

## THE NEW LHC PROTECTORS

New collimators are being installed and tested in the LHC. They will improve its protection and prepare it for higher luminosity in the HL-LHC



Two wire collimators have been installed in the LHC tunnel on both sides of the ATLAS experiment. (Image: Max Brice, Julien Ordon/CERN)

Collimators are the brave protectors of the LHC. They absorb all the particles that stray from the beam trajectory. These unruly particles may cause damage in sensitive areas of the accelerator, thereby endangering operational stability and machine safety, or quench the LHC's superconducting magnets. During the current year-end technical stop (YETS), two kinds of recently developed collimators have been installed in the LHC.

The first kind is called TCTW (Target Collimator Tertiary Wire) and will serve a double function. As its name suggests, it

has a wire integrated into its jaws, vacuum-brazed into its tungsten-alloy absorbers. A current passing through the wire creates an electromagnetic field, which can be used to compensate the effect of the opposite beam.

"We can look at it as half collimator, half magnet. In addition to cleaning the beam and protecting the downstream equipment, it also acts electromagnetically on the beam to compensate for long-range beam-beam effects."

(Continued on page 2)

## A WORD FROM ECKHARD ELSEN

### A FEAST OF PHYSICS TO TIDE US OVER UNTIL MORIOND...

While awaiting the annual tartiflette of physics that is the Moriond conference, at the forefront of which will be the results of the LHC's 13-TeV runs, it's refreshing to take a look at some of the other research that has been going on around the Laboratory. We have a very rich and diverse programme and there have been some very interesting developments over recent months.

(Continued on page 2)

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# A WORD FROM ECKHARD ELSEN

## A FEAST OF PHYSICS TO TIDE US OVER UNTIL MORIOND...

The LHC is becoming a dab hand at resolving decades-old enigmas. Following on from the Higgs boson and pentaquarks, we may soon be able to welcome the odderon to the collection of LHC physics results. The TOTEM experiment studies what happens when LHC protons glance off each other and remain intact, rather than breaking up in the collision. In this so-called elastic scattering, there is nevertheless an interaction between the two protons, and it's here that the odderon comes in. Back in the 1970s, Isaak Pomeranchuk proposed that elastic proton-proton scattering was mediated by a kind of quasi-particle carrying the strong interaction. This was duly named the pomeron in his honour. The pomeron has even CP quantum numbers, but it later became clear that a CP-odd exchange could also be at work, and the term odderon was duly coined. In modern physics language, we associate these exchange processes with an even or odd number of gluons. What TOTEM has seen is not a direct observation, but a hint that the odderon might be there. A dedicated 900-GeV LHC run later this year, during which ATLAS's ALFA detector will join the search, should clar-

ify the behaviour of the cross-section observed by TOTEM that leads to the putative odderon. The crème fraîche on the tartiflette remains, however, that of a resonant enhancement, which has yet to be observed.

Meanwhile, the AD is enjoying a particularly productive and engaging period. The ALPHA experiment recently performed its first precision spectroscopic measurements on antihydrogen, launching a new era of precision antimatter physics. BASE has vastly improved the precision of the measurement of the antiproton's magnetic moment. ALPHA-g and GBAR are preparing to measure the influence of gravity on antimatter. And the ELENA ring will soon come online to slow down antiprotons even further and vastly increase the trapping efficiency.

One of the more intriguing proposals to come to both the SPSC and INTC at their last meetings also involves the AD. We received a letter of intent to load antiprotons onto a truck and drive them to ISOLDE, where they could be used to study the exotic behaviour of unsta-

ble nuclei, in particular their outer skin. It's a sign of the maturity of antimatter research at CERN that antiprotons have evolved from being a subject for research in their own right to a tool enabling other forms of research to be carried out. If a mobile antiproton trap does indeed prove to be feasible, combined AD-ISOLDE experiments could be shedding light on astrophysical processes by 2022.

The final thing I'd like to mention is the activities at the CERN neutrino platform, where work is progressing well on two prototype detectors that we are building to establish the technology for the Deep Underground Neutrino Experiment (DUNE), hosted by Fermilab in South Dakota. A smaller device has already provided nice tracks. ProtoDUNE-SP is being prepared for beam before the long shutdown at the end of the year, and both protoDUNEs will continue recording data with cosmic rays. With such a variety of work going on across CERN's diverse range of facilities, there's plenty to feast on at any time of the year, tiding us over until the next round of conferences. *Bon appétit.*

Eckhard Elsen

Director for Research and Computing

## THE NEW LHC PROTECTORS

These disturbances are considered to be one of the limitations of the performance of the LHC and the HL-LHC, explains Iñigo Lamas García from the Sources, Targets and Interactions (STI) group of the Engineering department, who is in charge of the installation of the collimators.

