CERN Bulletin

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SUSTAINABLE DEVELOPMENT

The new year begins with some important changes for members of the CERN personnel. The measures proposed by the Management following the five-yearly review of employment conditions, which were approved by the Council in December 2015, will be implemented gradually. What changes can we expect?

The aim of the five-yearly review is the pursuit of excellence across all of CERN's activities. This is not just a hollow slogan but a joint commitment made by all those involved: the Management, the personnel, as represented by the Staff Association, and the Member States. The five-yearly review is a painstaking and complex process: every five years, the employment conditions of the CERN personnel are examined to evaluate whether the Organization continues to attract, retain and motivate personnel of the highest competence and integrity, as required for the execution of its mission. "As in every five-yearly review, we compared our employment conditions with those in the Member States," explains Anne-Sylvie Catherin, head of the Human Resources department. "Specifically, we examined the salaries offered by industry, which is our main recruitment market, and for other employment conditions we looked at other international organisations. The aim of the review is to adapt certain employment conditions to ensure that CERN continues to offer its personnel the best possible conditions in the present context."

Preparations for the 2015 five-yearly review began in 2011, with a survey of the personnel carried out by the HR department, followed in 2013 by a survey of staff members by the Staff Association. These two surveys allowed the priorities to be identified as well as pinpointing the issues that were the most important for the personnel. "Thanks to the results of these surveys, we were able to focus our efforts on the subjects that were really close to the hearts of the personnel," confirms Anne-Sylvie. "Motivation and financial conditions came out on top, but they weren't the only concerns: we also noted that diversity and social conditions were considered to be very important."

As a result, although there is no change in salaries, the career structure has been made clearer and more effective and, above all, emphasis has been placed on diversity matters, in particular the recognition of registered partnerships and the balance between professional and private lives, for example through teleworking (see the box on page 3 for more details). "Given the current economic climate, we decided to adopt a measured and rational approach, which was appreciated by the Member States," explains Anne-Sylvie. "In collaboration with the Staff Association, we tried to be inventive in order to come up with a balanced package, reconciling the main expectations of the personnel with those of the Member States and protecting the Organization's long-term interests."

Following the successful outcome of this

(Continued on page 2)

A WORD FROM THE DIRECTOR-GENERAL

LOOKING FORWARD TO A GREAT YEAR AHEAD

The year 2016 will be very challenging but also very exciting for all of us at CERN. The LHC will be operating at close to design energy and luminosity. We'll be preparing for CERN's medium- and long-term future, and there will be much interesting and crucial work across the full spectrum of the laboratory's projects and activities. As the year gets underway, I'd like to reiterate my very best wishes to you and your families for a very happy 2016.

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In this issue

NEWS

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A WORD FROM THE DIRECTOR-GENERAL

(Continued from page 1)

LOOKING FORWARD TO A GREAT YEAR AHEAD

While I may have the duty, and the honour, of being Director General for the next five years, I very much see CERN as a collaboration of equals. Each one of us has a role to play, and each one of us is as valuable to the Organization as everyone else.

In recognition of this, among the priorities for my mandate is communication with the CERN personnel. To that end, I will be addressing you not only in January, but also after the June Council meeting. Together with the Directorate, we will investigate other means and opportunities for exchanges with you. Your input, on all matters and in particular on how to improve our dialogue, is very much welcome. Today, however, I would like to address two points: the new organisational structure of CERN, and the scientific priorities for 2016-2020 as I presented them today in my first address to the personnel.

The most visible structural change is the creation of a new sector: International Relations. This recognises the vital importance of nurturing our good relations with key stakeholders: the Member States, of course, who are the backbone of our Organization, but also prospective Member and Associate Member states, and all other groups that matter to CERN. That includes you, our staff and users. It includes our neighbours. It includes students and educators, and it includes the media among many others. For this reason, we are moving the former Communications and Education groups into the new sector, along with Host State Relations, the Protocol Office, and Donor and Potential Donor Relations.

International Relations is not the only structural change. The bulk of the former GS department becomes Site Management and Buildings, with certain groups being moved elsewhere: the Medical Service and Fire Brigade, for example, to the HSE unit. In the Research and Computing sector, we have reinstated Theory as a department, recognising CERN's mission as a centre of excellence for scientific exchange and culture, and the important role our theorists play in this respect.

The scientific priorities for the next five years fall into three categories. Firstly, it hardly needs to be said that full exploitation of the LHC through Run 2 is the highest priority. Looking further, we need to ensure that the High-Luminosity LHC project and injector upgrades remain technically on track and financially secure, for both the accelerators and the experiments.

While doing this, we must remember that CERN is much more than the LHC, and this is the second category. The experimental programme across the whole accelerator complex is diverse, exciting and vibrant. Beyond the lab, we'll be developing our capacity to contribute to neutrino research outside Europe through the CERN neutrino platform.

