# CERN Bulletin

Issue No. 7-8/2019-Wednesday 13 February 2019
More articles at *http://home.cern/cern-people*


## LS2 REPORT: THE PROTON SYNCHROTRON'S MAGNETS PREPARE FOR HIGHER ENERGIES

**Following our article on the PS Booster, we take a look at the next link in CERN's accelerator chain: the venerable PS and its magnet system**

*One of the magnets being driven on a locomotive to the workshop (right) after being extracted from the PS itself (left) (Image: Julien Marius Ordan/Maximilien Brice/CERN)*

The Proton Synchrotron (PS), which was CERN's first synchrotron and which turns 60 this year, once held the record for the particle accelerator with the highest energy. Today, it forms a key link in CERN's accelerator complex, mainly accelerating protons to 26 GeV before sending them to the Super Proton Synchrotron (SPS), but also delivering particles to several experimental areas such as the Antiproton Decelerator (AD). Over the course of Long Shutdown 2 (LS2), the PS will undergo a major overhaul to prepare it for the higher injection and beam intensities of the LHC's Run 3 as well as for the High-Luminosity LHC.

One major component of the PS that will be consolidated is the magnet system. The synchrotron has a total of 100 main magnets within it (plus one reference magnet unit outside the ring), which bend and focus the particle beams as they whizz around it gaining energy. “During the last long shutdown (LS1) and at the beginning of LS2, the TE-MSC team performed various tests to identify weak points in the magnets,” explains Fernando Pedrosa, who is coordinating the LS2 work on the PS.

*(Continued on page 2)*

## A WORD FROM THE DIRECTOR GENERAL

### CELEBRATING WOMEN AND GIRLS IN SCIENCE

**Yesterday was the International Day of Women and Girls in Science, an annual event that CERN is proud to support. This year, as part of an initiative of CERN, the University of Geneva and EPFL, some 57 women from CERN will be going into local 146 school classes throughout this week to discuss careers in science with groups of young people, boys as well as girls, between the ages of 7 and 15.**

*(Continued on page 2)*

## In this issue




**Published by:**
CERN-1211 Geneva 23, Switzerland writing-team@cern.ch
**Printed by:** CERN Printshop


CERN-ISSN: **Printed version:** 2011-950X
**Electronic Version:** 2077-9518

# A WORD FROM THE DIRECTOR GENERAL

## CELEBRATING WOMEN AND GIRLS IN SCIENCE

**But it's not just for one day a year that we promote diversity in science, and that's why I signed the joint statement issued by EIROforum yesterday, celebrating the contributions and achievements of women and girls in science. CERN's sustained commitment to diversity and inclusion in all their facets (gender, ethnicity, culture, etc.) can be seen across the Organization and in our career opportunities. We monitor our Human Resources programmes closely to ensure that they respect the value of diversity. For instance, our recruitment policy, which places excellence first, is designed to encourage a diverse workforce – job titles are gender neutral and selection boards are trained to avoid unconscious bias. We have a range of family-friendly policies in place, including maternity, adoption, parental and other forms of leave for family reasons, as well as dual career support, childcare and education facilities on site and a breastfeeding room. We organise awareness-raising events on themes related to diversity, such as the Gender Equality in Education workshop held in 2018; last year, we held no fewer than 20 of them. And we have support structures enabling members of the personnel to talk to someone safely and confidentially if they feel the need. In 2015, the Diversity Office introduced a module on gender inclusivity into CERN's international high school teachers' programme in order to help teachers develop the competences needed to spark the interest of both female and male students in science.**

**CERN collects and reports gender data through which we observe an increase both in the representation of women among fellows and students as well as in the proportion of women who are senior staff. Overall, women now represent 21% of CERN staff, compared to 14% in 1995. The overall percentage of women across the scientific population at CERN is about 18%, compared to 8% in 1995. This shows good progress, but there's still much to be done, which is why I'm personally proud to support the International Day of Women and Girls in Science.**

*Fabiola Gianotti*
*Director-General*

# LS2 REPORT: THE PROTON SYNCHROTRON'S MAGNETS PREPARE FOR HIGHER ENERGIES

The team identified 50 magnets needing refurbishment, of which seven were repaired during LS1 itself. “The remaining 43 magnets that need attention will be refurbished this year.”

Specifically, one of the elements, known as the pole-face windings, which is located between the beam pipe and the magnet yoke, needs replacing. In order to reach into the magnet innards to replace these elements, the magnet units have to be transferred to a workshop in building 151. Once disconnected, each magnet is placed onto a small locomotive system that drives them to the workshops. The locomotives themselves are over 50 years old, and their movement must be delicately managed. It takes ten hours to extract one magnet. So far, six magnets have been taken to the workshop and this work will last until 18 October 2019.