Two of these collimators are now in place at Point 1, one on each side of the ATLAS experiment. This is the second time that wire collimators have been installed in the LHC, following a similar operation at Point 5 during last year's extended year-end technical stop (EYETS). This new kind

of collimator has been developed for the High-Luminosity LHC project, in collaboration with the Beam Instrumentation and Accelerator Physics groups of the Beams department, as part of the HL-LHC WP5 that is responsible of future collimation upgrades. "We are installing them in the LHC way in advance as proof of concept, to validate their expected performance and benchmark the simulations," adds Lamas García.

Another type of collimator – a TCPC (Target Collimator Primary Crystal) – has been installed at Point 7. Developed for the

HL-LHC project by EN-STI, together with the UA9 collaboration, this jewel of the collimation system offers an alternative way to clean the beam – it uses silicon bent crystals to deflect the halo particles.

"We still have to capture the particles, but, in theory, with the use of crystals we do it in a cleaner and more efficient way, further away from the beam line," explains Lamas García.

This is a very promising technology for the high-luminosity era of the LHC. Previously,

crystal collimators have been installed in the Super Proton Synchrotron (SPS) and in the LHC, where they have been tested during the machine development periods. In 2017, this new system proved to be very effective for Xenon ion beams and this year it will also be tested with lead ions.

A third kind of collimator, a prototype made out of a coated novel material (molybdenum graphite), is the TCSPM (Target Collimator Secondary Pick-up Metallic). It has also been developed by EN-MME and EN-STI. Its purpose is to reduce the elec-

tromagnetic disturbances while delivering an equivalent or even improved cleaning performance. A first prototype of this device, build in-house by EN-MME, was installed at Point 7 during the EYETS and successfully tested with beam in 2017 by the accelerator physics and collimation teams of the Beams department, demonstrating the expected improvements.

For the HL-LHC collimation upgrade, a series production of ten new TCSPM collimators is being launched by EN-STI. They

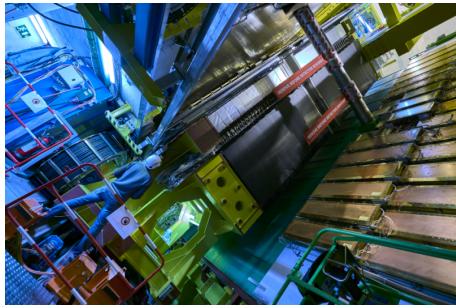
will be installed at point 7 during Long Shutdown 2 (LS2).

All these innovations in the collimator technology stem from the need for a better cleaning performance for the High-Luminosity LHC, when the intensity of the beam will be much higher. These collimation upgrade studies are carried out in a collaborative effort across the Accelerator and Technology sector.

Iva Raynova

## WHAT'S YETS FOR THE EXPERIMENTS?

### What repairs have been made at the experiments during the year-end technical stop



Work to maintain the LHCb detector has been carried out during the YETS. Here you see, from right to left, the muon chambers, the LHC beam pipe, the hadronic calorimeter and the electromagnetic calorimeter. (Image: Julian Ordan/CERN)

The year-end technical stop (YETS) is now over halfway through and just as lots of repairs and upgrades are being done in the LHC and the injectors, each of the LHC experiments is also being refreshed.

LHCb is using this period to perform maintenance work on its many sub-detectors in order to ensure that the detector is ready to make the most of this final year of Run 2, once protons begin to circulate in the LHC again from April 2018. The two-year Long Shutdown 2 will start in December 2018 and, during this period, LHCb will face its first major upgrade, which will allow the experiment to take data at a much higher rate.

At ALICE, the time has been used to undertake a very delicate procedure: an endoscopic cleaning of the time projection chamber (TPC), which will make it more efficient and afford higher collision rates in preparation for Run 3, which will begin in 2021. Using endoscopic cameras, the in-

sides of the TPC were explored and the presence of filaments of dust was detected. These were removed using small extractor tubes that acted like tiny vacuum cleaners. During the long shutdown, an upgrade of the TPC is planned, which will see it equipped with new readout chambers and electronics designed to allow the experiment to cope with the expected higher event rate. Since the central barrel of the TPC will stay as it is, efforts to maintain it are key to guaranteeing the correct functioning and high efficiency of the detector.