The third category recognises that the long-term future of CERN begins now. It will take some time for the physics case for the post-LHC era to become clear, but the technological developments necessary for that future must move to the forefront today. We will be seeking to enhance worldwide collaboration on this front, and, through studies and projects like the FCC study, CLIC and AWAKE, keeping our options open. In this vein, we will launch a study of the future scientific opportunities offered by the CERN accelerator complex away from the high-energy frontier, for example with a future fixed-target programme.

To conclude this message, I want to end on something that encapsulates the essence of CERN: an atmosphere of mutual trust, collaboration, and continuous dialogue between the Management, personnel and Council. This has been and will be the hallmark of CERN, and the new Management team is fully committed to it. The skills and dedication of CERN's personnel are the Organization's strongest assets. I will be relying on your help and support, and I will do my best to help you realise your own professional aspirations as we pursue our objectives.

Once again, let me wish you and all those close to you a wonderful 2016.

Please follow this link (http://cern.ch/go/9f69 - CERN credentials required) for the Director General's New Year's Address to personnel.

Fabiola Gianotti

SUSTAINABLE DEVELOPMENT

(Continued from page 1)

process and the approval of the measures by the Council, the updated employment conditions should ensure that the Organization can continue to develop sustainably. Do you still think that the five-yearly review doesn't concern you? Read the box below for an overview of the new measures before you come across them in EDH (new types of leave), in the Admin e-guide (detailed explanations) and during your MARS appraisal (as of 2017).

Antonella Del Rosso

The five-yearly review in brief

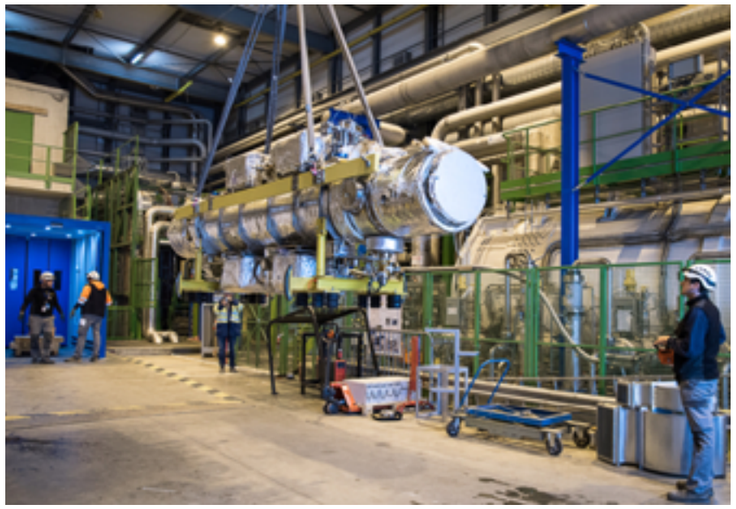
• Career structure: From 1 September 2016, the career structure will be rationalised and the career progression process clarified. As of 2017 (appraisals based on reference year 2016), MARS will be simplified and salary steps will be replaced with a new system combining salary progression within a defined structure and a performance payment. A "personal development conversation" will also be introduced, providing a forum in which to discuss professional development aspirations.

• Diversity: Among other measures, as of January 2016, people in a registered partnership have the same rights as married couples; also, standard paternity leave has increased to ten days and maternity leave has become more flexible. The balance between professional and private lives has also seen improvements: the conditions of the Saved Leave Scheme (SLS) are now more attractive and the teleworking scheme has become more flexible. In addition, increased flexibility has been introduced for events that many of us might face at certain points in our lives, such as the birth of a child or the illness of a close relative.

All of the details and procedures will gradually be added to the Admin e-guide and EDH. To find out more, **don't miss the public meeting for the personnel organised by the HR department at 2 p.m. on 11 February in the Main Auditorium.**

WINTER THERAPY FOR THE ACCELERATORS

Hundreds of people are hard at work during the year-end technical stop as all the accelerators are undergoing maintenance, renovation and upgrade operations in parallel.



The new beam absorber on its way to Point 2 before being lowered into the LHC tunnel for installation.

The accelerator teams didn't waste any time before starting their annual winter rejuvenation programme over the winter. At the end of November, as the LHC ion run was beginning, work got under way on the PS Booster, where operation had already stopped. On 14 December, once the whole complex had been shut down, the technical teams turned their attention to the other injectors and the LHC. The year-end technical stop (YETS) provides an opportunity to carry out maintenance work on equipment and repair any damage as well as to upgrade the machines for the upcoming runs. Numerous work projects are carried out simultaneously, so good coordination is crucial. Marzia Bernardini's team in the Engineering department is responsible for organising and planning the technical stops. "We started planning this technical stop as early as June 2015," she says. "Hundreds of people from all the technical departments were involved over the course of the 12 weeks."

