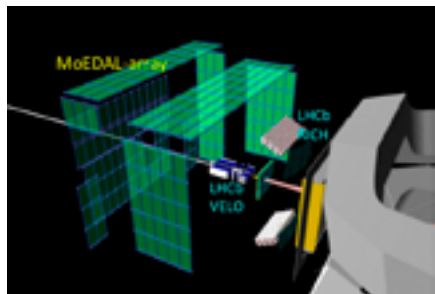


## FIRST YEAR OF DATA TAKING AT HIGH ENERGY FOR MOEDAL

**MoEDAL - the LHC experiment designed to search for highly ionising avatars of new physics, such as magnetic monopoles or massive pseudo-stable charged particles - has collected data from p-p and Pb-Pb collisions at high energy. A unique feature of the experiment is its membership, which includes a high school.**



Visualisation of the MoEDAL array in the LHC cavern.  
(Photo: MoEDAL Collaboration.)

MoEDAL's physics programme is investigating more than 34 scenarios that could yield potentially revolutionary insights into such fundamental questions as: are there extra dimensions or new symmetries? Where does the mechanism for the generation of mass originate from? Does magnetic charge exist? What is the nature of dark matter? How did the Big Bang develop?

MoEDAL employs a number of unconventional methodologies, specially tuned to the prospect of discovery physics. The largely passive MoEDAL detector, deployed at Point 8 on the LHC ring, works in two ways. First, it acts like a giant camera, comprised of nuclear track detectors - analysed offline by ultra-fast scanning microscopes - sensitive only to new physics. Second, it is uniquely able to trap highly ionising particle messengers of physics beyond the Standard Model - for example, the magnetic monopole - for further study. Last but not least, MoEDAL's radiation environment is monitored by a state-of-the-art real-time TimePix pixel detector array.

The full MoEDAL detector was installed in the winter of 2014 and started to take data officially in the spring of 2015. "In parallel to completing the installation of our detectors, we are analysing the first data from 2012 taken by test detectors, which were exposed to proton-proton and heavy-ion collisions," says James Pinfold, physicist from the University of Alberta and the Spokesperson for the MoEDAL collaboration. "Our first physics result paper, based on data taken with a prototype trapping detector deployed for 8 TeV centre-of-mass energy collisions, is in its final stages of preparation. We now have our first year of proton-proton data taken at 13 TeV and Pb-Pb collisions and we look forward to the restart of the LHC in March."



View of the MoEDAL experiment, located at Point 8 on the LHC ring. (Photo: MoEDAL Collaboration.)

MoEDAL's sensitivity is complementary to that of the other LHC detectors, extending the discovery horizon of the LHC using detectors that are insensitive to all Standard Model particles and immune to a background of fake signals. Importantly, MoEDAL is the

(Continued on page 2)



### A WORD FROM THE DIRECTOR-GENERAL

#### THE CHAMONIX WORKSHOP: A KEY POINT IN THE CERN CALENDAR

Last week I attended the annual LHC performance workshop in Chamonix. This meeting is an essential part of the CERN calendar, allowing colleagues from the accelerator community, along with representatives of the experiments and of other sectors and departments, to take stock of the accelerators' performance in the year gone by, and set the direction for the year to come.

(Continued on page 2)

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# A WORD FROM THE DIRECTOR-GENERAL

(Continued from page 1)

## THE CHAMONIX WORKSHOP: A KEY POINT IN THE CERN CALENDAR

This year's discussions were as lively, constructive and stimulating as I remember them to have been from the period of Run 1, when I attended several Chamonix workshops as ATLAS Spokesperson. Sessions covered everything from lessons learned in 2015, to operational improvements and plans for 2016, along with the status of the LHC injectors upgrade (LIU) and High Luminosity LHC projects. The broad conclusions are that in 2015 a large number of complex problems and subtle issues were successfully addressed, and 2016 will be a year of luminosity production: delivering large quantities of data to the experiments. The instantaneous

luminosity in ATLAS and CMS should reach the design value of  $10^{34} \text{ cm}^{-2} \text{ s}^{-1}$  this year, thanks mainly to more squeezed colliding beams and a larger number of circulating bunches, and the integrated luminosity delivered to each should approach  $30 \text{ fb}^{-1}$ .

For me personally, Chamonix workshops are always a very stimulating experience, a source of learning, the occasion of fruitful discussions with many colleagues, and an injection of energy and enthusiasm for the months to come.

A full report can be found on: <http://cern.ch/go/j9Pk>, and for those who're interested

in more details, there's a summary session on 3 March in the main auditorium from 14:00 to 17:00 (see here: <http://cern.ch/go/XL8T>).

To learn more about the Chamonix workshop, read the article "Chamonix 2016: setting the future course for the LHC and the accelerator complex" available in this issue.

Fabiola Gianotti

## FIRST YEAR OF DATA TAKING AT HIGH ENERGY FOR MOEDAL

(Continued from page 1)



Members of the MoEDAL experiment at the Royal Society Summer Exhibition "on shift" at the first soirée. From left to right: Arttu Rajantie (Imperial College London), Edward Gillman (Imperial College London), Mairi Sakellariadou (King's College London), James Pinfold (University of Alberta), Anna Evans (Simon Langton School), Caitlin Cooke (Simon Langton School) and Becky Parker (Simon Langton School). (Photo: MoEDAL Collaboration.)

first collider detector to be able to provide a

permanent record of discovery physics that can be examined time and again.

The MoEDAL collaboration has tripled in size since its final approval in 2010 and now includes 66 physics groups from over 20 institutes on four continents. Alongside established research institutes and universities, the collaboration can also count on the unique contribution of some 20 students from the Simon Langton Grammar School in the UK. "The Langton School students are renowned for their expertise with the TimePix detector, which is one of the key detectors of our apparatus," confirms Pinfold.

In 2015, the Royal Society of London chose to feature CERN's MoEDAL experiment and its "Monopole Quest" at its Summer Science

Exhibition. "Visitors took part in a number of activities," recalls Pinfold. "They could design their own monopole detector, take part in the Citizen Science project to search online for monopole tracks in exposed MoEDAL plastic nuclear track detectors, and test MoEDAL trapping volumes for captured monopoles. In addition, thanks to an app developed by the students of the Langton School, they could visualise a Dirac monopole and investigate radioactivity on their cell phones using a MoEDAL TimePix Chip." A truly amazing experience for the thousands of people who visited the exhibit!

CERN Bulletin

## LATEST NEWS FROM THE YETS: KEEPING UP THE PACE

As we explained in the last edition of the *Bulletin*, the winter technical stop (otherwise known as the YETS – Year-End Technical Stop) is setting a huge number of experts to work on all of the Laboratory's accelerators. For the time being, the various maintenance and improvement activities are all on schedule.



Replacing the BHZ62 magnet at the PS Booster. (Photo: Sylvain Fumey.)

