

Broader horizons ahead



The LHC has marked a great step in the evolution of CERN and the particle physics community. Today, more than 10,000 users from all around the world use the

CERN facilities. The resources needed for building the LHC – one of the most ambitious scientific instruments ever conceived – have been made available essentially by the Member States but non-Member States have also made important contributions. “This is the right time to prepare the Organization for the decades during which the LHC will be operated and upgraded and at the same time pave the way for new research programmes that will become more and more global”, says Felicitas Pauss.

The document approved by Council will help CERN to find new resources by providing a legal framework for the geographical enlargement of CERN within the rules

On 18 June 2010, the CERN Council opened the door to greater globalization in particle physics by unanimously adopting the recommendations of the Working Group set up in December 2008 to address the issues of scientific and geographical enlargement. The Bulletin talks to Felicitas Pauss, Head of CERN's Office for International Relations, co-Chair of the Preparatory Group and member of the Working Group.

established by the Convention, which does not include a provision restricting CERN Membership to European States. “The primary purpose of the document is to encourage States that already participate in CERN's scientific programme to establish more formal institutional links with the Organization by becoming Member States or Associate Members”, explains Felicitas Pauss. Although an Associate Status already existed, the Associate Member status is different in that the rights and obligations as well as the criteria for becoming an Associate Member have been redefined by this document. The rights and obligations relating to Membership remain unchanged in line with the Convention.

(Continued on page 2)



A word from the DG

Strengthening CERN's international relations

Council's decision in June to open membership of CERN to the world in a clear and well-defined way means that it's time to strengthen our international relations. Non-Member State interest and participation in CERN has been rising for many years, and with the LHC running smoothly that trend is continuing. Furthermore, the long-term future of particle physics may well see Europe contributing to facilities in other regions of the world, with European participation coordinated through CERN.

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(Continued from page 1)

Strengthening CERN's international relations

It was with these developments in mind that I established the External Relations Office under Felicitas Pauss at the start of my mandate last year. Council's decision underlines the need for that office, and clarifies its liaison role of with Member and non-Member States.

Clarity of function demands clarity of name, so from now on the Office will be known as the Office for International Relations. It will continue to be headed by Professor Pauss. The Office's main role is to coordinate our relations with Council delegations, governments, and funding agencies. With five candidates for accession to CERN already on the table, Observer status being phased out in favour of a new and more equitable form of Associate Membership and expressions of interest in closer collaboration with CERN coming from several non-Member States, the office will have no shortage of work over the coming months and years.

Rolf Heuer

Broader horizons ahead

(Continued from page 1)

The novelties contained in the document are substantial and will shape the future of CERN and the particle physics community. Besides the new definition of the Associate Member status, the list of novelties also includes: the possibility for any State (European or not) to apply for Membership and Associate Membership; the phasing out of the current "Observer" status; the confirmation of international co-operation agreements as an important means of establishing initial formal links with CERN. At the same time, the document clearly states that the applications for Membership will be subject to the Council first expressing its interest in considering them. Going further in the process, Membership will only be granted to States once they have completed at least two years of Associate Membership, and, of course, only if they fulfill the requi-

site criteria. Associate Membership therefore becomes an obligatory pre-stage for Membership.

The new procedures are a response to the increasingly global nature of the scientific community using the Laboratory's facilities and infrastructures. However, geographical enlargement will not change the fundamentally European identity of CERN. "Council has recognized the importance of maintaining the European character of the Organization", confirms Felicitas Pauss. "European Member States will remain in the majority and applications for Membership from EU/EFTA States will be strongly encouraged. The new rules are designed to be beneficial to and sustainable for both CERN and its global partners".

CERN Bulletin

A rich harvest of data from the LHC

Operation with many nominal bunches is a major technical achievement which the operations teams have obtained this week. The total number of particles per beam in the LHC has now exceeded the threshold of 10^{12} , a critical value whose achievement required the meticulous setting-up of many accelerator systems.

The particle bunches are injected into the LHC from the SPS accelerator. Until this week the operations teams had kept the injection scheme simple, taking just one bunch per SPS cycle. Now that the number of bunches injected is increasing, the time needed to fill the LHC is becoming uncomfortably long. So this week, for the first time, the teams have commissioned multi-bunch

After mastering operation with nominal bunch intensities in June, the number of nominal intensity bunches injected into the machine has been carefully increased over the last 3 weeks, and is presently 12 per beam. This achievement has allowed the LHC experiments to record more than 200 nb⁻¹ of integrated luminosity, most of it in recent physics fills. This represents a rich harvest of data that the experiments are now analysing with a view to presenting their latest physics results at the ICHEP conference in Paris from 22 to 28 July. You can follow the event by watching the live webcast or by reading the blog.

injection and have succeeded in injecting more than one bunch for each SPS particle acceleration cycle, thus considerably reducing the time needed to fill the LHC.

Once the colliding beams are injected into the LHC, it is now possible to maintain them for many hours. However, some instabilities are being observed with high intensity bunches in the machine. These instabilities, still under study, can result in beam loss (see picture), which in turn causes a reduction in

luminosity for physics. Understanding and preventing these sudden losses is one of the main priorities for the coming weeks.