In the PS Booster, a painstaking campaign was launched to identify obsolete cables. This might seem like a simple enough task, but it's actually very complex. Over the years, hundreds of kilometres of cables have been added to this accelerator, which began operation in 1972, and the associated documentation is sometimes incomplete. "We've had to check around 3000 cables, totalling 150 km in length," says Sébastien Evrard, who was in charge of the cable identification project. "It took sixty people eight weeks." The obsolete cables identified will be taken out during the next YETS to make room for the new cables that will be installed for the LHC Injectors Upgrade (LIU) project. At the same time, new structures will be installed to house future cable racks. A similar campaign was carried out in the Super Proton

Synchrotron (SPS), where approximately 7000 obsolete cables were identified at two points of the accelerator, and the false floors covering the cables were consolidated.

In the Proton Synchrotron (PS), in addition to the usual maintenance and consolidation work, two new pieces of beam instrumentation equipment – new wall current monitors to replace the one installed in 1993 – were installed as part of the LIU project: "Tests will begin at the end of January once the cabling has been completed, ahead of the arrival of the first beams in the ring on 8 March," says Simon Mataguez, PS Facility Coordinator.

Continuing along the accelerator chain, 16 magnets need replacing in the SPS: 14 of the 960 main magnets in the ring and two auxiliary magnets in the transfer line. Since each magnet weighs 16 tonnes, it's a big job. "But it's routine for us," David McFarlane, SPS Facility Coordinator, reassures us. "We usually change one or two magnets during each technical stop, even during short stops." The SPS is an ageing accelerator – it will turn 40 this year – and its magnets need to be renovated regularly. "The lamination and the cooling circuit both deteriorate. That's why we have to replace the magnets," David continues.

In the Large Hadron Collider (LHC), several major operations are ongoing. Two beam absorbers, at Points 2 and 8 of the machine, have been replaced (see box below). Two sectors (7-8 and 8-1) have been emptied of helium to ensure that no losses occur while one of the coldboxes is being repaired. Twelve collimators, on both sides of ATLAS and CMS, have been dismantled. The vacuum chambers, which restricted the movement of the collimators, are being modified. Finally, a piece of instrumentation equipment at Point 4, a beam synchrotron radiation telescope (BSRT), has been upgraded. Cabling campaigns are also taking place throughout the LHC machine – four teams are working in parallel to install 25 km of signal cabling (copper and fibre-optic) for new equipment and upgrades. "There are lots of other jobs to be done, especially maintenance work," Marzia says. "The Engineering department's Cooling and Ventilation (CV) and Electricity (EL) groups were busy performing work during the end-of-year closure, for example." The experiments are also working on their detectors at the same time, and sometimes have to coordinate their activities with the work on the accelerator.

All the work in the injectors has to be completed by early February and in the LHC by early March. The injectors will then be progressively restarted while powering tests begin in the LHC. The first beams in the LHC are scheduled for the end of March.

Corinne Pralavorio

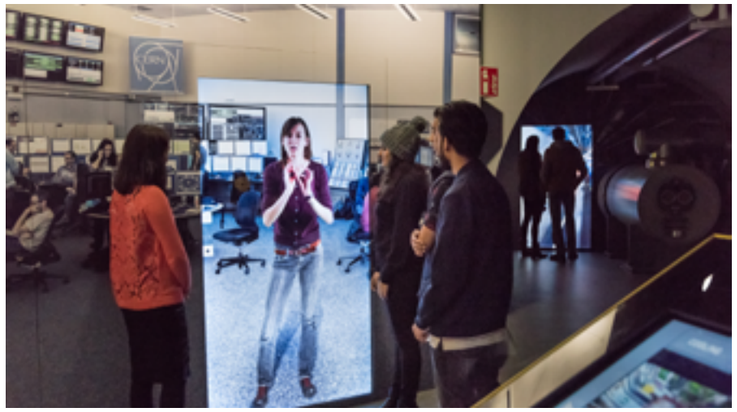
Absorbing without disturbing

Beam absorbers for injection (TDIs) are used when beams are ejected from the SPS into the LHC. They absorb the SPS beam if a problem occurs, providing vital protection for the LHC. They consist of two jaws that close around the bunches of particles injected, and the beam is gradually absorbed by the jaw materials: boron nitride, aluminium and copper. These absorbers work in a similar way to collimators, but their jaws are much longer – four metres compared with one metre in the case of the collimators. The existing TDIs, situated at Points 2 and 8 of the LHC, showed signs of weakness during the 2015 run, sometimes disrupting injection.