For ATLAS, work during the YETS has meant routine repairs and maintenance of the sub-detector systems. Two of the experiment's 32 cathode strip chambers (CSC) were brought to the surface for repairs and then reinstalled in the detector. These multiwire proportional chambers are based on Georges Charpak's Nobel-Prize-winning invention, which celebrated its 50<sup>th</sup> anniversary last week.

At the same time, the pixel detector readout system was upgraded in relevant parts. Consolidation and maintenance has also been carried out on the semiconductor tracker, transition radiation tracker, liquid argon calorimeter, tile calorimeter, muon drift tube chambers, resistive plate chambers, thin gap chambers, forward detectors, trigger and data acquisition and the corresponding service infrastructure.

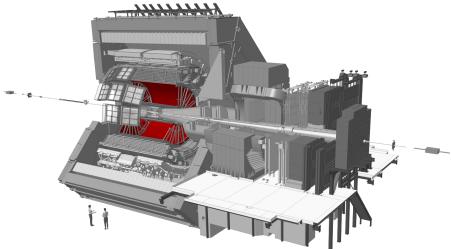
The YETS has been especially busy for CMS. Before the Laboratory's annual two-week closure over Christmas, part of the new pixel tracker installed in early 2017

was brought to a clean room on the surface at Point 5 to begin consolidation works in preparation for the 2018 data-collection run. Members of CMS worked there every day of the closure, performing diagnostic tests to help develop maintenance and refit procedures for the pixel system, the rest of which was brought to the clean room early in the new year. All components have now been re-inserted inside CMS and cold-testing will begin in the first few days of March.

Another key ongoing task for the collaboration is the Phase-1 Upgrade of the hadron calorimeter (HCAL). The "forward" part of this calorimeter (around the beam pipe as it enters/leaves CMS) was upgraded a year ago, while the upgrade of the so-called "endcap" section is now almost complete. The central "barrel" components will be re-equipped during the long shutdown, ready for LHC Run 3 and, eventually, HL-LHC.

In preparation for the long shutdown, CERN's Handling Engineering team and CMS have installed a second 20-tonne crane in the underground experimental cavern housing the detector. The installation was achieved in record time and will give CMS greater flexibility for moving sub-detector elements in the cavern during LS2 and beyond.

The last few weeks of the YETS continue to occupy the full attention of CMS Technical Coordination as the detector is readied for the next round of collisions.



An illustration of the ALICE experiment with the time projection chamber highlighted (Image: CERN)

## HIGH-LEVEL VISITS TO CERN

CERN welcomed the President of the Republic of Austria, the Governor-General of Australia, and the President of the Republic of Mozambique



The President of the Republic of Austria, Alexander Van der Bellen, and his wife (first two on the left), with Fabiola Gianotti, CERN Director-General, and Heinz Faßmann, Minister for Education, Science and Research. (Image: Julien Ordan/CERN)

The President of the Republic of Austria, Alexander Van der Bellen, and his delegation visited CERN on 27 February 2018. Upon his arrival, the President was welcomed by Fabiola Gianotti, CERN Director-General, Eckhard Elsen, Director for Research and Computing, Charlotte Warakaulle, Director for International Relations, Manfred Krammer, EP Department Head and Management Liaison for Austria, Pippa Wells, Head of Member State Relations, Friedemann Eder, CERN Austrian Circle Spokesperson and Stephanie Molinari, Chief of Protocol.

The President visited the CMS experiment, the LHC tunnel, the ASACUSA and AEgIS facilities and the Globe of Science and Innovation. He also attended a round table with a selection of young Austrian scientists.

On 26 February, the Governor-General of the Commonwealth of Australia, Peter Cosgrove, and his delegation were welcomed at CERN by Fabiola Gianotti, CERN Director-General, Eckhard Elsen, Director for Research and Computing, Emmanuel Tsesmelis, Head of Associate Member and Non-Member State Relations, and Geoffrey Taylor, National Contact Physicist. The Governor-General visited the ATLAS control room and the underground experiment area, as well as the LHC tunnel.

The President of the Republic of Mozambique, Filipe Nyusi, and his delegation were welcomed on 26 February 2018 by Eckhard Elsen, Director for Research and Computing. President Nyusi visited the ATLAS control room and the underground experiment area, as well as the LHC tunnel. He also signed the CERN guest book.