At the PS Booster, the task of identifying obsolete cables is almost complete: around

2400 cables have been disconnected and are ready for removal, 400 more are still being analysed, and 66 turned out to still be in use, which underlines the importance of the identification work. Consolidation work is also going well and will soon be completed. Due to an unexpected leak in its vacuum chamber, the BHZ62 magnet has been replaced after 20 years of service.



Identification of obsolete cables at the SPS. (Photo: Sébastien Thoulet.)

At the PS, a second cabling campaign has begun in the service tunnels, involving the

installation of cables for the TETRA digital radio communication system. The renovation of the bridge cranes at the PS, a process which began 10 years ago, was completed on 22 January with the acceptance test for the final crane. In addition, consolidation work on the cavities and the replacement of certain magnets are proceeding on schedule. The PS should therefore be ready to start powering tests on 13 February.

At the SPS, 14 of the 16 magnets due for replacement have now been successfully replaced, with the remaining two to follow on 15 February. At the same time, the civil-engineering team is working at Point 5 to prepare for the installation of a new beam dump at this part of the accelerator during the next long shutdown (LS2).

At the LHC, the cryogenic teams are still working flat out to repair the faulty cold-box at Point 8. New water-cooled cables have been installed for the TOTEM experiment. New Roman pots (detectors installed very close to the beam) have been installed near the ATLAS experiment. Meanwhile, the EN-MME teams are taking advantage of the YETS to carry out tomography to check the Sector 6-7 interconnections.

Anais Schaeffer

## CHAMONIX 2016: SETTING THE FUTURE COURSE FOR THE LHC AND THE ACCELERATOR COMPLEX

The LHC Performance Workshop took place in Chamonix between Tuesday, 25 and Thursday, 28 January. The programme included a review of the machine's performance in 2015, a forward look at Run 2, and discussion of the status of the LHC injectors upgrade (LIU) and HL-LHC projects. The final session was dedicated to the 2019-2020 long shutdown (LS2).



The 2016 LHC Performance Workshop participants.

Last year was the first year of operations following the major maintenance work of the 2013 – 2014 long shutdown (LS1). It was a tough but ultimately successful year. An analysis of operations and efficiency was performed with the aim of identifying possible improvements for 2016. The performance of key systems – e.g. machine protection, collimation, RF, transverse damper,

magnetic circuits and beam diagnostics – has been good but nonetheless efforts are still being made to provide, for example, better reliability, improved functionality and monitoring.

A number of challenges also arose in 2015 – some familiar, some new – and these were covered by dedicated talks. The list



includes the now famous Unidentified Falling Objects (UFOs) and an unidentified aperture restriction in an arc dipole, the so-called ULO - Unidentified Lying Object. The UFO rate has fallen during 2015 and it seems that it will remain acceptable in 2016. The ULO proved not to be a major problem in 2015 and is expected to remain under control this year. The overheads involved in carrying out an intervention in a cold part of the machine to remove the ULO would be prohibitive at this stage.

A dominating issue of 2015 was the electron cloud. A systematic scrubbing campaign mitigated the worst effects. A strategy for continued scrubbing at 6.5 TeV was deployed and allowed 2244 bunches per beam and promising luminosity performance to be established. Electron cloud will still be present in 2016 and the plans for tackling it were outlined. There was also discussion of the machine configuration, planning and potential performance for 2016.

Machine availability is absolutely key for efficient luminosity production and a day was spent examining availability tracking and the

performance of all key systems. Possible areas for improvement in the short and medium term were identified.

The LIU project aims to improve the LHC injectors in order to deliver the extremely ambitious beams required for the HL-LHC. The deployment of LIU is scheduled to take place during LS2 and will consist of an impressive and extensive upgrade programme for the Booster, the PS and the SPS, as well as the completion of Linac4. Additionally, the LIU team is also planning upgrades of Linac3, LEIR, PS and SPS for the ion runs.

An in-depth survey of the potential performance limitations of the HL-LHC and ways to mitigate them were discussed. Electron cloud will remain an issue: a number of measures were proposed, including in-situ amorphous carbon coating and in-situ Laser-Engineered Surface Structures (LESS) to address electron cloud in the magnets of the insertion regions.

Key upgrades to the collimation systems and the radiofrequency (RF) cavities are also required. The preparation for an installation of

novel crab cavities in the SPS is well under way. This will allow their performance to be tested with protons before the concept is used in the LHC.

lons will be an integral part of the HL-LHC programme and the means to deliver the required beams and luminosity are taking shape. The recent successful Pb-Pb run at 5.02 TeV centre-of-mass energy per colliding nucleon pair and the quench tests performed during the same run have provided very useful input.

The planning for LS2 is already under way. Aside from the LIU implementation discussed above, ALICE and LHCb will perform major upgrades of their detectors and read-out systems. An impressive amount of consolidation work is foreseen across the complex. One particularly noteworthy aspect is the significant maintenance and consolidation work planned by the non-LHC experiment facilities.

Mike Lamont

## CERN AND THE ENVIRONMENT

New webpages answer common questions about CERN and the environment.

**CERN and its neighbours**  
CERN's dedicated website for everyone living in the neighbouring region

Home CERN in a nutshell Open for all For school pupils Environment

### Clean Air and Water

A environmental scientist at CERN testing samples containing water from neighbouring streams to ensure that the first Swiss quality objectives are met.

CERN is constantly checking that its activities have an impact as little as possible on the air quality of nearby areas. Filters on the ventilation systems reduce CERN's atmospheric emissions and ventilation-monitoring stations allow to compare air-quality readings with those of neighbouring regions.

Monitoring devices continuously measure the quality of the water CERN releases into local streams. These devices measure the temperature, pH, conductivity and turbidity of the water. Hydrocarbon detectors were specifically set up to detect immediately any pollution incident in order to react rapidly and mitigate the consequences on the local rivers. In addition these rivers are regularly sampled to evaluate CERN's environmental impact.

CERN AND THE ENVIRONMENT  
Environmental impact  
Clean Air and Water  
Reducing Noise  
Recycling and sorting waste  
Minimizing ionizing radiation  
Preserving the landscape  
Sustainable Buildings and Transport  
Electricity consumption

One of the new public webpages dedicated to CERN and the environment.

Do your neighbours ever ask you about CERN's environmental impact? And about radiation in particular? If so, the answers to those questions can now be found online on a new set of public webpages dedicated to CERN and the environment. These pages, put together by the Occupational Health, Safety and Environmental Protection (HSE) unit and the groups responsible for CERN's site maintenance, contain a wealth of information on topics linked to the environment, such as biodiversity at CERN, waste management, ionising radiation, and water and electricity consumption.

"CERN forms part of the local landscape, with its numerous sites and scientific activities. It's understandable that people living nearby have questions about the impact of these activities and it's important that we respond with complete transparency," explains Simon Baird, head of the HSE unit.

The new environment pages can be found on the "CERN and its neighbours" website in English and French (<http://cern.ch/go/Cp8p>).