The workshop where the magnets are being treated is divided into two sections. In the first room, the vacuum chamber of the magnets is cut so as to access the pole-face windings. The magnet units are then taken to the second room, where prefabricated replacements are installed.

As mentioned in the previous LS2 Report, the PS Booster will see an increase in the energy it imparts to accelerating protons, from 1.4 GeV to 2 GeV. A new set of quadrupole magnets will be installed along the Booster-to-PS injection line, to increase the focusing strength required for the higher-energy beams. Higher-energy beams require higher-energy injection elements; therefore some elements will be replaced in the PS injection region as part of the LHC Injectors Upgrade (LIU) project, namely septum 42, kicker 45 and five bumper magnets.

Other improvements as part of the LIU project include the new cooling systems being installed to increase the cooling capacity of the PS. A new cooling station is being built at building 355, while one cooling tower in building 255 is being upgraded. The TT2 line, which is involved in the transfer from the PS to the SPS, will have its cooling system decoupled from the Booster's, to allow the PS to operate independent of the Booster schedule. “The internal dumps of the PS, which are used in case the beam needs to be stopped, are also being changed, as are some other intercepting devices,” explains Pedrosa.

The LS2 operations are on a tight schedule, notes Pedrosa, pointing out that works being performed on several interconnected systems create constraints for what can be done concurrently. As LS2 proceeds, we will bring you more news about the PS, including the installation of new instrumentation in wire scanners that help with beam-size measurement, an upgraded transverse-feedback system to stabilise the beam and more.

More pictures of the PS magnets are available on CDS:

*Achintya Rao*

# GET READY FOR WEB@30

**On 12 March, CERN will celebrate the 30th anniversary of the World Wide Web. The programme is now available**


In March 1989, Sir Tim Berners-Lee wrote a document entitled " Information Management: A Proposal". By 1991, this vision of universal connectivity had become the World Wide Web! To mark the 30th anniversary of this invention, which revolutionised communication around the globe, CERN will be holding a special event on **12 March**.

**8 a.m. to 10 a.m.: *Web@30***

This event, organised in collaboration with the World Wide Web Foundation and the World Wide Web Consortium (W3C), will kick-start a series of celebrations worldwide. Sir Tim Berners-Lee and Robert Cailliau, together with other Web pioneers and leading experts, will explore the challenges and opportunities of innovative technologies,past, present and future. Visit www.cern.ch/web30 for the full programme and a list of speakers.

If you would like a place at this celebration, please submit a request before 24 February:
- via this page (https://indico.cern.ch/event/796686/) if you have a CERN computing account
- via this page (https://indico.cern.ch/event/796742/) if you are an alumnus and do not have a CERN computing account

Unfortunately, places in the auditorium are limited, so in the case of too many requests, we will draw requests at random.

The event will be broadcast via the Web (of course!). Click on this link (https://webcast.web.cern.ch/) or go to the Council Chamber (503-1-001) or the IT auditorium (31-3-009) on the Meyrin site, or the BE auditorium (774-R-013) on the Prévessin site.

Don't hesitate to let your colleagues in other institutes know that they can organise their own viewing parties. To do so, they can register on this site (https://indico.cern.ch/event/774736/)

**4.30 p.m.: "Ask me anything" - your questions to the experts**

An "Ask me anything" session will take place (in English) on Reddit. The Web pioneers and experts will answer all your questions.

**8 p.m. to 10 p.m.: Thirty years of the Web: film followed by a discussion**

Screening of the *ForEveryone.net* documentary (in English with French subtitles), followed by a discussion (in French, with simultaneous interpretation into English) with panel members who played roles during the early years of the Web's evolution.

The full programme is available on this page ( https://indico.cern.ch/event/796527/). Free entry, booking required via this page ( https://indico.cern.ch/event/796527/).

*The evening event is being organised by CERN, in conjunction with FIFDH, CineGlobe and the* Commune de Meyrin .

# A LONG-SIGHTED LASER BEAM

**A team from CERN and the IPP in Prague has developed a laser beam with remarkable properties that has potential applications in many fields**

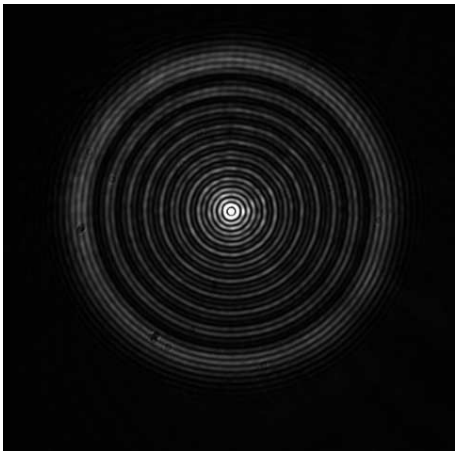


*Image 1: Example of a transverse cross-section of a beam produced by the structured laser beam. The central axis, which is very dense, is surrounded by several halos of light. The darkness between the halos is absolute, creating a strong contrast. This contrast makes it possible to measure the position of the halos of light with great precision, and thus to validate the mea-*

Sometimes, opportunities fall into our laps when we're least expecting them. A team of CERN surveyors, in collaboration with the Institute of Plasma Physics in Prague (IPP), has developed a pioneering laser beam while working on a particularly challenging alignment system. "While developing the alignment system for the HIE-ISOLDE accelerator, we discovered that the system generating a structured laser beam had astonishing optical properties", explain Jean-Christophe Gayde (CERN, EN-SMM-ESA) and Miroslav Šulc (IPP), the system's inventors. "We didn't initially plan to develop a generator for this kind of

laser beam, but the results of our research were very encouraging."