"We observed abnormal increases in the temperature of these absorbers and outgassing that compromised the LHC vacuum," explains Antonio Perillo Marcone, project leader in the Targets, Collimators and Dumps section of the Engineering department (EN-STI-TCD). Two new absorbers were therefore developed, using a different material in the jaws. "We replaced the boron nitride with graphite, which is more stable over time and won't disrupt the beam so much," says Antonio. The final assembly has already taken place in CERN's workshops and the two new components will now be tested.

MICROCOSM: THE STORY OF CERN

After a major revamp last year, Microcosm is once again open to visitors. Readers of the *Bulletin* can sign up for a guided tour of the new exhibitions. Go and visit it as soon as you can to win a t-shirt through our competition!



Role models for students - 1:1 scale audiovisual in Microcosm allows visitors to meet the people who make CERN tick.

The new exhibition takes visitors on a journey through CERN's key installations, following the path of the particles from the bottle of hydrogen, through the network of accelerators and on to collision inside vast experiments. Objects, life-sized audio-visuals and high-definition photographs are used to recreate real CERN spaces, whilst live data feeds bring news of the Large Hadron Collider direct to the exhibitions. Throughout, the focus is on the people who design and use this extraordinary technology to further our understanding of the universe. Screen content continues to evolve and more games will be introduced into the exhibition during 2016. Watch this space!

The exhibition is free and open to all without reservation.

Opening hours: Monday - Friday 8.30 a.m. - 5.30 p.m., Saturday 9.00 a.m. - 5.00 p.m., closed on Sundays (see **www.cern.ch/microcosm**).

Two guided tours have been organised for CERN people. Places are limited and registration is required:

Thursday, 28 January
10.30 -11.15 a.m. in English (12 places) – sign up at **http://cern.ch/go/7LD6.**
1.30-2.15 p.m. in French (12 places) – sign up at **http://cern.ch/go/hZ8X.**

You can also win a CERN t-shirt! Find the image of the robotic camera that took the 160 photos making up the giant fresco of the CCC displayed in Microcosm. The first to send **Bulletin-Editors@cern.ch** a selfie taken next to the camera wins!

CERN Bulletin

ARTISTIC TRANSPARENCY

As the Arts@CERN programme testifies, CERN is no stranger to the collision of science and art. Just before Christmas, the Slovak artist Ján Zoričák exhibited his glass artworks at CERN, some of which make use of crystals from the OPAL experiment. We take a look at the artist, the science that inspired him and the techniques that he uses.

It took 10 months to create the 22 glass artworks in the exhibition, six of which make use of lead glass from the calorimeter of OPAL, one of the four main LEP experiments. Ján Zoričák has been a glass sculptor for several decades. In his capable hands, glass seems to take on a new energy, as he uses the contrast in temperature when glass heated for up to 48 hours at extremely high temperatures is exposed to a very cold source until it fractures. The resulting cracks break up the homogeneity and regularity of the glass and play with light and shadow, an effect that is majestically reinforced by finishing and polishing work.

The glass artworks were exhibited during the week of 14 December in the "Pas Perdus" lobby area of the Main Building. Rolf Heuer, the outgoing Director-General of CERN and former spokesperson of the OPAL experiment, visited the exhibition and warmly congratulated the artist. Other members of the OPAL collaboration and members of the CERN Council were also able to enjoy this unique event.

One of the lead-glass sculptures from the collection was donated to CERN by the artist.

Antonella Del Rosso

CONGRATULATIONS TO THE CLASS OF 2015!

Five apprentices who left CERN in June having successfully completed their training were awarded their diplomas during the *Fête de l'apprentissage* in Geneva.

Bastien Gallay (fifth from right) received the 2015 Union Industrielle Genevoise *prize during an official ceremony on 8 December in the presence of Pierre Maudet, Geneva state councillor (right).*

In September, the five CERN apprentices from the 2011-2015 year group were awarded their *Certificat fédéral de capacité* (CFC) during the *Fête de l'apprentissage*, which takes place at the Geneva Arena every year.

The apprentices, three electronics technicians, Bastien Gallay, Sébastien Hiltbrunner and Valentino Ranieri, and two physics laboratory technicians, Loïc Baravaglio and Yan Reynard, spent four years in CERN's workshops and laboratories honing their skills and acquiring the necessary experience for their future careers. We are very pleased to congratulate them on their success! In addition, Bastien Gallay was awarded the *Union Industrielle Genevoise* prize for his outstanding results.

CERN welcomed four new apprentices at the start of the 2015-16 academic year, three electronics technicians and one physics laboratory technician, and we look forward to congratulating them too in four years' time!

Anaïs Schaeffer

THE VALUE OF YOUR PASSWORD

Of course, your passwords have a value to you as they allow you to access your computer and your Facebook page, to buy on Amazon, to create a Twitter feed, and to use a multitude of computing services provided by CERN. But have you ever thought of their value to the malicious people of this world?