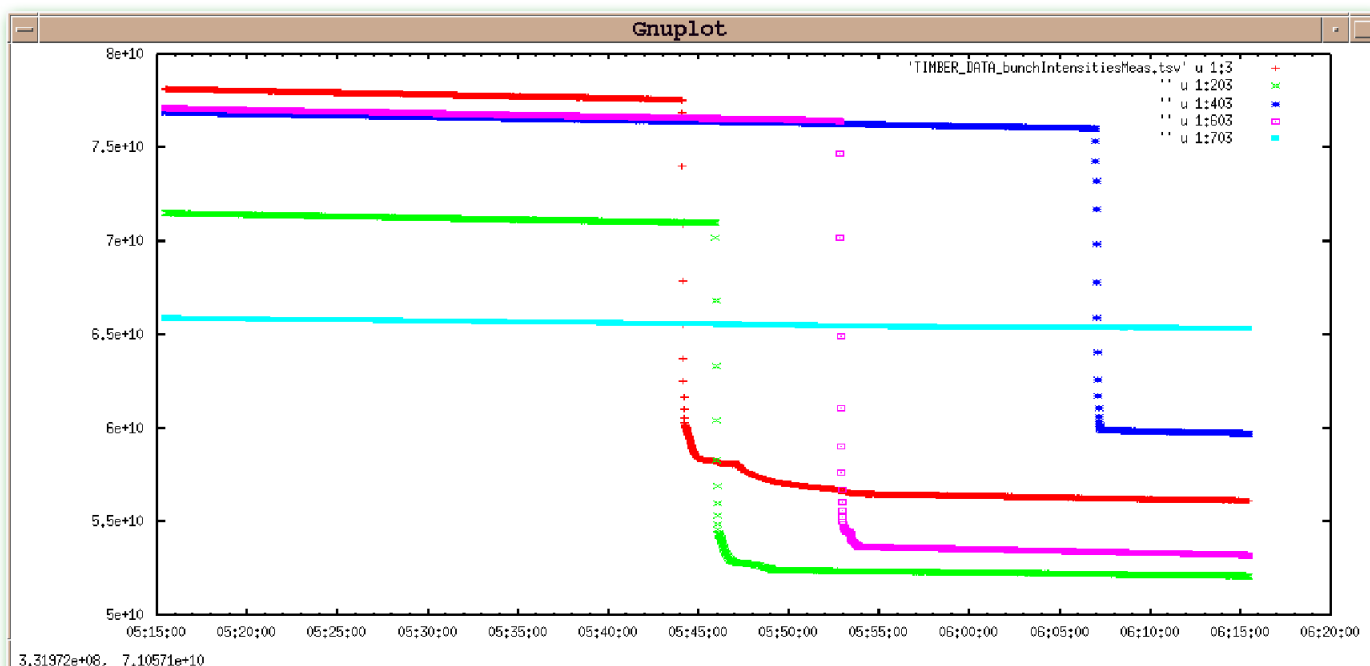
The long hours of stable operation at high intensity and high energy have provided the experiments with a rich harvest of data. The LHCf experiment, one of the three smaller experiments at the LHC, has already completed its run for 2010 (more information on this will be published in the next issue of the Bulletin), while the other experiments are preparing to present their latest physics results at the ICHEP conference in Paris.

Follow ICHEP via the live webcast (<http://webcast.in2p3.fr/2010/ichep/>) or read the regular blog posts (<http://ichep2010.blogspot.com/>).

Up-to-date graphs showing the LHC luminosity are available here:

<http://lpc.web.cern.ch/lpc/lumiplots.htm>

CERN Bulletin



The graph shows the loss of four bunches (red, green, pink, and blue in order of time). Other bunches were not affected, as indicated with the cyan trace. The cause and cure of the losses is under investigation.

Trial of car-sharing scheme at CERN

How many times have you found yourself searching fruitlessly for a parking space? How many times have you decided against using your car to run a short errand because you were worried about being able to find another parking space? Over the last 50 years, the number of users at CERN has grown steadily, and it is gratifying that the total number now exceeds 10,000. Other contributing factors include the re-start of the LHC and the introduction of the new tram line in May 2011, which is expected to lead to people parking their vehicles at CERN for the purpose of taking the tram into Geneva. This is why transportation has become an important priority. The present trial is an integral part of CERN's urban plan.

On 6 July, a sample group of approximately 500 users started a six-month trial of a new car-sharing scheme. The project is an initiative of the General Infrastructure Services Department (GS), in collaboration with the Physics Department (PH) and Hertz car rentals.

Today there are some 13,000 personal automobiles being used at CERN, and another 1 000 official CERN vehicles. The official vehicles average some 5 000 km per year, which shows that vehicle utilisation at CERN is not optimum. Given the broad consensus that we must all do our part to protect the environment and reduce carbon dioxide emissions, it has become imperative to rationalise and optimise the fleet of vehicles. Isabelle Mardrossian, head of the Logistics Section in the GS Department, explains: "The aim of the car sharing project is to provide a broader range of transportation options without increasing the number of

CERN vehicles being driven on the site; the level of service should be the same or better, while keeping costs under control."