Corinne Pralavorio

## NINETY-SIX HOURS TO BUILD A PROTOTYPE ROBOT SHOWING HUMAN EMOTIONS

Thirty-five Master students in the fields of business, design and engineering participated in an intensive five-day project-based introduction to programming and advanced electronics. The goal of the initiative was to build a fully functional prototype robot able to communicate and show at least four basic human emotions.



A group of students is presenting a prototype robot showing human emotions at IdeaSquare.

With no previous experience in electronics or coding, groups of students from Portugal, Italy, Norway and Estonia were introduced to the basics of sensors, integrated circuits and actuators, and after just 96 hours they presented their functioning robots at IdeaSquare on Friday, 15 January.

These robots, mostly built around Arduino boards and recycled materials, were able to display different human emotions as a response to external environmental inputs.

The five-day workshop, called öBot, was

organised by the IdeaSquare team in collaboration with Porto Design Factory and the Stanford global product-design project ME310, as part of IdeaSquare's research into multidisciplinary collaboration and education.

The prototypes are meant to be just an intermediate exercise to develop essential prototyping skills: most of the participants will continue developing their actual projects in advance of the final presentations scheduled for early June 2016 in Stanford.

Stefania Pandolfi

## VISIT OF THE PRESIDENT OF THE REPUBLIC OF LITHUANIA

On Wednesday, 20 January 2016, Her Excellency Dr Dalia Grybauskaitė, President of the Republic of Lithuania, visited CERN. The Lithuanian delegation had a busy morning, visiting several of CERN's facilities.



The President of the Republic of Lithuania, Dalia Grybauskaitė (4th from right), with CERN Director-General, Fabiola Gianotti (3rd from right), CMS Deputy Spokesperson Kerstin Borras (1st from left), and representatives of the Lithuanian community working at CERN.

The tour of the Laboratory started at Point 5, where the President and her delegation were welcomed by Director-General Fabiola Gianotti, who gave a general introduction to CERN's activities. This was followed by a presentation of the work at Point 5 by CMS Deputy Spokesperson, Kerstin Borras, and a meeting with users from Lithuania working at CMS. The President also enjoyed an introduction to life at CERN during Her lunch in the cafeteria.

In the afternoon, the delegation stopped off at the Data Centre, where they heard a presentation on the Worldwide LHC Computing Grid by Jamie Shiers, the IT

Department's Data Preservation Project Leader. The President also had the chance to see the robotic arms in the Data Centre's automated libraries.

At the end of the visit, the President took part in experiments at S'Cool Lab and participated in a virtual tour with high-school classes connected remotely from Lithuania.

Stefania Pandolfi

# PRIME MINISTER OF PAKISTAN VISITS CERN

On Saturday, 23 January 2016, CERN welcomed Mr Muhammad Nawaz Sharif, Prime Minister of Pakistan.



From left to right: Minister of Finance Mr Mohammad Ishaq Dar, Prime Minister of the Islamic Republic of Pakistan, Muhammad Nawaz Sharif, CERN Director-General Fabiola Gianotti and CMS national contact physicist Hafeez Hoorani.

Mr Muhammad Nawaz Sharif arrived at Point 5 in Cessy, where he was welcomed onto French soil by the *sous-préfet* of Cessy, Stéphane Donnot, and, representing CERN, Director-General Fabiola Gianotti, Directors Eckhard Elsen and Charlotte Warakaulle, and Rüdiger Voss, the adviser for relations with Pakistan. It was the first visit by a head of government of Pakistan since the country became CERN's latest Associate Member State in July 2015.

The Prime Minister then had the opportunity to visit the CMS underground experimental area accompanied by the CMS Spokesperson,

Tiziano Camporesi, and the CMS collaboration's National Contact Physicist for Pakistan, Hafeez Hoorani.

At the end of his visit, the Prime Minister took the time to sign CERN's guest book and to meet with a number of Pakistanis collaborating with CERN.

Anaïs Schaeffer

## YEAR-END TECHNICAL STOP: TRAIN TO WORK SAFELY

As mentioned in the previous issue of the *Bulletin*, the accelerators are currently undergoing maintenance as part of the year-end technical stop (YETS). Hundreds of people are working simultaneously on different machines, and many of them need to be trained in order to work safely underground. From a Safety Training point of view, this has resulted in a significant increase in training requests, most of them at the last minute, which are now being handled – but not without difficulties.

"The most requested course is the Self-Rescue Mask classroom training," explains Christoph Balle, Safety Training Section Leader. "In this course, people are trained to face the oxygen deficiency hazards that may occur in CERN's underground areas, learning how to put on the mask correctly and how to evacuate safely in the event of an emergency." Being able to use the mask is mandatory in the underground areas of the LHC complex (SPS, LHC tunnel, experiments, etc.), so people going underground must have followed either the "Initial" (valid for three years) or the "Refresher" course in order to gain access.

"We kindly ask project leaders, supervisors, work coordinators and individuals to anticipate access needs, and therefore their training requests, as early as possible, ideally at least a month in advance," says Christoph. This will allow the Safety Training section to meet the increasing training needs for the YETS, and to manage their future training course offerings more efficiently.

Learners appreciate the quality of this course which, thanks to the limited number of people allowed per session (12 maximum), enables

the trainer to really focus on the practical part of the course. "This ensures that people are well-trained and will be able to respond appropriately to emergencies and stressful situations," continues Christoph. "As we want to guarantee the same level of training for all our trainees, we can't increase the number of people allowed per session. Thus, in order to cope with the recent high demand, we instead have to increase the number of sessions per week from the usual two to five."

"From our point of view, this can make it difficult to handle last-minute requests, as there is important – and often underestimated – work that has to be done in order to organise, manage and guarantee the quality of each and every session," says Christoph. Course coordinators have to book rooms, make sure technicians are available on the training site, check the availability of the trainers, and send invitations to the attendees... for every session.

"I would like to stress that all of our internal trainers – 20 for the Self-Rescue Mask course – are volunteers," says Christoph. "They can't be replaced by external personnel due to CERN-

specific safety issues. They know the subject very well, as they often work under the same conditions for which they train people. I would like to thank all of them for their commitment, professionalism, flexibility and availability even at very short notice."

"To conclude on a lighter note," says Christoph, "I'd like to mention that we recently celebrated the 100th session led by Aniello Russo – one of our Self-Rescue Mask trainers. We are proud of such commitment and we're looking forward to celebrating the next trainer's 100th session."

Rosaria Marraffino

## Computer Security

### TRANSPARENT MONITORING FOR YOUR PROTECTION

Computer security can be handled in one of two ways: in secrecy, behind a black curtain; or out in the open, subject to scrutiny and with full transparency. We believe that the latter is the only right way for CERN, and have always put that belief into practice. In keeping with this spirit, here is a reminder of how we monitor (your) CERN activities in order to guarantee timely responses to computer security incidents.

We monitor all network traffic coming into and going out of CERN. Automatic tools look for suspicious patterns like connections to known malicious IP addresses, web pages or domains. They check for malicious files being downloaded and make statistical analyses of connections in order to identify unusual behaviour. The automatic analysis of the logs from the CERN Domain Name Servers complements this and provides a redundant means of detection.