With your account password, I can take over your computer. I can install software allowing me to enable your microphone and listen to your communications and what is happening around you as long as your computer is turned on. I can take regular screenshots and monitor you while you work. With that, I can try to determine your working habits, your online behaviour, the way you write e-mails… Useful, if I want to impersonate you believably (e.g. to attack CERN and the systems you are working on at CERN). What's more, with access to your computer, I can install a keylogger to record your every keystroke – including when you type all your other passwords: Amazon, Paypal, Facebook, Twitter. Of course, with those passwords, I can go on a nice shopping spree with your money…

So, what is the value of your password to those malicious people? A few bucks? A bit more or a bit less, depending on the type of account. There are black market websites where they can buy and sell account names and passwords in bulk. Think of what an attacker could do with your CERN password. For example, they could access your mailbox and send spam to people all over the world, which could earn them some money if people respond. By sending phishing emails, they can harvest even more passwords. They could access CERN's software repositories or our online journal library; downloading them in bulk and selling them on the black market would definitely create revenue – at CERN's expense!

They could access your computer and manipulate your work: if you work in finance, the attackers might try to siphon money out of CERN. If you have access to computing resources, the attackers might misuse them, by blackmailing third-party web services and threatening to bring their sites down or by running dedicated computing jobs to mine BitCoins or crack hashed password files. If you have access to control systems, targeted attackers might even misuse your power to grind your system to a halt…

So, is your password already on sale? Hopefully not. Just follow a few simple steps to keep your password yours – both at home and at CERN: keep your PCs and laptops up to date and run antivirus software. Do not install software downloaded from dubious sites. Browse responsibly – stop and think before you click. Make use of browser extensions and plugins that can help you. Keep your password to yourself, do not share it and do not type it into webpages you are not sure of. Do not use the same password for multiple sites. And finally, make your password complex: for example, you could use the title and artist of a song you like ("Money4Nothing---DireStraits"), a mathematical formula ("DeltaX*DeltaP>=h/4pi"), or a poem ("3quarksforMusterMark!"). Recall what is at stake: lose your password and you are digitally naked…

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

As a boss, do you unconditionally stand by your line management when they are involved in potential conflicts with their supervisees or do you take a stand and look into the issue yourself?

Marc goes to see Anna, his Group Leader, because he feels his team is being treated unfairly by his direct supervisor, Luke.

Marc explains that he and his colleagues have been exposed to unfair public criticism and other similarly unpleasant situations several times and that they feel they are being bullied. He has tried to discuss this with Luke but to no avail.

Anna tells Marc that he is being overly sensitive, that he should realise that workplace efficiency cannot always make room for niceties and insists that she knows Luke to be an excellent supervisor.

Marc returns to his office feeling very disappointed and tells his colleagues: "It is no use – these managers always stick together and refuse to listen to our point of view."

This type of scenario can lead to a general feeling of distrust where people dismiss the Code of Conduct as a mere 'paper exercise' and refrain from raising issues with their hierarchy as they are perceived to 'not walk the talk'.

It does not always have to be this way, however, and it would not have taken much for Anna to turn the scenario around and start building a greater sense of trust among colleagues with just a few simple steps:

Marc goes to see Anna who listens to his account and probes him for specific examples in order to understand his perception of the situation faced by his team.

She then thanks him for bringing the issue to her and assures him that she will take the matter up with Luke in order to get his side of the story.

She suggests that they meet again within a week, together with Luke, in order to agree on ways of moving forward.

Marc returns to his office feeling very reassured and tells his colleagues he was "well received". He believes that their concerns have been heard and that some action will be taken.

Often, for a boss, it is really just a matter of demonstrating a willingness to listen and understand the concerns of their staff. While it is totally understandable that managers would not wish to bypass the first-line hierarchy and intervene directly in internal matters of the team, it is equally important that issues that are brought to their attention are not perceived to be brushed under the carpet or summarily dismissed.

In the second scenario, by listening to Marc, and then taking the matter up with Luke, Anna shows that by respecting both points of view and taking subsequent action, she is able to work towards finding a mutually acceptable solution.

Moreover, by this action, she also takes a vitally visible step towards sowing the seeds of trust throughout the whole system.

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

Sudeshna Datta-Cockerill

Official news

ANNUAL ADJUSTMENTS TO 2016 FINANCIAL BENEFITS

In accordance with recommendations made by the Finance Committee and decisions taken by the Council in December 2015, no adjustments have been made to basic salaries and stipends, subsistence allowances or family benefits as at 1 January 2016.