The Governor-General of the Commonwealth of Australia, Peter Cosgrove, and Fabiola Gianotti, CERN Director-General. (Image: Julien Ordan/CERN)



The President of the Republic of Mozambique, Filipe Nyusi, in the LHC tunnel. (Image: Julien Ordan/CERN)

# NEW CHAIRS FOR THE ANTIPOTON DECELERATOR USERS COMMUNITY

**Stefan Ulmer and Chloé Malbrunot are the newly elected chairs of the Antiproton Decelerator Users Community**



New and old ADUC chairs: from left to right, Walter Oelert, Chloé Malbrunot, Stefan Ulmer, Horst Breuker. (Image: CERN)

CERN has two essential frontiers for new discoveries: the high-energy physics programme at the LHC and the low-energy precision studies at ISOLDE and the Antiproton Decelerator (AD). In recent years, several globally recognised milestone results have been achieved at the low-energy antiproton frontier. For the last 17 years, this programme has been chaired by Walter Oelert, who was joined by Horst Breuker as deputy chair in 2012. After those many years of fruitful, constructive and visionary service, new chairs Stefan Ulmer (RIKEN) and Chloé Malbrunot (CERN) were elected by the AD experiment spokespersons last October and took over on 23 January this year.

The chairs of the ADUC (Antiproton Decelerator Users Community) perform a variety of tasks. They represent the interests of the AD community in discussions with the CERN management. To

this end, they are in regular contact with the spokespersons of the approved experiments, AEgIS, ALPHA, ASACUSA, ATRAP, BASE and Gbar. They organise the annual ADUC/ELENA meetings and propose the schedule for the distribution of beam time in collaboration with the PS/SPS coordinator.

*Stefan Ulmer*, the newly elected chair, is a chief scientist at RIKEN, Japan, and the founder and spokesperson of CERN's BASE collaboration. He and his team at BASE have performed the most precise measurement of the proton magnetic moment ever achieved, as well as the most precise measurement of the proton-to-antiproton charge-to-mass ratio. In 2017, BASE reported a 350-fold improved measurement of the magnetic moment of the antiproton. In addition, Stefan has invented a reservoir trap technique that enables BASE to operate independently of the AD. Based on this method, he demonstrated the trapping of antiprotons for more than 405 days. For his work on high-precision comparisons of the fundamental properties of protons and antiprotons, he received the 2014 IUPAP Young Scientist Prize in Fundamental Metrology.

*Chloé Malbrunot*, the newly elected deputy chair, first came to CERN in 2005 as a summer student. Chloé received her PhD from the University of British Columbia in Vancouver, Canada. Her work on low-energy precision particle physics was carried out at

Canada's particle accelerator centre, TRIUMF. She came back to CERN in 2012 as a local leader of the Stefan Meyer Institute (SMI), Vienna, to work at the ASACUSA antihydrogen spectroscopy experiment. In 2013, she obtained a CERN research fellowship and joined the AEgIS experiment. Chloé has been a member of CERN's research staff since 2016 and is still involved in both AEgIS and ASACUSA.

*Walter Oelert* led the team that observed the world's first antihydrogen atoms in 1995. A member of the ATRAP experiment, he has been the ADUC chair since 2000. One of his achievements as ADUC chair was to initiate and organise a working group for the ELENA project. He represented the project at several meetings of the SPSC and the SPC. After the approval by the Research Board he participated to the construction of the machine.

*Horst Breuker* became CERN's PS/SPS coordinator in 2009. At that time, he started to work on the ELENA project. At the beginning of 2013, he became a member of the ASACUSA collaboration.

New challenges await the ADUC and its chairs, due to the higher number of experiments and the new operating modes for physics at ELENA.

The outgoing chairs wish the new incumbents great success.

## FEMALE PHYSICISTS AND ENGINEERS GO BACK TO SCHOOL

**Female scientists visited 108 local classrooms to mark the International Day of Women and Girls in Science**



*Cristina Bahamonde Castro, chemical and nuclear engineer, talking about her job during one of the visits at a school in Geneva (Image: Sakura Horiguchi, Chandieu School)*

On the International Day of Women and Girls in Science (11 February) and throughout the preceding week, female scientists and engineers visited schools in the local area to talk about their jobs.

Some 2400 pupils between the ages of 7 and 18 from 108 different classes had the opportunity to meet 47 women work-

ing at CERN, the University of Geneva and EPFL. These women talked about their careers and their daily work, revealed the answers to a few of science's mysteries, sometimes even conducted small experi-

ments, and answered numerous questions on subjects ranging from supernovas to absolute zero and the speed of light. The visitors received an enthusiastic welcome

from the captivated pupils, who were delighted with the talks.

No doubt they've inspired lots of budding scientists and engineers!

Last year, 34 volunteers visited 70 classrooms in the local area.