For the next six months, 19 cars strategically positioned around the Meyrin and Prévessin sites will be made available to the users in the sample group. "The Physics Department got involved in the project because of its familiarity with this method of car-sharing. We already possess 170 cars shared by some 3000 users. And it works very well," explains Sébastien Auerbach of the Space Management and Infrastructure Section in the Physics Department's Administration and General Services Group (PH-AGS-SI). "This will be a supplement to the existing services such as the regular CERN shuttles and carpooling, and should improve the quality of services while meeting a wider range of users' needs," adds Véronique Marchal, who heads the GS Department's Site Engineering and Management Group office.

The members of the sample group have already been selected. If the test results are deemed successful, CERN will set up a car-sharing scheme, probably using more environmentally friendly cars, such as electric cars. When that happens, you will all have the opportunity to use them.

Laëtitia Pedroso



CERN gets a new terrace

As part of the programme of renewal and improvement of CERN's green areas, the GS Department entrusted *Genève Espaces Verts*, the company responsible for their upkeep and management, with the creation of a new terrace between Buildings 39 and 40. The terrace, which is made of a wood selected for its ability to withstand variations in temperature, is shady in the mornings and in the full sun from midday onwards. It can seat about a hundred people. Users can now unwind or drink their coffee at leisure in a peaceful and harmonious setting surrounded by flowers. Even here, though, physics is never far away: the flower pots made from the protective end-caps of the LHC magnets serve as a reminder of what we are all here for.

For the last few days, people working on the CERN site have been able to take advantage of the new terrace to relax on and make the most of the nice weather. What more could you ask for in your work place?



Laëtitia Pedroso

New terrace between building 39 and 40.

Paul Dirac lectures at CERN

When a group of physicists entered the main auditorium, during the evening of the 29 June, they felt they had opened a time portal. An attentive audience, dressed in early 1900 costumes were watching a lecture by an elusive Paul Dirac, presenting for the first time his famous formula on the blackboard. Paul Adrien Maurice Dirac (1902-1984) was a British mathematical physicist at Cambridge, and one of the fathers of quantum mechanics. When he first wrote it, in 1928, Dirac was not sure what his formula really meant. As demonstrated by Andersson four years later, what Dirac had written on the blackboard, was the first definition of a positron, hence he is credited with having anticipated the existence of antimatter.

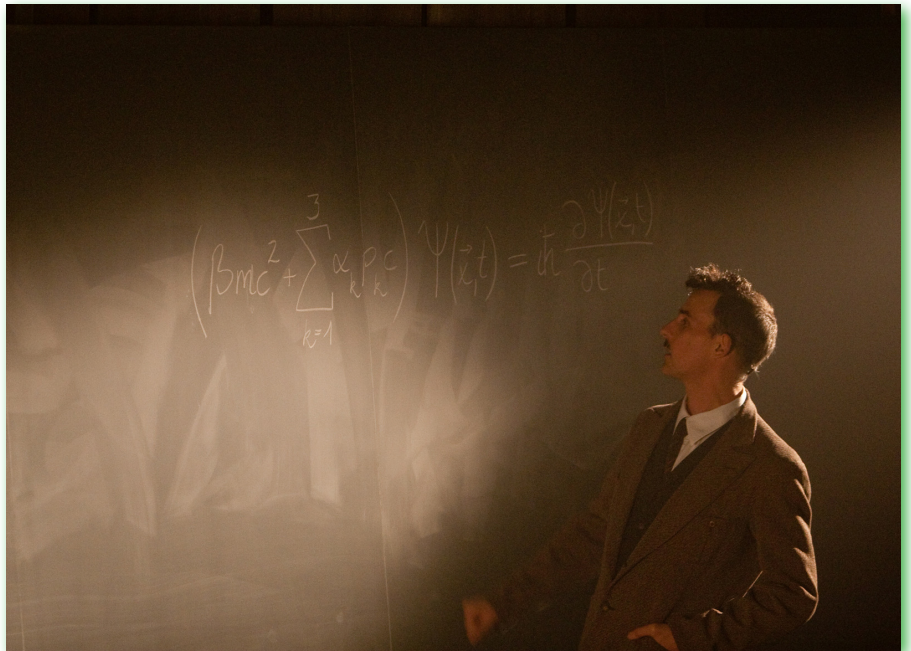
What the groups of puzzled physicists were really observing when they entered the CERN Auditorium was the shooting of a historical reconstruction produced for an institutional film on the LHCb experiment. Actor John Kohl, whose resemblance to the father of antimatter is astounding, gave us an impressive interpretation of Dirac in the CERN auditorium, transformed for the occasion into a hall at Cambridge University as it looked in the 20's. In real life John is a psychologist working for the University of

Geneva, and for the purpose of the shooting he lectured our video team, and a group of summer students dressed as their grandfathers, on the psychology... of physics!

See the video here:

project-tv.web.cern.ch/project-tv/QT/Dirac_SD.mov

CERN Bulletin



Paul Dirac in front of a blackboard showing his formula.