HR department

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

The Five-Yearly Review 2015 has concluded with the approval, of 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, on: **http://cern.ch/go/7gS7.**

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

TO ALL MEMBERS OF PERSONNEL IN RECEIPT OF REMUNERATION FROM CERN

In 2016, net monthly remuneration will be paid into individual bank accounts on the following dates:

- Monday, 25 January
- Thursday, 25 February
- Thursday, 24 March
- Monday, 25 April
- Wednesday, 25 May
- Friday, 24 June
- Monday, 25 July
- Thursday, 25 August
- Monday, 26 September
- Tuesday, 25 October
- Friday, 25 November
- Tuesday, 20 December

Finance and Administrative Processes department

Learning

SAFETY TRAINING: PLACES AVAILABLE IN JANUARY 2016

There are places available in some Safety courses. For updates and registrations, please refer to the Safety Training Catalogue: http://cern.ch/go/vW6x.

Safety Training, HSE Unit

Take note

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: http://cern.ch/go/tTb6

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.**

Alberto Pace, Director of the CERN School of Computing

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: **http://cern.ch/go/pD8Z**.

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. Registration is required; participants must sign up via this link: **http://cern.ch/go/Z9IK**. Attendance will be recorded in the participants' personal training records.

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

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 on: **http://cern.ch/go/9f69.**

Seminars

MONDAY, 25 JANUARY 2016

09:30 **Special Event:** Schools@CMS 2016

TUESDAY, 26 JANUARY 2016

16:00 **ISOLDE Seminar:** What happened to Observation, analysis, and solution
26-1-022

THURSDAY, 28 JANUARY 2016

10:00 **Science, Technology and Industry Seminar:** Presentation of STANDA motorization, control systems
7-1-007

TUESDAY, 02 FEBRUARY 2016

10:30 **Academic Training Lecture Regular Programme:** FCC (1/4) **Filtration Plant**

Supplemental

NEWS

FROM THE CERN WEB: NEW YEAR CEREMONY, NEW LHC PROGRAMME COORDINATOR, SCIENTIFIC PRIZE 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...

CERN DG meets locals and internationals in New Year ceremony
15 January – by James Gillies

In one of her first official duties as CERN Director General, Fabiola Gianotti met representatives of CERN's local communities and international Geneva in Microcosm on Thursday evening to wish them a Happy New Year 2016, and to express thanks for their support.

Photo (left to right): Charlotte Lindberg Warakaulle, Director for International Relations, Martin Steinacher, Director for Finance and Human Resources, Fabiola Gianotti, CERN Director-General, Eckhard Elsen, Director for Research and Computing and Frédérick Bordry, Director for Accelerators and Technology.

Continue to read on:
http://cern.ch/go/9dBQ

Balancing Act
14 January – UK News from CERN

Jamie Boyd. (Credit : STFC)

A UK researcher has taken on one of the trickiest jobs in physics. As LHC Programme Coordinator, Jamie Boyd (CERN) is responsible for preparing the experimental schedule for the LHC, and that means balancing the requirements of the different LHC experiments with those of the accelerator physicists for whom the LHC machine is an experiment in its own right.

Continue to read on:
http://cern.ch/go/wS8s

Carlo Rubbia awarded China's highest scientific prize
8 January – by Harriet Jarlett

Professor Carlo Rubbia, Nobel Laureate for Physics 1984 and CERN's Director-General from 1989 to 1994, has been awarded the International Scientific and Technological Cooperation Award by the People's Republic of China. The award honours the significant contributions Rubbia has made to China's scientific development in the field of high-energy physics.

Professor Carlo Rubbia has been awarded the highest prize available to foreign individuals by the People's Republic of China, for his contribution to their scientific development.

Continue to read on:
http://cern.ch/go/69lw

CERN expands scientific collaboration with Middle East
8 January – by James Gillies

Mouïn Hamzé (left), Secretary General of the CNRSL and Rüdiger Voss of CERN after signing the International Collaboration Agreement on 3 December in Beirut. (Image: CNRS Lebanon)

On 3 December 2015, CERN signed an International Cooperation Agreement (ICA) with the Lebanese National Council for Scientific Research, CNRSL, paving the way for future collaboration with Lebanese academia. Soon after, on 18 December, a second ICA was signed with Palestine, allowing CERN to forge stronger links with Palestinian Universities.

Continue to read on:
http://cern.ch/go/ZK9R

A new era for CERN-US collaboration in particle physics
18 December 2015

Ambassador Pamela Hamamoto of the United States (left) and CERN Director-General Rolf Heuer.

Collaboration between CERN and the US is nothing new. The American Nobel-Prize winner, Isidor Rabi, was among CERN's founding fathers, and it was not long after the Laboratory was established that close collaboration between CERN and the Brookhaven National Laboratory took root. Since then, the number of US partners for CERN has multiplied, with the arrival of laboratories such as Fermilab and SLAC on the global particle physics scene.