## COMPUTER SECURITY: CURIOSITY CLICKS THE LINK

### Only the curious click the link – and put their digital assets at risk

Oh, how wonderful e-mails are. And chats. And the web. All this interconnectivity. Blue lines underneath keywords everywhere. Links. URLs. Redirections. All taking us to more information. More cat photos. More distractions. Awesome. Like Christmas, with presents and yet more presents to open. An infinity of presents. But some presents might result in a rude awakening...

The underlying assumption in the above is that you trust the originator of the e-mail, the chat or the webpage, the creator of the blue line, the links and the URLs ... and Santa Claus for the presents. But what if you shouldn't? Would you enter a shabby bar in a dark alley downtown (and risk getting beaten up)? Would you dare put your hand in a rabbit hole (and risk getting bitten by a fox hiding inside)? Would you accept a parcel from a stranger (and risk going to jail if it turns out to be a package of drugs)? Would you take the red balloon from Pennywise the clown and follow him around the corner?

Surely not! But why is it that many people still throw this "surely not" over board and click on random links in random e-mails

from unknown senders, on random attachments from unknown authors, on random webpages of unknown origin? With one wrong click, your computer might get infected. With one single infection, your digital life gets exposed. For many of us, our computers, and even more so our laptops, smartphones or tablets, are the central digital focal points of our lives: we store our personal photos and videos on them, as well as lots of private documents, and we use them as a central hub to access our bank accounts, to communicate with our closest friends (on Facebook or Twitter, or via video or audio streams) or to consult our favourite health applications to check out our well-being. One single infection and all those photos, videos, documents, bank accounts and communication channels, as well as access to our webcams, microphones and medical information, are in the hands of people with malicious intent. Goodbye data, goodbye privacy, goodbye digital life (see our Bulletin article Enter the next level: Doxware (<https://security.web.cern.ch/security/reports/en/articles.shtml>)).

So, be sensible! If you've just got divorced, a love letter from your ex-spouse doesn't

make sense. Neither does an attachment from Deutsche Telekom if you've never lived in Germany, or an e-mail in a language you've never spoken. Your favourite celebrity will never send you naked photos and your bank will never ask you to reset your password. And the advert promising you thousands of dollars for no work is a scam, like anything else offered to you "free" on the internet. Read more about identifying malicious e-mails here ([https://cern.ch/security/recommendations/en/malicious\\_email.shtml](https://cern.ch/security/recommendations/en/malicious_email.shtml)).

Hence, only the curious click the link – and put their digital assets at risk.

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*Do you want to learn more about computer security incidents and issues at CERN? Follow our Monthly Report ([http://cern.ch/security/reports/en/monthly\\_reports.shtml](http://cern.ch/security/reports/en/monthly_reports.shtml)). For further information, questions or help, visit our website (<http://cern.ch/Computer.Security>) or contact us at [Computer.Security@cern.ch](mailto:Computer.Security@cern.ch).*

*The Computer Security Team*

# Official communications

## 119TH ACCU MEETING

**Agenda for the 119 th ACCU meeting to be held on Tuesday, 6 March 2018 at 9:15 a.m. in Room Georges Charpak (Room F, 60/6-015)**

1. Chairperson's remarks
2. Adoption of the agenda
3. Minutes of the previous meeting
4. 40 years of ACCU
  - (a) The beginnings
  - (b) CERN in the 1980s
5. News from the CERN Management
6. Data Privacy Protection
7. Report on services from SMB Department
8. Users' Office News
9. Matters arising
  - (a) Endorsement of a new ACCU representative for the Housing Service review meeting

- (b) Election of ACCU Chairperson
10. Any Other Business
11. Agenda for the next meeting

The **Advisory Committee of CERN Users (ACCU)** is the forum for discussion between the CERN Management and the representatives of CERN Users to review the practical means taken by CERN for the work of Users of the Laboratory. The mandate of ACCU is available on: <http://accu.web.cern.ch/content/mandate>

There are one or two Delegates from each Member State (two Delegates from the large Member States), one Delegate from each of the Associate Members, four Delegates from non-Member States (NMS), and two from CERN. The list of ACCU members is available on: <http://accu.web.cern.ch/content/accu-members>

ACCU meetings are attended by the Director General and members of the Directorate, other members of the CERN management and departmental representatives, the Head of the Users' Office and a representative of the CERN Staff Association. Other members of the CERN Staff attend as necessary for specific agenda items.