We also constantly scan the CERN office network and keep an inventory of the individual network services running on each device: web servers, SSH clients, etc. The antivirus software installed on centrally-managed Windows computers provides our virus experts with alerts in the event of malicious or suspicious activity being discovered. For similar purposes, all e-mails into or out of CERN are automatically scanned by the Microsoft spam filters. Statistical tools identify mail accounts that send spam – it is only in very rare cases that people manage to send more than 3000 legitimate e-mails a day...

We monitor your logins, whether they are using SSH or the CERN Single Sign-On portal

([login.cern.ch](https://login.cern.ch)). If the origin of the login is unusual in our eyes (and bear with us if it is not unusual for you!), we automatically notify you and ask you to check. We also automatically inspect all activities on our central computing clusters, including commands and parameters typed, network traffic and connections, manipulations to the kernel or installed software, etc. Finally, we monitor external feeds which, depending on their nature, report on compromised or vulnerable webpages, publish stolen password files, etc. Google Alerts helps us with that, too.

Most of these data sources are fed into a single analysis framework. Our new analysis infrastructure will be able to cope with the automatic live analysis of about one terabyte of data every day. If your account/webpage/device appears to be compromised or negatively affected, you will get an automatic notification. Let's hope that you never do! For later use (e.g. for forensics purposes), all this data is stored for one year and then purged. Access is restricted to the CERN Computer Security Team only.

However, rest assured that the Computer Security Team has no right to "just" look at your activities for fun. Our accesses is governed

by the CERN Computing Rules (OC5). Direct access to your mailbox or to your private files stored on CERN's file systems is strongly regulated by the CERN Data Protection Policy (in draft) and its subsidiary policy and requires official authorisation by the Director-General. Any violation is considered to be professional misconduct and will result in dismissal.

For further information, questions or help, check: <https://security.web.cern.ch> or contact us at

[Computer.Security@cern.ch](mailto:Computer.Security@cern.ch).

Do you want to learn more about computer security incidents and issues at CERN? Follow our Monthly Report:

<https://security.web.cern.ch/security/reports/en/>

Stefan Lueders, Computer Security Team



## SOWING THE SEEDS OF TRUST... CONTINUED

**Are you able to assign tasks to your staff and then let them get on with them... or do you tend to hover over them to check on their progress? Observing and controlling supervisees too closely can be counterproductive, as it is often perceived as micromanagement and results in stifling employee decision-making, leaving them with the feeling that their manager does not trust them.**

*Susan has just accepted a new position. Very quickly, she realises that Philip, her supervisor, constantly has his eye on her - observing what she does and how she does things, regularly correcting tiny details in her work and intervening with stakeholders before she has a chance to address them herself. She learns from team members that he had been in charge of her activity before his promotion. Despite being herself a recognised expert in the field, she begins to doubt her own choices and becomes timid and tentative in her work, even hesitating to take the actions that she knows have been successful in the past.*

When a colleague takes over an activity from you, it is quite natural to find yourself comparing their style to your own and there is a risk that you will want to step in and do the job yourself at the first minor hiccup. It is absolutely critical, however, that you do not give in to this temptation, as this would amount to disempowering your colleague, by undermining their self-confidence and ultimately leading to a deterioration in performance. As a supervisor, moreover, you will not be able to carry out your own

management responsibilities if you are constantly immersed in the technical details of each individual task, nor will you be able to develop the healthy relationships that are crucial to staff motivation and development.

*Susan feels that Philip does not respect her expertise and judgement. She believes that 'no matter what she does, it will be wrong' and, as a result, she starts to feel paralysed and inadequate. She becomes afraid of taking initiative without turning to him for guidance.*

*Philip interprets this as proof that she needs to be constantly supervised and grows more and more convinced that Susan is not up to the job. They are trapped in a vicious circle of mutual mistrust.*

What can you do, as a supervisor, to break out of this kind of vicious circle and sow the seeds of trust that your team members need in order to excel?

First of all, it is important to look in the mirror once again and understand what

may have been the reasons that led you to micromanage your staff, albeit with the best of intentions. Is this due to a lack of confidence in the competence of your staff, a fear of losing control, a lack of experience in the art of delegation or your own feelings of insecurity? Once acknowledged, you can take a few simple steps to remedy the situation, such as proposing training for your colleague if appropriate or agreeing on a work plan that allows them to work independently while ensuring also regular checkpoints to keep you informed. A more challenging but crucial step may be in recognising shortcomings in yourself and, if that is what your mirror tells you, you should not hesitate to request some coaching or support in order to move out of your comfort zone as a hands-on technical contributor and assume the oversight role expected of a manager.

*All previous Ombud's Corners can be accessed in the Ombud's blog: <http://cern.ch/go/p9ZS>.*

*Sudeshna Datta-Cockerill*

## PIERRE CHARRUE (1961 - 2016)

**Our friend and colleague Pierre is no longer with us. In corridors, around meeting tables, at coffee places, we gather and talk about him, about how great it was to have met him, and what a special person he was.**



And what to write about him?

"He was always there for us"; "He was dynamic!"; "He was enthusiastic, he always kept a positive attitude!". How empty this sounds when you knew Pierre.

"He wrote great software!"; "Look at his

project, building 774, isn't it amazing?"; "We had lots of good laughs together!". All of this is true, but none of it really does him justice.

Pierre was a special person who had the capacity to make you feel good whenever he was around.

In meetings, his levelheadedness and clear, honest comments were much appreciated by us all. He had the gift of giving real meaning to situations, always with a smile and clarity and that was all he expected back from others.

When he organized team-building outings in the mountains, and orienteering events, his goal was always to find the correct path in the best of humours.

He probably did not realize how much he helped many of us choose good paths in life, merely by following his example. We all miss him dreadfully but endeavor to remember all that he has taught us through his good sense

and contagious smile. Rest in peace, dear Pierre, you will always be in our hearts and minds.

*His colleagues and friends*

We deeply regret to announce the death of Pierre Charrue on 19 January 2016. Pierre Charrue, who was born on 14 July 1961, worked in the BE department and had been at CERN since 10 October 1986.

The Director-General has sent a message of condolence to his family on behalf of the CERN personnel.

*Social Affairs  
Human Resources department*

## Learning

### LABVIEW WORKSHOPS 2016: A FREE AND FUN WAY TO LEARN A NEW PROGRAMMING LANGUAGE

**We are organising about 5 workshops (1 day per week - 2 hours after work) at CERN in the following months, particularly aimed at CERN people (especially technical students).**

The courses will start with the basics of LabVIEW. During the course, which is based on official National Instruments (NI) training materials, we'll learn together how to program in LabVIEW and how to interface with NI hardware. Depending on the participants' needs and requests, the topics of FPGA and Real-Time could also be explored. The course ends with the CLAD certificate exam. The course and materials are in English.

**What is LabVIEW?** A highly productive development environment for creating custom applications, allowing users to code in a single language for devices ranging from FPGA, through RT systems to PCs. The software is used at CERN, but not everybody has had the opportunity

to work with it. Now could be a good time for you to start.