Continue to read on:
http://cern.ch/go/7QtS

OFFICIAL NEWS

PENSION PAYMENT DATES IN 2016

The pension payment dates for next year are also available on the Pension Fund website (go to: http://cern.ch/go/Ndq7).

- Thursday 7 January
- Monday 8 February
- Monday 7 March
- Thursday 7 April
- Friday 6 May
- Tuesday 7 June
- Thursday 7 July
- Monday 8 August
- Wednesday 7 September
- Friday 7 October
- Monday 7 November
- Wednesday 7 December

CERN HEALTH INSURANCE SCHEME (CHIS): MONTHLY CONTRIBUTIONS FOR 2016

For 2016, the contribution rate for active and retired CHIS members will be 4.86%. The amounts of the fixed contributions for voluntarily insured members (e.g. users and other associates), as well as the supplementary contributions for spouses with income from a professional activity or with a retirement pension (including a CERN pension), are thus as follows:

1. Voluntary contributions
The full contribution based on Reference Salary II is 1218 CHF per month. This fixed contribution is applied to voluntarily affiliated users and other associates with normal coverage. Half of this amount, 609 CHF, is applied to voluntarily affiliated users and other associates with reduced coverage. Finally, an amount of 487 CHF is applied to children maintaining their insurance cover on a voluntary and temporary basis.

2. Supplementary contributions
The supplementary contribution for the spouse or registered partner of a staff member, fellow or pensioner is now as follows, according to the spouse's monthly income:

- up to and including 2500 CHF: none
- more than 2 500 CHF and up to 4 250 CHF: 162 CHF
- more than 4 250 CHF and up to 7 500 CHF: 283 CHF
- more than 7 500 CHF and up to 10 000 CHF: 446 CHF
- more than 10 000 CHF: 609 *CHF*

HR Department
Tel.: 74719

NEW CERN HEALTH INSURANCE SCHEME (CHIS) FORMS

New versions of the following forms for claims and requests to the CERN Health Insurance Scheme (CHIS) have been released:

- form for claiming reimbursement of medical expenses,
- form for requesting advance reimbursement, and
- dental estimate form (for treatments foreseen to exceed 800 CHF).

The new forms are available in French and English. They can either be completed electronically before being printed and signed, or completed in paper form. New detailed instructions can be found at the back of the claim form; CHIS members are invited to read them carefully.

The electronic versions (PDF) of all the forms are available on the CHIS website (**http://cern.ch/go/Q6Pr**) and on the UNIQA Member Portal (**http://cern.ch/go/GSX6).**

CHIS Members are requested to use these new forms forthwith and to discard any previous version.

Questions regarding the above should be addressed directly to UNIQA (72730 or 022.718 63 00 or **uniqa.assurances@cern.ch**).

HR Department

OPERATIONAL CIRCULAR NO. 2 (REV. 3) - CONDITIONS OF ACCESS TO THE FENCED PARTS OF THE CERN SITE

Operational Circular No. 2 (Rev. 3) entitled "Conditions of access to the fenced parts of the CERN site", approved by the Director-General following discussion in the Standing Concertation Committee meeting on 24 September 2015, is now available on: http://cern.ch/go/qB8K.

This revised circular cancels and replaces Operational Circular No. 2 (Rev. 2) also entitled "Conditions of access to the fenced parts of the CERN site", of September 2014.

The circular was revised predominantly in order to specify that access to the CERN site is granted to CERN Pension Fund beneficiaries only provided that they are actually in receipt of payments from the Fund; and to allow the Director-General to permit special types of vehicles on site, such as trailers. It also includes a certain number of text improvements and an updated version of the implementation measures, in particular with regard to vehicle identification, road traffic and parking.

HR Department

OFFICIAL HOLIDAYS IN 2016 AND END-OF-YEAR CLOSURE 2016/2017

Application of Articles R II 4.38 and R II 4.39 of the Staff Regulations.

Official holidays in 2016 (in addition to the special leave during the annual closure):

- Friday, 1 January (New Year)
- Friday, 25 March (Good Friday)
- Monday, 28 March (Easter Monday)
- Thursday, 5 May (Ascension Day)
- Friday, 6 May (compensation granted for 1 May)
- Monday, 16 May (Whit Monday)
- Thursday, 8 September ("*Jeûne genevois*")
- Thursday, 22 December (compensation for 24 December, Christmas Eve)
- Friday, 23 December (compensation for 25 December, Christmas)
- Thursday, 29 December (compensation for 31 December, New Year's Eve)
- Friday, 30 December (compensation for 1 January 2017, New Year)

Annual closure of the site of the Organization during the Christmas holidays and days of special leave granted by the Director-General:

- The Laboratory will be closed from Thursday, 22 December 2016 to Wednesday, 4 January 2017 inclusive (without deduction of annual leave). The first working day in the New Year will be Thursday, 5 January 2017.