First Doctoral student assembly and poster session at CERN

130 doctoral students are currently doing their research at CERN on technical subjects such as magnets and cryogenics, beam and detector physics, computing and vacuum.

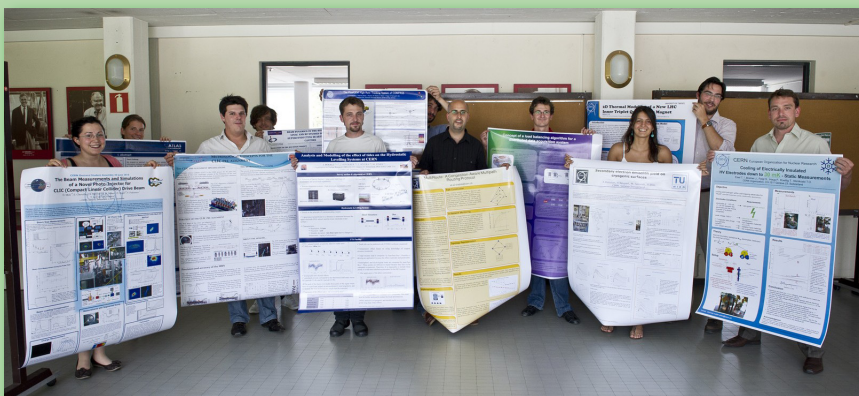
The main objective of the first doctoral student assembly and poster session, held

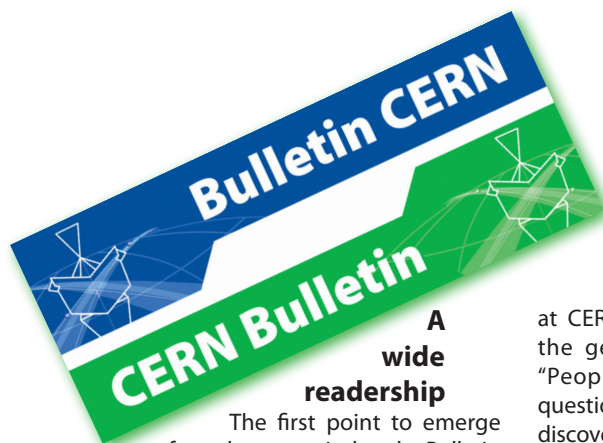
June 30, was to give the doctoral students the opportunity to present their scientific achievements to their CERN supervisors and the CERN Management (?). The photograph shows about half of those who presented posters, all in their second year of assignment, ready to attach their work to the panels.

Another aim of the assembly was to discuss the outcome of the anonymous questionnaire and to gain feedback for the purposes of identifying any areas for improvement in the doctoral student programme. While the questionnaire revealed broad overall satisfaction with the programme, respondents underlined the need to strengthen the links between students, CERN supervisors, and university professors.

With 24 posters presented and 160 participants in all, the Council Chamber and the adjacent concourse were full to capacity. Due to the success of this first student assembly, it is planned to repeat this event when the next subset of students are ready to present their work.

Stephan Russenschuck and Ingrid Schmid





What you think about the Bulletin

A wide readership

The first point to emerge from the survey is that the Bulletin is read by a large proportion of the CERN population, even if opinions on its form and contents vary: 33 of the 35 people questioned said that they read it, representing 94.3%. Some even consider it as a point of reference: "If a subject isn't featured in the Bulletin, I don't even know it exists!", said one young woman.

Different reading habits

Of course, almost all the people questioned don't read the Bulletin from cover to cover but select the information which concerns them personally or is on a subject of interest to them. The choice of articles read varies according to profession, job and personal curiosity. As a general rule, the articles on the LHC are particularly popular.

The LHC: important but sometimes given too much emphasis

"For me, it goes without saying that the Bulletin should talk about the LHC", says one respondent. "The work of each and every one of us has been geared towards the LHC for several years now, so it would be a pity if we didn't know what was going on there, what was happening with the components, the teams, the problems and the challenges!" Many of the survey's participants shared these views as the LHC machine is a subject of great curiosity, not only

at CERN but among the general public: "People ask lots of questions when they discover that we work at CERN", said one woman, "and they're mostly about the LHC. The Bulletin is a good source of basic information that helps to answer them".

On the other hand, several people thought that the LHC was sometimes given too much coverage in the Bulletin. "It seems like the other machines and the other projects, etc., have been forgotten about", said one respondent. The Bulletin's articles will soon start to focus more on the experiments, then later on the accelerators of the future. Articles on their design and construction are already featured from time to time, as and when there are developments to be reported.

Suggestions for improvements

As well as suggestions about the contents, such as covering a wider range of subjects, the survey reveals a desire for improvements to the form, including that of the web version. Some respondents suggested the possibility of allowing readers to comment on articles on-line, a feature which should be introduced by next year. Another suggestion concerning the form was the introduction of sub-headings in articles to make it easier to get a gist of the contents: "In general, I read the title and the introduction, then I skim through the rest", said one participant.

The internal communication service has carried out a survey regarding the quality of the Bulletin. Between the middle of May and the middle of June, 35 members of the CERN personnel were consulted individually about what they liked and disliked about the Bulletin and any changes they wanted to see.