**Target audience:** For students and anyone else interested.

**Pre-requirements:** No experience required, but a bit of programming awareness is recommended.

**If you are interested:**

Register on: <http://cern.ch/go/q7T9>

More info on: <http://cern.ch/go/qf8v>

Questions: [patryk.oleniuk@cern.ch](mailto:patryk.oleniuk@cern.ch)

*Organisers: Patryk Oleniuk, LabVIEW Student Ambassador (CERN, TE-EPC) assisted by Izabela Horvath (CERN, TE-MS), Michał Maciejewski (CERN, TE-MPE) and CERN's LabVIEW support team.*

*All courses are free - we offer them because we're LabVIEW fans...*

*Note: These workshops are given by volunteers. We like LabVIEW and want to share our knowledge of it. The course and the exam are*

*free of charge and the workshops should not be considered as professional NI training. Please refer to the Technical Training catalogue ([cta.cern.ch](http://cern.ch/cta)) for all formal LabVIEW training courses available*

### SAFETY TRAINING: PLACES AVAILABLE IN FEBRUARY 2016

**There are places available in some Safety courses. For updates and registrations, please refer to the Safety Training Catalogue (<http://cern.ch/go/z6gQ>).**

## Take note

### REGISTRATION OF VEHICLES AT THE GEX SOUS-PRÉFECTURE: NOW BY APPOINTMENT ONLY

The Gex sous-préfecture has informed CERN that it has taken the following steps in order to reduce waiting times at its counters for the issue of *carte grise* vehicle registration certificates. As of 1 February 2016, you must book an appointment via the website <http://www.rdv.ain.gouv.fr/> for all services relating to the registration of vehicles, in particular the:

- change of the holder of a registration certificate,
- issue of a *certificat de situation administrative* (administrative status certificate required for the sale of a vehicle),
- change of marital status (or company name in the case of legal entities),
- change of address,
- change in the technical specification of the vehicle,
- corrections to registration certificates,
- requests for duplicates (loss or theft of registration certificates),
- registration of a diplomatic vehicle (CERN),
- registration of a new vehicle,
- registration of vehicles purchased tax-free in the Pays de Gex free zone (formerly TTW series), and
- import of vehicles (from within the EU, from Switzerland, from outside the EU).

Further information about these services can be obtained by sending an e-mail to [pref-cartesgrises-gex@ain.gouv.fr](mailto:pref-cartesgrises-gex@ain.gouv.fr) or by calling +33 4 50 41 51 51 on Mondays and Tuesdays between 2 p.m. and 4 p.m. and on Wednesdays between 9 a.m. and 12 noon. Please note that appointments cannot be booked by telephone.

### FOURTH THEMATIC CERN SCHOOL OF COMPUTING

The Fourth Thematic School of Computing (tCSC2016) takes place this year in Split, Croatia, from 22 to 28 May 2016.

The theme is "Efficient and Parallel Processing of Scientific Data", looking at:

- The challenge of scientific data processing: commonalities, analogies and the main differences between different sciences.
- Size of scientific software projects.
- Parallelism and asynchronism: computation and I/O.

The School is open to postgraduate students and research workers with a few years' experience in elementary particle physics, computing, engineering or related fields. All applicants are welcome, including former and future participants in the main CSC summer school.

Registration will close on 15 February and participation is limited to 24 students. To register, please go here: <http://cern.ch/go/76Z8>.

#### About:

The Thematic Schools are part of the annual series of CERN Schools of Computing, to promote advanced learning and knowledge exchange on the subject of scientific computing between young scientists and engineers involved in particle physics or other sciences.

They are shorter and more focused than the main summer CERN School of Computing, but still maintain the same guiding principles: an academic dimension covering advanced topics; theory and practice; networking and socialisation.

**Applications will be accepted until  
15 February 2016.**

For more information on the CSC, see: <http://cern.ch/csc>.

For registration and more information on the tCSC2016, see: <https://indico.cern.ch/e/tCSC2016>.

Alberto Pace, CSC Director

### TAKE PART IN A DJANGO GIRLS TRAINING!

**Women are often under-represented in IT. And yet, at any age and whatever their level and background, it is a field that can arouse much interest.**

To overcome this under-representation, the ROSEH1PSters community organises Django workshops targeted at women to introduce them to the world of coding and technology by teaching them how to successfully create a blog application and deploy it to the internet. And who knows, a spark of interest in the newly-discovered IT world may develop into a shine! The aim of Django Girls is also to increase the diversity within the industry.

The mentors are mainly female volunteers who bring their passion to the workshop and are part of the awesome atmosphere attendees can feel during each event. Workshops have been organised worldwide

regularly since 2014.

Hosted by IdeaSquare and supported by the CERN IT department and the Diversity team, the Geneva workshop will take place in the evening on Friday evening, 26 February, and all day on Saturday 27 February 2016.

People interested in participating must apply online at: <https://djangogirls.org/geneva/>, where further information will also be available. Mentors have already been selected.

**Deadline for applications:  
Thursday 11 February.  
Limited number of seats!**

The event is entirely free and is not limited by age or background.

#### About ROSEH1PSters

ROSEH1PSters is a community aiming to enhance digital and IT culture for 21st century women of the 21st century. ROSEH1PSters provides a platform to express mixed ideas from women of all generations by organising monthly presentations and discussions on life-shaping digital and IT topics they find worthy to discuss about.

### CERN COMPUTING COLLOQUIUM | COMPUTER SECURITY IN 2016: WHERE ARE WE AND WHAT TO EXPECT | 8 FEBRUARY

**Computer Security in 2016:  
Where are we and what to expect**  
by Sebastian Lopienski, CERN-IT  
Monday 8 February from 11 a.m. to 12 p.m.  
<http://cseminar.web.cern.ch/cseminar/>

at CERN, Council Chamber (503-1-001)

**Description:** Attacks against computer systems, belonging both to individuals and organisations, are an everyday reality. How many times have we heard about supposedly well protected companies and online services at the mercy of cyber criminals, or governments accusing other nation states of cyber espionage. Only the most serious breaches and biggest data leaks continue to make the headlines. But really, how secure is our data, computers and networks? What is happening behind the scenes? Is it actually possible to avoid the vulnerabilities, or detect the resulting exploits?

This talk will address these questions and provide a high-level overview of security trends in the last year or two. It will

include information on emerging types of vulnerabilities and recent attack vectors, as well as providing an insight into the cyber-security world and the underground economy of 2015. The talk will finish with a discussion on how the HEP community and in particular CERN are affected by the general situation: what could be the motivation behind attacks against fundamental research scientific institutes?

### LECTURE | ACCELERATING INNOVATION... IN MEDICINE: SOUND FOR HEALTH | 16 FEBRUARY

**ACCELERATING INNOVATION ... IN MEDICINE**

**Domenico Vicinanza**  
Anglia Ruskin University, Cambridge

**Sound for Health**  
From astronomy to biomedical sciences: music and sound as tools for scientific investigation

In this talk, Dr. Vicinanza will highlight the complementarity and the natural synergy between music and science, with specific reference to biomedical sciences. He will take the audience for a journey through the many ways of listening to scientific data: from hearing the differences between stem cells, to identifying the right home for physical robots, to pure musical wonder.