HR Department
Tel.: 73903/79257

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^0 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).***

JOINT UNIVERSITIES ACCELERATOR SCHOOL (JUAS)- PLACES AVAILABLE

If you are a PhD student, fellow or staff member and are interested in following one or more specific modules à la carte at JUAS a limited number of places are still available on the Technologies & Applications course.

The course will be held at the European Scientific Institute in Archamps, France (Haute-Savoie) in February and March 2016.

EUROPEAN SCHOOL OF INSTRUMENTATION FOR PARTICLE AND ASTROPARTICLE PHYSICS (ESIPAP) - PLACES AVAILABLE

If you are a PhD student, fellow or staff member and are interested in following one or more specific modules à la carte at ESIPAP, a limited number of places are still available on the Technologies & Applications course.

The course will be held at the European Scientific Institute in Archamps, France (Haute-Savoie) in February and March 2016.

CERN'S 2016 BEAMLINE FOR SCHOOLS COMPETITION STARTS ON 17 NOVEMBER

Spread the word: CERN is offering high-school students from around the world the chance to create and perform a scientific experiment on a CERN accelerator beamline. What better way to learn about physics?

Now in its third year, the Beamline for Schools competition is open to teams of at least five students aged 16 and with at least one adult supervisor or "coach".

Students can find out about the beamline and facilities via **http://cern.ch/bl4s,** then think of a simple, creative experiment. They can register their team from 17 November to start receiving e-mail updates. They then submit a written proposal and a short video by 31 March 2016. The winners will be announced in June and will come to CERN, preferably in September 2016. Previous winners have tested webcams and classroom-grown crystals at the beamline, others have studied how particles decay and investigated high-energy gamma rays.

All participants will receive a certificate. Shortlisted teams will win a BL4S t-shirt for each team member and a cosmic-ray detector for the school, and some will be offered the chance to visit a physics laboratory near them. For the winning team(s), between five and nine members and up to two adult coaches per team will be invited to CERN, all expenses paid, for 10 days to carry out their experiments at the beamline.

Registration opens 17 November: http://cern.ch/bl4s.

The project is funded in part by the Alcoa Foundation; additional contributions are received from National Instruments.

ACADEMIC TRAINING LECTURES | INTRODUCTION TO PARALLELISM, CONCURRENCY AND ACCELERATION | 19-20 JANUARY

Please note that the next series of Academic Training Lectures will take place on 19 and 20 January 2016. The lectures will be given by Andrzej Nowak (TIK Services, Switzerland).

An Introduction to Parallelism, Concurrency and Acceleration (1/2)
on Tuesday, 19 January
from 11 a.m. to 12 noon
https://indico.cern.ch/event/404682/

An Introduction to Parallelism, Concurrency and Acceleration (2/2)
on Wednesday, 20 January
from 11 a.m. to 12 noon
https://indico.cern.ch/event/404683/

at CERN IT Amphitheatre (31-3-004)

Description: Concurrency and parallelism are firm elements of any modern computing infrastructure, made even more prominent by the emergence of accelerators. These lectures offer an introduction to these important concepts. We will begin with a brief refresher of recent hardware offerings to modern-day programmers. We will then open the main discussion with an overview of the laws and practical aspects of scalability. Key parallelism data structures, patterns and algorithms will be shown. The main threats to scalability and mitigation strategies will be discussed in the context of real-life optimisation problems.

LEARNING

PLACES AVAILABLE - TECHNICAL MANAGEMENT COURSES (UP TO THE END OF JUNE 2016)

Please find here the courses in the field of technical management scheduled up to the end of June 2016 and which have places available.

For more details about a course and to register, please go to the Training Catalogue.

If you need a course that is not in the catalogue, please contact your supervisor, your Departmental Training Officer or the HR-LD group at **Communication.Training@cern.ch.**

Upcoming Technical Management courses (in chronological order)

	Language	Next Session	Duration	Available places
Procurement of supplies at CERN up to 200 000 CHF – e-learning	English	n/a	1 hour	n/a
Achats de fournitures au CERN jusqu'à 200 000 CHF – e-learning	français	n/a	1 hour	n/a
Selecting the right person for CERN	English	5 February	1 day	13
Quality assurance	English	8-9 February	2 days	6
Selecting the right person for CERN	English	22 March	1 day	14
Dealing with Media questions	English	29 March	1 day	9
Managing by project	English	28-29 April	2 days	11
PMI Project management	English	12-13 May 16-17 June	4 days	9
Risk management	English	17-18 May	2 days	8
Procurement and Contract Management of Supplies	English	27 May	1 day	13
Project Engineering	English	20-21 June	2 days	4