**Chairperson:** Dragoslav-Laza Lazic ([Dragoslav.Lazic@cern.ch](mailto:Dragoslav.Lazic@cern.ch))

**Secretary:** Michael Hauschild ([ACCU.Secretary@cern.ch](mailto:ACCU.Secretary@cern.ch))

Anyone wishing to raise any points under "Any Other Business" at the upcoming ACCU meeting is invited to contact the appropriate User representative, or the Chairperson or the Secretary.  
<http://accu.web.cern.ch/>

## SUMMER WORK FOR CHILDREN OF MEMBERS OF THE PERSONNEL

During the period from 11 June to 07 September 2018 inclusive, there will be a limited number of jobs for summer work at CERN (normally unskilled work of routine nature), which will be made available **to children of members of the personnel** (i.e. anyone holding an employment or association contract with the Organization). Candidates must be aged between 18 and 24 inclusive on the first

day of the contract, and must have insurance coverage for both illness and accident. The duration of all contracts will be 4 weeks and the allowance will be CHF 1500.- for this period. Candidates should apply via HR Department's electronic recruitment system (<http://ert.cern.ch>): <https://jobs.web.cern.ch/job/13123>

Completed application forms must be returned by 3 April 2018 at the latest. The results of the selection will be available by the end of May 2018.

For further information, please contact:  
[Virginie.Galvin@cern.ch](mailto:Virginie.Galvin@cern.ch) Tel. 72855  
[Geraldine.Ballet@cern.ch](mailto:Geraldine.Ballet@cern.ch) Tel. 74151)

*HR Department*

# CERN HEALTH INSURANCE SCHEME (CHIS): CHANGES TO THE SUPPLEMENTARY CONTRIBUTIONS

As previously announced, as of 1 March 2018 the CHIS will apply a new scale for the supplementary contributions (see the Official Communication of 12 July 2017 (<https://home.cern/cern-people/official-communications/2017/07/cern-health-insurance-scheme-chis-new-rules-1-september>)). This concerns present and former Staff Members or Fellows, and Beneficiaries of the Pension Fund, who are Main Members of the CHIS and whose spouse<sup>1</sup> has:

1. an income derived from a professional activity (i.e. income from employment or self-employment, or a retirement pension) in excess of 2500.- CHF; and
2. no adequate primary health insurance other than the CHIS.

The supplementary contribution is a monthly lump-sum payable in addition to the monthly contribution, which is determined on the basis of the spouse's gross monthly income according to the table be-

low. The relevant regulatory provisions can be found in Section 2 of Chapter VII, Art. XII 1.06, V 1.02 and XV 1.04 of the CHIS Rules.

The most significant change is the replacement of the five income bands used so far to determine the supplementary contributions by a set of twelve bands. These new bands and the corresponding supplementary contributions are as follows (all amounts are monthly, in Swiss francs):

## **Spouse's Gross Income From (excl.):**

0  
2500  
4500  
6500  
8500  
10500  
12500  
14500  
16500  
18500  
20500  
22500

## **Spouse's Gross Income To (incl.):**

2500	0
4500	170
6500	267
8500	365
10500	462
12500	559
14500	656
16500	753
18500	851
20500	948
22500	1045
No limit	1142

## **Supplementary Contribution**

Staff Members and Fellows will be notified of their new supplementary contribution in their March 2018 payslip. Former Staff Members or Fellows and beneficiaries of the Pension Fund will be notified of any change in their supplementary contribution by e-mail or postal mail.

Questions regarding the new supplementary contributions should be addressed to the SHIPID Service: by e-mail at [chis.shipid@cern.ch](mailto:chis.shipid@cern.ch) or by telephone at +41 (0) 22 766 43 67 (on Mondays or Thursdays between 10:00 and 12:00).

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<sup>1</sup>As per Article S IV 1.02 of the Staff Rules and Regulations, the term "spouse" includes registered partners

# Announcements

## WHAT'S NEW FOR THE ACCELERATORS?

This year's LHC performance workshop took place in Chamonix from 29 January to 1 February.

Frédéric Bordry, Director for Accelerators and Technology, will give a concluding summary session. He will deal with the lessons learnt in 2017, operation of the ac-

celerators in the upcoming year, the last year of Run 2, and plans for the Long Shutdown 2, which will start in December.

**Summary Session of the LHC Performance Workshop 2018** (<https://indico.cern.ch/event/705545/>)

**Wednesday 7 March at 2.00 p.m.  
Main Auditorium**

*Read also Frédéric Bordry's opinion piece here (<https://home.web.cern.ch/cern-people/opinion/2018/02/preparing-last-year-lhc-run-2>).*

## A NEW EDH DOCUMENT TO CONFIRM ORDER RECEPTION

On Friday, 2 March, the "Reception of goods and services" EDH document will replace the "Delivery Acceptance" document.