The presentation will be followed by two demonstrations organised with Dr. Giovanni Williams (Department of Life Sciences, Anglia Ruskin University), showing modification in action.

Conference examples - Production disponible en français  
Summarised by website

**Tuesday, 16 February**  
**18:30 onwards**  
**CICG, Geneva**

Entrance free - Limited number of seats -  
<https://indico.cern.ch/e/evs/475475/>

CERN



# Seminars

## MONDAY, 8 FEBRUARY 2016

- 11:00 CERN Computing Colloquium:** Computer Security in 2016: Where are we and what to expect **Council Chamber**
- 16:00 Miscellaneous:** York ATLAS meeting

## TUESDAY, 9 FEBRUARY 2016

- 08:45** Safety Territorial Safety Officer (TSO) - Initial **6959/R-002**
- 08:45** Safety Territorial Safety Officer (TSO) - Initial **BLDG 6959/2**
- 11:00 LHC Seminar:** CMS SUSY searches at 13 TeV **Main Auditorium**

## MONDAY, 15 FEBRUARY 2016

- 16:00 Miscellaneous:** York ATLAS meeting

## TUESDAY, 16 FEBRUARY 2016

- 11:00 LHC Seminar:** ATLAS seminar **Main Auditorium**
- 18:30 Medical Applications Seminars:** Sound for Health **Room 2**

# NEWS

## FROM THE CERN WEB: WEF, ALPHA, CAST AND MORE

This section highlights articles, blog posts and press releases published in the CERN web environment over the past weeks. This way, you won't miss a thing...

**Director General attends WEF annual meeting in Davos**  
28 January – by James Gillies

As head of a major intergovernmental organisation, CERN's Director General has a standing invitation to attend the World Economic Forum's annual meeting of leaders in politics, business and other walks of life at the Swiss mountain resort of Davos, and it's an invitation that Fabiola Gianotti accepted this year. The theme for this year's meeting was 'mastering the fourth industrial revolution', expected to be characterised by the rise of new technologies such as robotics and 3D printing.



Anne Richards, Chair of the CERN & Society Foundation (left) chairs a meeting on diversity at Davos with CERN Director General, Fabiola Gianotti (centre), and Clare Matterson, Director of Strategy at the Wellcome Trust. (Image: Giovanni Porcellana/CERN)

Continue to read on:  
<http://cern.ch/go/79ml>

**ALPHA experiment shows antihydrogen charge is neutral**  
21 January – by Harriet Jarlett



In a new paper published in the journal Nature, the ALPHA experiment at CERN's Antiproton Decelerator (AD) reported the most accurate measurement yet of the electric charge of antihydrogen atoms.

# Supplemental

In a paper published in the journal Nature, researchers at CERN's ALPHA experiment have shown – to the most accurate degree yet – that particles of antihydrogen have a neutral electrical charge.

According to the Standard Model, which explains how the basic building blocks of matter interact, all antimatter – such as antihydrogen – should have the exact opposite charge to its matter counterpart. For example, in a hydrogen atom, a negatively charged electron combines with a positively charged proton to give a net charge of zero. In contrast, an antihydrogen atom should have a positively charged positron combining with a negatively charged antiproton to give a net charge of zero. The Standard Model also says that during the Big Bang equal amounts of antimatter and matter were created. But today this isn't the case, there is much less antimatter in the universe than matter.

Continue to read on:  
<http://cern.ch/go/W7sG>

**CAST: enlightening the dark**  
15 January – CERN Courier

After sixteen years searching for solar axions, CAST is attracting new collaborators and widening its scientific programme.

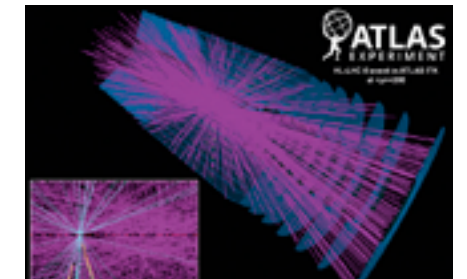
Our star has been the target of human investigation since the beginning of science. However, a plethora of observations are not yet understood. A good example is the unnaturally hot solar corona, the temperature of which spans 1–10 MK. This anomaly has been studied since 1939 but, in spite of a tremendous number of observations, no real progress in understanding its origin has been made.



Giovanni Cantatore and Marin Karuza in front of the CAST magnet, holding the heart of the KWISP force sensor: nano-membranes to detect the direct coupling of exotic particles to matter. (Image credit: Luca Nagel/CAST)

Continue to read on:  
<http://cern.ch/go/bm7H>

**ATLAS and CMS upgrade proceeds to the next stage**  
15 January – CERN Courier



Event display of a top-antitop event with 200 pile-up events in the ATLAS Phase-II tracker. (Image credit: ATLAS)

The High-Luminosity LHC project will bring unprecedented collision rates to the experiments, but with some technical challenges.

At the end of the third operational period in 2023, the LHC will have delivered 300 fb<sup>-1</sup>, and the final focusing magnets, installed at the collision points at each of four interaction regions in the LHC, will need to be replaced. By redesigning these magnets and improving the beam optics, the luminosity can be greatly increased. The High Luminosity LHC (HL-LHC) project aims to deliver 10 times the original design integrated luminosity (number of collisions) of the LHC.

Continue to read on:  
<http://cern.ch/go/S9SG>

## OFFICIAL NEWS

### STAFF RULES AND REGULATIONS - MODIFICATION N°10 TO THE 11TH EDITION

The Five-Yearly Review 2015 has concluded with the approval, by the Finance Committee and the Council on 16 and 17 December 2015, of the package of measures proposed by the Management (CERN/3213).

In accordance with the recommendations made and decisions taken at the Finance Committee and Council meetings relating to diversity-related aspects, which enter into force on 1 January 2016, the following pages of the Staff Rules and Regulations have been updated:

- Preamble, Contents – *amendment on page iii.*
- Chapter II, Conditions of Employment and Association:
  - Section 1 (Employment and Association) – *amendment on pages 11, 12, 14 and 15.*
  - Section 4 (Leave) – *amendment on pages 24, 25, 26 and 27.*
- Chapter IV, Social Conditions:
  - Section 1 (Family, partners and family benefits) – *amendment on page 37.*
  - Section 2 (Social insurance cover) – *amendment on page 39.*
- Chapter V, Financial conditions:
  - Section 1 (Financial benefits) – *amendment on page 46.*
- Annex R A 9 (Installation indemnity) – *amendment on page 75.*
- Annex R A 10 (Reinstallation indemnity) – *amendment on page 76.*

The complete updated electronic version of the Staff Rules and Regulations is accessible via CDS (<https://cds.cern.ch/record/1993099?ln=en>).