An overview of science and technology

The articles that readers most tend to glance through are those of a scientific and/or technical nature. Opinions on their comprehensibility are divided: some think that the level is correct, while others feel that articles are not accessible enough. But many readers say that they don't require more from the Bulletin: they don't wish to know the details but simply have an overview of what's going on at CERN. "Even if I don't understand all the technical terms, it's not a big problem for me. When I hear them mentioned again in conversations, I make the link".

The Bulletin team will take account of all the opinions and ideas emerging from the survey in order to improve the form and content of the magazine and ensure that it meets its readers expectations as closely as possible.

If you have any other suggestions, please write to:

Bulletin-Editors@cern.ch

Alizée Dauvergne



Library
Bibliothèque

News from the Library

There is a strong demand for offices close to the Main Building and the CERN Management is looking at many solutions to increase the number of offices available in this area. One of these solutions concerns the Library and the periodicals reading room. A new set of offices will be built where the paper periodicals are stored and part of these will be moved to a nearby store, easily accessible by the Library staff on user request. The space taken from the Library will be fully compensated by a new veranda to be built in the garden adjacent to the reading

Printed periodicals in the CERN Library: your opinion matters!

room. This new reading room is expected to offer a better and more modern use of the available library space (indoor/outdoor). The advantage to the Organization is obviously that we will create more work stations in an inspiring environment, while the disadvantage is that some printed material will have to be moved to the nearby stockroom. In this context it should also be remembered that two years ago, the Library stopped most subscriptions to hard-copy journals and periodicals. The transition to electronic only has been well received by a large majority of Library users.

In order to best gauge what journals should be kept in the Library, we are seeking your input.

We thank you in advance for your answer to this questionnaire. It will take no more than 10 minutes to complete.

http://www.surveymonkey.com/s/cern_library_periodicals

Thomas Pettersson, Head of GS Department

A night without limits for science

The theme of this year's event, now in

On 10 and 11 July some 400 scientists came down to Geneva's Perle du Lac park to meet the public for the *Nuit de la Science*.

its eighth year, was "Extremes and Limits". Numerous attractions including stands, workshops, mini-conferences and plays were set up in the park, all with the aim of conveying their passion for research and thirst for knowledge to the visitors. Several CERN guides were on hand to tell the public about that machine of the extreme, the LHC. CERN was also represented on the stand of the *Réseau romand science & cité*.

For more information, go to:

<http://www.rezoscience.ch/rp/index.html>

CERN Bulletin



One of the many attractions at the 'Nuit de la Science'.

Gianfalco Pozzo (1926-2010)

Gianfalco Pozzo (Gughi to his friends) passed away suddenly on 30 June. Born in Candelo near Biella in 1926, he was recruited by CERN in 1957 to set up and lead the mechanical workshop in the Physics Division, where he spent his whole career until his retirement in 1991. Passionate about and tirelessly devoted to his work, he was a reserved, yet open and warm-hearted man. He had close and warm relations with those who shared his passion and interests, and demanded of his collaborators, all carefully selected by him and highly skilled, the same commitment and craftsmanship that he brought to bear on his own work either at the drawing board or in the workshop.

His ingenious and straightforward solutions to problems, and his abilities in developing, organising and finally producing the required apparatus, quickly became known. With his reputation growing rapidly, even beyond CERN, he became sought after for his expertise in the most difficult and innovative techniques.

He soon began to focus on the design and execution of all types of magnets and windings, for which he created the necessary tooling and pushed insulation techniques to new limits. He was one of the first to develop



superconducting cables. In 1977, he built a solenoid for the R-108 experiment at the ISR, using a cable in which the superconducting wires were stabilized by aluminium strips. It was a remarkable success. When the ISR machine closed down, the magnet was donated to the PSI Laboratory, where it is still used in the Sindrum experiment to this day. Among the numerous devices - all of them masterpieces in their own right - to come out of his workshop, particular mention should be made of the special magnets built for the secondary beams of the PS and the original magnets developed to split

the PS slow-extracted proton beam, the pole-face windings for ICE, which were built in record time, the magnet windings and assembly for the NA4, UA6 and NA10 experiments at the SPS, and, above all, the large and complex coil for UA1. The UA1 magnet went on to be used by NOMAD and is still serving today in the T2K experiment at J-PARC in Japan.

His last masterpiece was the huge and impressive OPAL solenoid. To build it, a technique involving continuous impregnation in a dry atmosphere was developed and used for the first time. The gantry needed for the solenoid construction was so large that it entirely filled Hall 168. Gianfalco was the heart and the brain of this enterprise and spent countless hours on it, day and night, ensuring that it worked to perfection.

Active to the very end, Gianfalco was often to be seen at CERN enquiring about the progress of the experiments and the work of his former close colleagues and friends.

We are all deeply saddened by his loss. Our thoughts are with his wife, Marica, and with his children, Marco and Andrea, and their families.