Its objectives remain the same: the technical contact confirms that the ordered goods and services have been delivered and that they comply with the order.

Why did we change the document?

We didn't have a standard tool for confirming the delivery of a service, or for gathering your feedback on our suppliers' performance. Also, both the objective and the content of the previous document were often perceived as unclear.

So what's new?

- A new design, with clearer and more relevant information;

- More suitable help elements, with tooltips on specific fields;

- A survey to understand your satisfaction with the supplier's performance;

- The document can now be used to confirm the reception of all services (including contracts).

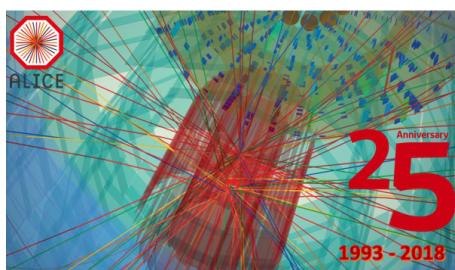
This new document will be easier to use, and will also enable CERN, via the satisfaction survey, to compile reliable, long-term data to make more informed decisions on how to manage relationships with our suppliers.

You will find additional information in the user guide available in the EDH document ("Help" button).

*IPT and FAP departments*

The screenshot shows a web-based form for 'Module order receipt'. It includes sections for 'MODULE ORDER RECEIPT' and 'SUPPLIER MODULE ORDER RECEIPT'. Both sections contain fields for 'Order quantity', 'Order price', 'Previously received', 'To receive', and 'Car receiver date'. Below these are sections for 'Supplier evaluation' with questions like 'Compliance with delivery dates?', 'Quality of the supply or service?', and 'Communication responsiveness from the supplier?'. At the bottom, there is a section for 'Supplier recommendation' with a 'Yes' or 'No' checkbox.

## ALICE'S 25TH ANNIVERSARY



The ALICE collaboration is pleased to announce the celebration of its 25<sup>th</sup> anniversary and invite you to the jubilee session that will take place on:

**Wednesday, 21 March 2018 at 3.30 p.m.  
in the Main Auditorium**

A drink will follow the jubilee session. If you wish to participate, please register by **14 March**, using the following link: <https://indico.cern.ch/event/702897/>.

# AXEL – 2018 - INTRODUCTION TO PARTICLE ACCELERATORS

**AXEL-2018** is a course series on particle accelerators, given at CERN within the framework of the 2018 Technical Training Program. As part of the BE Department's Operation Group Shutdown Lecture series, the general accelerator physics module has been organized since 2003 as a joint venture between the BE Department and Technical Training, and is open to a wider CERN community.

The lecturer is Rende Steerenberg, Group leader of the BE-Operation Group.

**Programme :** Basic Mathematics; Transverse Optics; Lattice calculations; Resonances; Longitudinal Motion; Transfer Lines, Injection and Ejection; Longitudinal & Transverse Beam Instabilities, Colliders.

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

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

The series will be composed of 10 one-hour lectures (Monday 05.03.2018 – Fri 09.03.2018, from 09:00 to 10:15 and from 10:45 to 12:00), given in English with questions and answers also possible in French. Participation in all lectures is encouraged, to allow people to gain maximum benefit from the course.

If you are interested in AXEL-2018, please discuss with your supervisor. Registration is required, participants must sign up via the following link: <https://cern.ch/course/?089AXE01>.

The detailed program is available on the AXEL-2018 indico web page (<https://indico.cern.ch/event/704869/>).

A small contribution of CHF20,- is requested when registering to covers the cost for the printed syllabus.

Attendance will be recorded in the personal training records.

## Organizers:

Rende Steerenberg/BE-OP/79086/164518  
Technical Training/HR-LD/72844/74924

## 6TH THEMATIC CERN SCHOOL OF COMPUTING



The sixth Thematic CERN School of Computing (**tCSC 2018**) will take place this year in **Split, Croatia, from 3 to 9 June 2018**. The theme is “High Throughput Distributed Processing of Future HEP Data”, looking at:

- The challenges of HEP data processing in the post-upgrade scenarios.
- Scientific software as the key to achieving the deliverables of the (HL-)LHC physics programme.

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.

### Applications will be accepted until Sunday, 11 March 2018.

Participation is limited to 24 students.

To register, please go to: <https://indico.cern.ch/e/tCSC-2018>.

