity on Synchrotron and Free Electron Laser Science) stands for nothing less than the cooperation of all European synchrotron and FEL radiation sources, corresponding to the world's largest network of this kind. With a funding volume of 27 million Euros for a period of five years, the 16 partners, coordinated by the Italian institute ELETTRA, further develop research possibilities in their fields and advance communication between each other and universities. Since the project's start in 2004 there have already been numerous accomplishments, for example in the synchronisation and diagnostics of femtosecond-flashes of light that occur at free-electron lasers. "Great progress has also been made in the optimisation of photo injectors for FELs, mainly at PITZ in Zeuthen," said Gerhard Grübel of DESY, coordinator of the research activities in the EU project.
Another goal of the project is to offer data taking time at the existing synchrotron and FEL sources to scientists from countries that do not have their own light source. For this purpose, standardised methods for the access to such sources are brought forward. European guest scientists also receive travel grants.
As of 2009, a follow-on project is planned. A proposal with the pretty name ELISA (European Lightsources Activities) has already been submitted. *(tz)*

INFO

More info
www.elettra.trieste.it/i3/

DESY colleagues help to assemble and disassemble the sensitive measuring apparatuses.

"Full House" at FLASH

The scientific demand is strong, but time and work stations are scarce

In the four weeks of April, around 70 scientists carried out eight different experiments at FLASH. Four of these experiments formed a large collaboration. Under the leadership of Robert Moshammer from the Max Planck Institute for Nuclear Physics in Heidelberg, teams from Frankfurt University, TU Berlin and FOM Amsterdam worked hand in hand. Bundling the expertise becomes a natural consequence if you want to manage your data taking time well as it is scarce and scientifically extremely valuable. What unites the collaboration mentioned above is the investigation of decay processes of atoms, molecules and clusters which are bombarded with the intensive FLASH pulses. The scientists measure the direction-dependent energy and velocity distribution of the atomic fragments. Like the police who traces the course of a car accident by examining skid marks and distances, the scientists get learn more about reaction mechanisms in the nanocosm with their experiments.

Trying to get the best yield in ten days, the team around Robert Moshammer installed their four experiments at two measuring stations, two of each in a row. Since bits and pieces must be at hand immediately, the researchers took "half the lab" with them – apart from the measuring equipment. Each experiment approximately filled a 7.5-ton lorry. As soon as everything is ready for measuring, the scientists work in shifts around the clock.
Before and during the users' time, DESY colleagues give them enthusiastic and competent support with scientific counselling at the experiments, cooperation in the measurements, data analysis and 24/7 machine operation, as well as with the on-call service of many colleagues. The success speaks for itself: In the last three years, FLASH experiments produced more than 30 publications, for example in Applied Physics Letters, Physical Review Letters and in several issues of Nature. *(she)*

DESY – Control Room to the World

A new control room in building 1d opened in May that enables scientists to monitor their test objects (for example detector prototypes) from DESY, even if the objects are located at CERN or Fermilab. At the moment, the CALICE group uses the control room for several months for a test beam experiment. A permanent video connection and a web based user interface allow the physicists to monitor and control the experiment from the DESY site – work which so far had to be done locally.

Hamburg Science Senator Herlind Gundelach (in front, 4th from right) and the association members are jointly getting an idea of DESY.

VIP Visit

DESY in the focus of parliamentarians and the new Hamburg Senator for Science

Her first official visit took the new Hamburg Senator for Science Herlind Gundelach to DESY, where she met the German Bundestag Committee on Education, Research and Technology Assessment. On 19 May, nineteen members of this committee accepted DESY Director Albrecht Wagner's invitation. "We take great interest in the scientific development of DESY as well as the resources and funding situation," said committee member Michael Kretschmer.

Albrecht Wagner explained to the interested politicians the future challenges that DESY has to face to stay competitive on an international level. He also outlined the distribution of the budget. DESY spends approximately 80 percent of its financial means for the operation of the large-scale facilities, used in the first place by external national and international researchers groups. Parallel to an excellent internal research, these facilities secure DESY's attractiveness and international visibility. Appropriate funds can only be granted if the is enough support from policymakers.

During the tour to the PETRA III experimental hall and FLASH, the parliamentarians were able to get an idea of the activities at DESY. Senator Gundelach and members of the Bundestag committee signed the DESY guest book, expressing their gratitude "for the very informative lecture and the constructive talks." *(she)*

Weighty Protection Wall

The first shielding blocks are already in place in the PETRA III experimental hall. The concrete blocks weighing between 14 and 17 tonnes form the lateral wall of the tunnel that will later house the electron beamline. Thin black lines on the floor mark the position of wall and shielding blocks. Surveyor colleagues had previously laid out a detailed network that is now used to lift and align the 2.5-metre-high heavyweights with a special crane.

Two sectors from a total of nine are already complete. A pre-casting factory near Cuxhaven manufactures the accurately sized blocks. The production takes time; only one stone can be cast per mould per day. At the beginning of July, the next load of heavyweights will be delivered. *(she)*

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DESY Seminar

On 24 June, Markus Wobisch from Louisiana Tech University will report on the latest results from the Tevatron in DESY's Tuesday Seminar: "QCD Studies at the Tevatron – Recent Results". This will be the last seminar before the summer break.
Auditorium, 24 June, 5 p.m.

Hot Wire to Zeuthen

The internet connection between Hamburg und Zeuthen has become more fail-safe. In April, a 1 Gigabit line has been connected between the Zuse Institute Berlin (ZIB) and Zeuthen, upgrading the existing 10 Gigabit dedicated line which so far was not switchable in case of damage.