His friends



Take note

FIRST-AID BOXES - REMINDER

With a view to ensuring optimum use of the first-aid boxes on the CERN site, we should like to remind you of various changes introduced in March 2009:

- * The TSOs of the buildings concerned are responsible for the first-aid boxes, including checking their contents.
- * First-aid boxes may be restocked **ONLY** at the CERN stores (SCEM No. 54.99.80). This is no longer possible at the Infirmary. The associated cost is charged to the Departments.
- * First-aid boxes should be used only for mild injuries. All other cases should be referred to the Medical Service Infirmary (Bldg. 57 – ground-floor, tel. 73802) between 8.00 a.m. and 5.30 p.m. or to the Fire Brigade (tel. 74444).

N.B.: This information does not apply to the red emergency first-aid boxes in the underground areas or to the emergency kits for use in the event of being splashed with hydrofluoric acid.

GS Department

RENOVATION OF THE CERN OUTDOOR LIGHTING

Due to the renovation of the CERN outdoor lighting, traffic will be limited to one way along "Route Gregory" from the E entrance (France) up to "Route Fermi" just before the water tower between 12th and 23rd July 2010.

Disruption can also be expected in the car parks "Les Erables" and "Les Tilleuls" close to building 30 and also the car park in front of building 377, between 19th and 30th July 2010.

Thanks for your understanding.

GS Department
SEM Group



Technical training

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CERN TECHNICAL TRAINING: AVAILABLE PLACES IN FORTHCOMING COURSES

The following course sessions are scheduled in the framework of the 2010 CERN Technical Training Programme and places are still available. You can find the full updated Technical Training course programme in our web catalogue (<http://cta.cern.ch/cta2/f?p=110:9>).

Software and system technologies

Business Objects Basic	18-Oct-10	19-Oct-10	tbc	2 days
Business Objects advanced	20-Oct-10	20-Oct-10	tbc	1 day
C++ Part 1 - Hands-On Introduction	20-Sep-10	23-Sep-10	English	4 days
CERN openlab/Intel Computer Architecture and Performance Tuning Workshop	22-Sep-10	23-Sep-10	English	2 days
Developing secure software	6-Sep-10	6-Sep-10	English	3,5 hours
ISTQB International Software Testing Qualifications Board	13-Sep-10	16-Sep-10	English	4 days
ITIL Foundations (version 3)	4-Oct-10	6-Oct-10	English	3 days
ITIL Foundations (version 3) EXAMINATION	28-Oct-10	28-Oct-10	English	1 hour
JCOP - Joint PVSS-JCOP Framework	30-AUG-10	3-Sep-10	English	4,5 days
JCOP - Joint PVSS-JCOP Framework	11-Oct-10	15-Oct-10	English	4,5 days
Oracle Database SQL Tuning	25-Oct-10	27-Oct-10	English	3 days
Oracle Databases: Advanced PL/SQL Programming	27-Sep-10	29-Sep-10	English	3 days
Python - Hands-on Introduction	18-Oct-10	21-Oct-10	English	4 days
Web Applications with Oracle Application Express (APEX) 3.2	20-Sep-10	22-Sep-10	English	3 days



Electronic design

Altium Designer - Advanced training for experts	8-Oct-10	8-Oct-10	French	1 day
Altium Designer - migration for occasional PCAD users	5-Oct-10	7-Oct-10	French	3 days
Altium Designer 6.0 - Foundation & Board Implementation	22-Sep-10	30-Sep-10	French	5 days
Comprehensive VHDL for FPGA Design	27-Sep-10	1-Oct-10	English	5 days
LabVIEW Core I with RADE introduction	11-Oct-10	13-Oct-10	Bilingual	3 days
LabVIEW Core II	14-Oct-10	15-Oct-10	Bilingual	2 days
Siemens - STEP7 : level 2	13-Sep-10	17-Sep-10	French	5 jours
Siemens: Profinet IK-PNSYS	28-Oct-10	29-Oct-10	French	

Mechanical design

AutoCAD 2010 - level 1	30-Sep-10	8-Oct-10	French	4 jours
AutoCAD 2010 - Refresher	1-Sep-10	1-Sep-10	French	1 jour
AutoCAD Mechanical 2010	30-AUG-10	31-AUG-10	French	2 jours
CATIA-Smarteam Base 2	29-Sep-10	19-Oct-10	French	7 jours
CATIA-Smarteam Base1	30-AUG-10	24-Sep-10	French	6 jours
Schneider: Automate Modicon Premium UNPP2	14-Sep-10	17-Sep-10	French	4 jours