The recommendations and decisions relating to the new CERN career structure, which will enter into force on 1 September 2016, will require a further update of the Staff Rules and Regulations to be published during the summer of 2016.

HR Department

## TAKE NOTE

### WANTED: MODERATORS FOR INTERNATIONAL MASTERCLASSES IN PARTICLE PHYSICS

The International Masterclasses in Particle Physics give high school students from around the world the opportunity to become particle physicists for a day. CERN physicists are invited to participate in next year's Masterclass programme, to be held from 11 February to 23 March 2016.

During a Masterclass, high-school students work with recent data from the LHC experiments under the supervision of physicists. For example, students can rediscover the Z boson or the structure of the proton, reconstruct strange particles or measure the lifetime of the D<sup>0</sup> particle. "Students get a taste of how modern physics research works by working directly with particle physicists and using real LHC data," says Uta Bilow from TU Dresden, coordinator of the International Masterclasses programme.

To simulate a real scientific working environment, each Masterclass ends with a video conference, where student groups from different countries connect with two moderators at CERN to combine and discuss their results. They can also pick their moderators' brains in a Q&A section. The video conference ends with a multiple choice quiz on particle physics.

In 2015, 47 CERN physicists volunteered to moderate the video conferences. Paul Laycock, a former moderator, especially enjoyed the Q&A part: "The best part is answering their questions and seeing how happy and excited they are to be talking to physicists at CERN!"

If you are interested in joining the Masterclass moderator team in 2016, please contact Uta Bilow ([uta.bilow@cern.ch](mailto:uta.bilow@cern.ch)).

### 2016 CERN-JINR EUROPEAN SCHOOL OF HIGH-ENERGY PHYSICS

The 2016 CERN-JINR European School of High-Energy Physics will take place in Skeikampen (near to Lillehammer), Norway, on 15-28 June 2016.

The School is targeted particularly at students in experimental HEP, who are in the final years of work towards their PhDs, although

candidates at an earlier or later stage in their studies may be considered.

The deadline for applications is 12 February 2016.

Sponsorship may be available for a small number of students from developing countries. Further details are available here: <http://cern.ch/go/8IHj>.

### WHERE STUDENTS TURN INTO TEACHERS: THE 9TH INVERTED CERN SCHOOL OF COMPUTING

Now in its ninth year, CERN's "Inverted School of Computing – iCSC2016" will take place at CERN on 29 February – 2 March 2016 in the IT Auditorium (Room 31/3-004).

Attendance is free and open to everyone, and will be webcast for those who cannot attend in person. The programme consists mainly of individual lectures on single topics, while some lectures are complementary to each other and can be followed as a series.

Registration is not compulsory, but will allow you to obtain a hard copy of the booklet, which includes the lecture slides and notes (while stocks last).

Programme & registration: <https://indico.cern.ch/e/iCSC2016>

#### iCSC2016

This year's programme, selected from a range of CSC2015 student proposals, focuses on challenging and innovative topics, including:

- Template Metaprogramming for Parallel Computing
- Detector Simulation for the LHC and beyond
- Event reconstruction in Modern Particle Physics
- Continuous Delivery and Quality Monitoring
- Multivariate Classification
- Formal Verification
- Shared memory and message passing
- Virtualisation Technologies
- Continuous Integration
- Accelerating C++ applications in Medical Physics

This year's lecturers are:

- Kim Albertsson, University of Technology, Lulea
- Anastasios Andronidis, Imperial College London
- Valentina Cairo, University of Calabria, Arcavacata
- Thomas Keck, KIT Karlsruhe

- Kamil Krol, CERN, Geneva
- Pedro Mendes Correia, University Of Aveiro
- Aram Santogidis, CERN, Geneva
- Daniel Saunders, University of Bristol
- Joshua Smith, Georg-August Universität Göttingen
- Jiří Vyskocil, Czech Technical University

#### About the iCSC

The Inverted Schools of Computing (iCSC) are part of an annual series of schools organised by the CERN School of Computing (CSC). The iCSC consists of lectures presented over several days by former CSC students, providing advanced training in specialist topics.

The iCSC lectures are specially chosen to create a unique educational programme. They are written and delivered by selected students from the previous year's CSC, who demonstrated a very high level of expertise in a given area during their participation at the annual Main School. So why not find a way to promote and share this knowledge, and turn the students into teachers?

#### The CERN Schools of Computing

The two other Schools that make up the annual CSC series are:

- The Thematic School (tCSC2016) in May in Split, Croatia
- The Main School (CSC2016) in August in Mol, Belgium

For further information on the CERN School of Computing, see: <http://cern.ch/csc> or email: [computing.school@cern.ch](mailto:computing.school@cern.ch).

Alberto Pace, Director of the CERN School of Computing

### ACADEMIC TRAINING LECTURES | FCC | 2-5 FEBRUARY

Please note that the next series of Academic Training Lectures will take place from 2 to 5 February 2016.

**Tuesday, 2 February 2016**  
from 10.30 a.m. to 12.30 p.m. in the Filtration Plant (Building 222-R-001)

**FCC 1:** Introduction to FCC by Michael Benedikt  
**FCC 2:** FCC Physics - Challenges and Potentials by Christophe Grojean, Michelangelo Mangano  
<https://indico.cern.ch/event/472105/>

**Wednesday, 3 February 2016**  
from 10.30 a.m. to 12.30 p.m. in the Filtration Plant (Building 222-R-001)

**FCC 3:** FCC hh Detectors and Experiments by Werner Riegler  
**FCC 4:** Experimental Measurements and Detectors for the FCC-ee by Mogens Dam  
<https://indico.cern.ch/event/472106/>

**Thursday, 4 February 2016**  
from 10.30 a.m. to 12.30 p.m. in the Filtration Plant (Building 222-R-001)

**FCC 5:** FCC Hadron Collider Design by Daniel Schulte  
**FCC 6:** FCC Lepton Collider Design by Frank Zimmermann  
<https://indico.cern.ch/event/472107/>

**Friday, 5 February 2016**  
from 10.30 a.m. to 12.30 p.m. in the Filtration Plant (Building 222-R-001)

**FCC 7:** Civil Engineering and Technical Infrastructure by Volker Mertens  
**FCC 8:** SC magnets, SRF, Key Technologies by Luca Bottura  
<https://indico.cern.ch/event/472108/>

### MEET THE WINNER ARTISTS OF ACCELERATE@CERN TAIWAN | 3 FEBRUARY

Accelerate@CERN is the country-specific, one-month research award for artists who have never been in a science laboratory before.

Accelerate@CERN Taiwan, is funded by the Ministry of Culture for Taiwan. From within thirty outstanding applicants, the winners of Accelerate@CERN Taiwan are WenChi Su - dancer and choreographer - and Pei-Ying Lin - digital artist.

This is the first opportunity for two talented artists to work and research together on the joint creation of a new dance project which engages with the digital realm and is inspired by the world of particle physics. In the past month they have been exploring CERN together, and now they are working on their project.