## About:

The Thematic Schools are part of the annual series of CERN Schools of Computing, to promote advanced learning and knowledge exchange in scientific computing among 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 on advanced topics; theory and practice; networking and socialisation.

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

For registration and more information on the tCSC 2018, see: <https://indico.cern.ch/e/tCSC-2018>.

Sebastian Łopierński, CSC Director

# 5-8 MARCH AT CERN: 11TH INVERTED CERN SCHOOL OF COMPUTING



The 11<sup>th</sup> edition of the “Inverted” CERN School of Computing (iCSC 2018) will take place at CERN from **5 to 8 March 2018 in the IT Auditorium** (Room 31/3-004).

An excellent programme is planned, consisting of lectures and hands-on exercises selected from a range of proposals submitted by CSC 2017 students. You are not obliged to attend every lecture, indeed you can simply attend the lectures and exercises that interest you the most.

**Attendance is free and open to everyone at CERN**, and the event will be webcast for those who cannot attend in person.

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

Programme and registration: <https://indico.cern.ch/e/iCSC-2018>.

## iCSC 2018 programme

This year's programme, selected from a range of CSC 2017 student proposals, focuses on challenging and innovative topics, including:

- Blockchain and Decentralised Consensus
- Backend Systems
- Complexity and Data Structures
- Data Analysis
- Identity Federation
- Medical Imaging
- Open MP
- Parallel Programming

This year's lecturers are:

- Alejandro Avilés, Bity SA
- Lennaert Bel, Nikhef
- Plácido Fernández, CERN/University Carlos III of Madrid
- Gabriele Gaetano Fronzé, INFN & Università di Torino/Subatech et IMT-Atlantique Nantes
- Christian Graf, Max Planck Institute for Physics
- Hannah Short, CERN
- Victoria Tokareva, JINR
- Georgios Voulgarakis, CERN

## 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 a few days by former CSC students, providing advanced education in specialist topics. The Inverted School provides a platform for them to share their knowledge, turning the students into teachers.

## The CERN Schools of Computing

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

- The Thematic School (tCSC 2018) taking place in June in Split, Croatia; (<https://home.cern/cern-people/announcements/2018/02/6th-the-matic-cern-school-computing>)
- The Main School (CSC 2018) taking place in October in Tel Aviv, Israel.

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

*Sebastian Łopieński, Director, CERN School of Computing*

## Ombud's corner

### COMMUNICATION: NURTURE YOUR RELATIONSHIPS!

It's not uncommon in communication for a hidden message to take on more importance than what's actually said.

Example: you're a workshop technician and you're waiting for your colleague, Tibor, to finish some welding so you can assemble a cryostat that needs to be delivered to an experiment next week. Tibor's work has been held up by a late delivery that's beyond his control. You're probably going to have to make up the time yourself by working overtime. You say to him:

*“So, Tibor, you’re still behind with the welding. I’m going to have to work overtime yet again.”* Hidden message: *“You’re incapable of meeting deadlines. Our work’s behind schedule because of you and it’ll be your fault if I have to work overtime. I obviously can’t trust you.”*

Instead, you could say:

*“Tibor, I can see that you’ve only been able to do half the welding, which means I won’t be able to finish the assembly on time.*

*“Why don’t we both work equal amounts of overtime so we can meet the deadline?”* Hidden message: *“Neither of us is to blame for the situation, so let’s try to share the consequences equally. Let’s work together to meet the deadline.”*

Although the objective facts are the same, the message is very different.

Another example: You’re the secretary of a working group and you’ve forgotten to call

the technical coordinator to find out when she's available. You say to your assistant:

*"Markus, call Stefania for me quickly. I didn't have time yesterday evening."*  
Hidden message: *"I'm allowed to give you orders because I'm your supervisor."*

You could ask him to do the same thing in a more respectful way:

*"Markus, I'm sorry, I forgot to call Stefania again yesterday evening. Could you do it*

*for me, please?"* In other words: *"I may be your supervisor, but I admit that I'm disorganised and I know I can count on you."*

People often don't realise the effect their words have on their relationships with their colleagues, conveying a lack of respect, self-importance, blame or even threats. We remember the tone of a conversation long after we've forgotten what was said. Try to remember the last difficult conversation you had with someone. You probably don't remember exactly what the problem was, but you remember clearly whether the tone

was scornful, threatening or very respectful.

These examples show that the way you communicate betrays your attitude to your colleagues. Be aware of the effects of how you speak and learn to decode the messages hidden behind what others say.

*If you'd like to comment on any of my articles or suggest a topic that I could write about, please don't hesitate to e-mail me at Ombuds@cern.ch .*