Office software

ACCESS 2007 - Level 1 : ECDL	27-Sep-10	28-Sep-10	French	2 jours
CERN EDMS - Introduction	1-Sep-10	1-Sep-10	French	1 jour
CERN EDMS for Engineers	26-Oct-10	26-Oct-10	French	1 jour
CERN EDMS for Local Administrators	5-Oct-10	6-Oct-10	French	2 jours
Dreamweaver CS3 - Niveau 1	30-Sep-10	1-Oct-10	French	2 jours
EXCEL 2007 - level 1 : ECDL	7-Oct-10	8-Oct-10	French	2 jours
EXCEL 2007 - Level 2: ECDL	21-Oct-10	22-Oct-10	French	2 jours
Indico - Conference Organization	7-Oct-10	7-Oct-10	English	0,5 jour
Indico - Meeting Organization	7-Oct-10	7-Oct-10	English	0,5 jour
Individual Coaching	27-Sep-10	27-Sep-10	tbd	1 hour
Individual Coaching	19-Oct-10	19-Oct-10	tbd	1 hour
OUTLOOK 2007 (Short Course I) - E-mail	18-Oct-10	18-Oct-10	Bilingual	0,5 jour
OUTLOOK 2007 (Short Course II) - Calendar, Tasks and Notes	18-Oct-10	18-Oct-10	Bilingual	0,5 jour
OUTLOOK 2007 (Short Course III) - Meetings and Delegation	19-Oct-10	19-Oct-10	Bilingual	0,5 jour
PowerPoint 2007 - Level 1: ECDL	2-Sep-10	3-Sep-10	French	2 jours
Sharepoint Collaboration Workspace	13-Sep-10	14-Sep-10	French	2 jours
Sharepoint Collaboration Workspace	11-Oct-10	12-Oct-10	English	2 days
Sharepoint Designer (Frontpage) - Level 1	16-Sep-10	17-Sep-10	French	2 jours
Sharepoint Designer (Frontpage) - Level 2	14-Oct-10	15-Oct-10	French	2 jours
Windows 7	28-Sep-10	28-Sep-10	French	3 hours
WORD 2007 - level 1 : ECDL	6-Sep-10	7-Sep-10	French	2 jours
WORD 2007 - level 2 : ECDL	4-Oct-10	5-Oct-10	English	2 days
WORD 2007 (Short Course I) - HowTo... Mail merge (with Outlook)	27-Sep-10	27-Sep-10	Bilingual	0,5 day

Special course

Demonstrating Reliability with Accelerated Testing 2 days	20-Sep-10	21-Sep-10	English
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If you are interested in attending any of the above course sessions, please talk to your supervisor and/or your DTO, and apply electronically via EDH from the course description pages that can be found at: <http://cta.cern.ch/cta2/f?p=110:9> under 'Technical Training' with the detailed course program. Registration for all courses is always open – sessions for the less-requested courses are organized on a demand-basis only. CERN Technical Training courses are open only to members of the CERN personnel (staff members and fellows, associates, students, users, project associates, apprentices and employees of CERN contractors, with some restrictions). In particular, quoted prices and programmes refer specifically to the CERN community.



Seminars

MONDAY 19 JULY

SUMMER STUDENT LECTURE PROGRAMME
GLOBE 1ST FLOOR

**09:15 - Fundamental Concepts
in Particle Physics (Theoretical
Particle Physics - Introductory
Lecture) (1/5)**

J-P DERENDINGER / BERN UNIVERSITY

**10:15 - Introduction to Electronics,
DAQ, Trigger (1/5)**

N. NEUFELD / CERN

**11:15 - Accelerators (Accelerator
Physics) (1/5)**

S. GILARDONI / CERN, B. HOLZER / DEUTSCHES
ELEKTRONEN-SYNCHROTRON (DESY)

12:00 - Discussion Session (1/5)

TH INSTITUTES

11:00 - TH Auditorium, Bldg. 4

**Future directions in lattice gauge
theory - LGT10**

P. H. DAMGAARD / BOHR INST., L. GIUSTI / CERN AND
UNIVERSITY OF MILANO-BICOCCA, G. ISIDORI / INFN
- FRASCATI, M. LUSCHER / CERN, R. SOMMER / DESY -
ZEUTHEN

TUESDAY 20 JULY

SUMMER STUDENT LECTURE PROGRAMME
GLOBE 1ST FLOOR

**09:15 - Fundamental Concepts
in Particle Physics (Theoretical
Particle Physics - Introductory
Lecture) (2/5)**

J-P DERENDINGER / BERN UNIVERSITY

**10:15 - Introduction to Electronics,
DAQ, Trigger (2/5)**

N. NEUFELD / CERN

**11:15 - Accelerators (Accelerator
Physics) (2/5)**

S. GILARDONI / CERN, B. HOLZER / DEUTSCHES
ELEKTRONEN-SYNCHROTRON (DESY)

12:00 - Discussion Session (2/5)

TH STRING THEORY SEMINAR

14:00 - TH Auditorium, Bldg. 4

**Trapped surfaces, $O(3)$ symmetry,
and a generalization of Bjorken flow**

S. GUBSER / PRINCETON UNIVERSITY

WEDNESDAY 21 JULY

SUMMER STUDENT LECTURE PROGRAMME
GLOBE 1ST FLOOR

**09:15 - Fundamental Concepts
in Particle Physics (Theoretical
Particle Physics - Introductory
Lecture) (3/5)**

J-P DERENDINGER / BERN UNIVERSITY

**10:15 - Introduction to Electronics,
DAQ, Trigger (3/5)**

N. NEUFELD / CERN

**11:15 - Accelerators (Accelerator
Physics) (3/5)**

S. GILARDONI / CERN, B. HOLZER / DEUTSCHES
ELEKTRONEN-SYNCHROTRON (DESY)

12:00 - Discussion Session (3/5)