Meet the artists on Wednesday 3 February at 4:30 p.m. in Restaurant 1.

For more information on Accelerate@CERN, see here: <http://cern.ch/go/QX9V>. Follow the artists blog to know what they have been doing for the past month at CERN (<http://soicern.peiyinglin.net/>).

## LEARNING

### AXEL-2016: INTRODUCTION TO PARTICLE ACCELERATORS

AXEL-2016 is the latest in a yearly lecture series on particle accelerators given at CERN within the framework of the 2016 Technical Training Programme. As part of the BE department's Operation group's shutdown lecture series, this general accelerator physics module has been offered since 2003 as a joint venture between the BE department and the Technical Training team and is open to the wider CERN community.

The lecturer is Rende Steerenberg, deputy leader of the Operation group and PS section leader.

Programme: basic mathematics; transverse optics; lattice calculations; resonances; longitudinal motion; transfer lines, injection and ejection; longitudinal and transverse beam instabilities; colliders. A detailed programme is available on the AXEL-2016 webpage.

Target audience: designed for technicians who are operating an accelerator or whose work is closely linked to accelerators, but also open to technicians, engineers and physicists interested in this field.

Pre-requisites: the course does not require any prior knowledge of accelerators. However, some basic knowledge of trigonometry, matrices, differential equations and magnetism would be an advantage.

The series will consist of 10 one-hour lectures (**Monday, 8 to Friday, 12 February 2016, from 9 a.m. to 10.15 a.m. and from 10.45 a.m. to 12 noon**), delivered in English with questions and answers also possible in French. Participation in all lectures is encouraged in order to gain the maximum benefit from the course.

If you are interested in attending AXEL-2016, please discuss with your supervisor. Attendance will be recorded in the participants' personal training records.

Organisers:  
Rende Steerenberg/BE-OP/79086/164518  
Technical Training/HR-LD/72844



## SAFETY TRAINING: PLACES AVAILABLE IN FEBRUARY 2016

There are places available in the forthcoming Safety courses. For updates and registrations, please refer to the Safety Training Catalogue on: <http://cern.ch/go/gnL9>.

Title of the course EN	Title of the course FR	Date	Hours	Language
<b>Installation Specific Safety</b>				
ALICE - Confined Space	ALICE - Espace confiné	01-Feb-16	09:00 - 12:00	English
ALICE - Underground - Guide	ALICE - Souterrain - Guide	09-Feb-16	14:00 - 16:00	English
		10-Feb-16	10:00 - 12:00	English
CMS - Shift Leader in Matters of Safety (SUMoS)	CMS - Chefs d'équipe en matière de sécurité (SUMoS)	05-Feb-16	13:00 - 17:00	English
		19-Feb-16	13:00 - 17:00	English
CMS - Technical Shifter	CMS - Technical Shifter	12-Feb-16	14:00 - 17:30	English
		26-Feb-16	14:00 - 17:30	English
CMS - Underground - Guide	CMS - Souterrain - Guide	23-Feb-16	14:00 - 17:00	English
ISOLDE - Experimental Hall - Electrical Safety - Handling	ISOLDE - Hall d'expérience - Sécurité électrique - Manipulation	02-Feb-16	14:30 - 17:00	English
ISOLDE - Experimental Hall - Radiation Protection - Handling	ISOLDE - Hall d'expérience - Radioprotection - Manipulation	23-Feb-16		
<b>Chemical Safety (CS)</b>				
Respiratory Protective Equipment - Fundamentals	Équipement de protection respiratoire - Fondamentaux	04-Feb-16	08:30 - 12:00	French
<b>Electrical Safety (EL)</b>				
Habilitation Électrique - Electrician Low Voltage - Initial	Habilitation électrique - Électricien basse tension - Initial	17-Feb-16 to 19-Feb-16	09:00 - 17:30	English
		01-Feb-16 to 03-Feb-16	09:00 - 17:30	French
Habilitation Électrique - Non-Electrician - Initial	Habilitation électrique - Non-électricien - Initial	11-Feb-16	09:00 - 17:30	English
		04-Feb-16	09:00 - 17:30	French
Habilitation Électrique - Person making Tests in Labs or on Test Bench - Refresher	Habilitation électrique - Personnel réalisant des essais en laboratoire ou en plate-forme d'essai - Recyclage	15-Feb-16 to 16-Feb-16	09:00 - 17:30	English
<b>Fire (FS)</b>				
Fire Extinguisher	Extincteur d'incendie	01-Feb-16	10:30 - 12:00 14:00 - 15:30	English
		02-Feb-16	08:30 - 10:00	French
		12-Feb-16	10:30 - 12:00	
<b>Mechanical Safety (M)</b>				
Cryogenic Safety - Fundamentals	Sécurité Cryogénie - Fondamentaux	18-Feb-16	10:00 - 12:00	English

Cryogenic Safety - Helium Transfer	Sécurité Cryogénie - Transfert d'hélium	19-Feb-16	09:30 - 12:00	English
Forklift Truck - Driving - Refresher	Chariot élévateur - Conduite - Recyclage	03-Feb-16	09:00 - 17:30	French
Mobile Elevated Working Platform - Driving - Refresher	Plate-forme élévatrice mobile de personnel - Conduite - Recyclage	02-Feb-16	09:00 - 17:30	French
Overhead Crane - Operator and Slinger - Initial	Pontier-élingueur - Initial	11-Feb-16 to 12-Feb-16	09:00 - 17:30	French
<b>Non-ionizing Radiation (NIR)</b>				
Magnetic Fields	Champs magnétiques	05-Feb-16	09:30 - 12:00	French
<b>Radiation Protection (RP)</b>				
Radiation Protection - Controlled Area - CERN Employees and Associates	Radioprotection - Zone contrôlée - Employés et associés CERN	08-Feb-16	09:00 - 17:00	English
		17-Feb-16		
		24-Feb-16		
		25-Feb-16	09:00 - 17:00	French
Radiation Protection - Experts	Radioprotection - Experts	25-Feb-16 to 11-Mar-16	08:30 - 17:30	English
<b>Safety Organisation (SO)</b>				
Safety in Projects	Sécurité dans les projets	09-Feb-16	14:00 - 17:00	English
Territorial Safety Officer (TSO) - Initial	Délégué à la sécurité territoriale (TSO) - Initial	09-Feb-16 to 11-Feb-16	08:45 - 17:30	English
<b>Safety and Health (SH)</b>				
Self-Rescue Mask - Initial	Masque auto-sauveteur - Initial	08-Feb-16	10:00 - 12:00	English
		17-Feb-16		
		22-Feb-16		
		04-Feb-16	14:00 - 16:00	French
		15-Feb-16	10:00 - 12:00	
Self-Rescue Mask - Refresher	Masque auto-sauveteur - Recyclage	04-Feb-16	10:00 - 12:00	English
		18-Feb-16		
		25-Feb-16		
		02-Feb-16	10:00 - 12:00	French
		09-Feb-16		
		16-Feb-16		
		23-Feb-16		