TH THEORETICAL SEMINAR

14:00 - TH Auditorium, Bldg. 4

TBA

M. KUNZ / UNIGE

THURSDAY 22 JULY

SUMMER STUDENT LECTURE PROGRAMME
GLOBE 1ST FLOOR

**09:15 - Fundamental Concepts
in Particle Physics (Theoretical
Particle Physics - Introductory
Lecture) (4/5)**

J-P DERENDINGER / BERN UNIVERSITY

**10:15 - Introduction to Electronics,
DAQ, Trigger (4/5)**

N. NEUFELD / CERN

**11:15 - Accelerators (Accelerator
Physics) (4/5)**

S. GILARDONI / CERN, B. HOLZER / DEUTSCHES
ELEKTRONEN-SYNCHROTRON (DESY)

12:00 - Discussion Session (4/5)

FRIDAY 23 JULY

SUMMER STUDENT LECTURE PROGRAMME
GLOBE 1ST FLOOR

**09:15 - Fundamental Concepts
in Particle Physics (Theoretical
Particle Physics - Introductory
Lecture) (5/5)**

J-P DERENDINGER / BERN UNIVERSITY

**10:15 - Introduction to Electronics,
DAQ, Trigger (5/5)**

N. NEUFELD / CERN

**11:15 - Accelerators (Accelerator
Physics) (5/5)**

S. GILARDONI / CERN, B. HOLZER / DEUTSCHES
ELEKTRONEN-SYNCHROTRON (DESY)

12:00 - Discussion Session (5/5)

TH STRING THEORY SEMINAR

14:00 - TH Auditorium, Bldg. 4

TBA

S. MINWALLA / TIFR

MONDAY 26 JULY

SUMMER STUDENT LECTURE PROGRAMME
GLOBE 1ST FLOOR

09:15 - Astroparticle Physics (1/3)

P. BINETRUY

**10:15 - Physics at Hadron Collid-
ers (Experimental Particle Physics)
Introductory Lecture (1/4)**

B. HEINEMANN / LBNL AND UC BERKELEY

**11:15 - Introduction to Cosmology -
Theoretical Physics (1/5)**

L. VERDE / ICREA & ICC

12:00 - Discussion Session (1/3)



Seminars

TUESDAY 27 JULY

SUMMER STUDENT LECTURE PROGRAMME
GLOBE 1ST FLOOR

09:15 - Astroparticle Physics (2/3)

P. BINETRUY

10:15 - Physics at Hadron Colliders (Experimental Particle Physics) Introductory Lecture (2/4)

B. HEINEMANN / LBNL AND UC BERKELEY

11:15 - Introduction to Cosmology - Theoretical Physics (2/5)

L. VERDE / ICREA & ICC

12:00 - Discussion Session (2/3)

TH STRING THEORY SEMINAR

14:00 - TH Auditorium, Bldg. 4

TBA

F. LARSEN / UNIVERSITY OF MICHIGAN

WEDNESDAY 28 JULY

SUMMER STUDENT LECTURE PROGRAMME
GLOBE 1ST FLOOR

09:15 - Astroparticle Physics (3/3)

P. BINETRUY

10:15 - Physics at Hadron Colliders (Experimental Particle Physics) Introductory Lecture (3/4)

B. HEINEMANN / LBNL AND UC BERKELEY

11:15 - Physics at Hadron Colliders (Experimental Particle Physics) Introductory Lecture (4/4)

B. HEINEMANN / LBNL AND UC BERKELEY

12:00 - Discussion Session (3/3)

TH COSMO COFFEE

11:00 - Bldg. 1-1-025

TBA

C. WETTERICH

TH THEORETICAL SEMINAR

14:00 - TH Auditorium, Bldg. 4

TBA [Kaon physics on the lattice]

N. CHRIST / PHYSICS DEPARTMENT, COLUMBIA UNIVERSITY

THURSDAY 29 JULY

SUMMER STUDENT LECTURE PROGRAMME
GLOBE 1ST FLOOR

09:15 - Future Colliders : Physics Motivations

F. RICHARD

10:15 - Introduction to Cosmology - Theoretical Physics (3/5)

L. VERDE / ICREA & ICC

11:15 - Introduction to Cosmology - Theoretical Physics (4/5)

L. VERDE / ICREA & ICC

12:00 - Discussion Session

CERN COLLOQUIUM

16:30 - BLDG. 222-R-001

The Final Results from the Sudbury Neutrino Observatory

A. BELLERIVE / CANADA RESEARCH CHAIR, CARLETON UNIVERSITY

FRIDAY 30 JULY

SUMMER STUDENT LECTURE PROGRAMME
GLOBE 1ST FLOOR

09:15 - Introduction to Root (1/2)

J. GROSSE-ODTRINGHAUS / CERN

10:15 - Introduction to Root (2/2)

J. GROSSE-ODTRINGHAUS / CERN

11:15 - Introduction to Cosmology - Theoretical Physics (5/5)

L. VERDE / ICREA & ICC

12:00 - Discussion Session