Continuing with the "unplanned" project, the two teams developed the "structured laser beam", which is extremely innovative in that it produces beams that are almost non-diffractive. The central axis of the beams diverges very little, even over a distance of several hundred metres: 200 metres from the system, the central axis of the laser measures only a few millimetres in diameter, hardly more than when it left the generator (see image 2)! The systems available on the market produce such beams over a distance of only a few metres.

Its exceptional properties give the structured laser beam potential in many fields, including communication, medicine, physics and, above all, metrology. "At CERN, this laser would be a valuable tool for aligning magnets, thanks to its low central divergence", says Jean-Christophe Gayde. "And it has one particularly remarkable characteristic: in certain conditions, the beam reconstructs itself after meeting an obstacle. In other words, its halo can reconstruct the central beam after it has passed the obstacle, in a similar way to a Bessel beam."

The structured laser beam can be produced from source laser beams in a wide range of wavelengths and its geometry can be easily adapted (diameter of the central divergence, number of circles in the halo, etc.). The generator itself can be very compact (the size of a matchbox) and adjustable, while still being fairly inexpensive. "We filed a patent application in May 2018 and since then we've been in talks with several potential clients in Europe to establish collaborations", says Amy Bilton, the knowledge transfer officer (KTO) responsible for the project within CERN's Knowledge Transfer group. "Studies are ongoing and more tests are needed, but the structured laser beam could considerably improve some applications that use light beams, in particular laser beams."

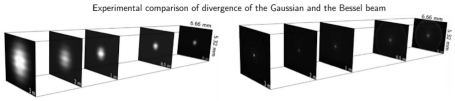



*Image 2: Comparison of the central divergence of a non-structured laser beam (left) and a structured laser beam (right), at distances of 0 to 3 metres from the generator. (Image: CERN/IPP)*

*Anaïs Schaeffer*

# CERN'S WOMEN IN TECHNOLOGY GROUP LAUNCHES A MENTORING PROGRAMME

**In 2018, the Women In Technology group launched a pilot mentoring programme with 11 mentor-mentee pairs to offer guidance to young CERN colleagues**

*Training session for the mentors and mentees involved in the Women in Technology mentoring programme (Image: CERN)*

Last year, CERN's Women In Technology * (WIT) Steering Committee launched a pilot mentoring programme to offer talented young people at CERN, in particular women, guidance on career evolution and to help them have a more enriching working experience, reducing feelings of isolation and balancing work and personal commitments.

---

"The Mentoring Programme has given me the opportunity to tap into the experience and knowledge of someone with a completely different background at CERN. I thoroughly enjoyed getting to know and working with my mentor, whom I don't believe I would have met without the WIT initiative. We have even decided to continue our meet-ups after the end of the formal programme because it was such a positive experience for both of us."
*A mentee*

---

As we celebrate the International Day of Women and Girls in Science, it is important to remember that work still needs to be done to achieve gender equality and to foster full and equal access to and participation in science for women and girls.

Over six months, 11 mentors shared their knowledge of CERN and their experience with 11 of their young colleagues. "We received many expressions of interest from the WIT community to put in place a structured mentoring scheme," explains Maria Alandes (IT department), the main organiser of the pilot programme. "So we decided to organise a pilot programme. Eleven of our experienced colleagues volunteered to be mentors and we received 15 applications from potential mentees."

The WIT Mentoring Programme Committee therefore formed 11 mentor-mentee pairs, connecting people from the same department or field. "We organised a training session in May so that everyone had a good understanding of what mentoring actually is," adds Maria. "The pairs then met privately to define their objectives together and, from there, followed their own path."

---

"Our mentoring process was highly beneficial for both of us. The reason is that we quickly built mutual trust and confirmed shared values. I learned a lot from my mentee and hope to continue this enriching experience with her."
*A mentor*

---

Although the mentoring relationship is confidential, the WIT Mentoring Programme Committee remains available throughout: “We are the central referral point for mentees and mentors who have questions or problems, so that any issues can be resolved in a timely manner,” adds Maria.

The pilot programme, which is now over, was a great success and the WIT Mentoring Programme Committee is preparing to organise the 2019 programme.

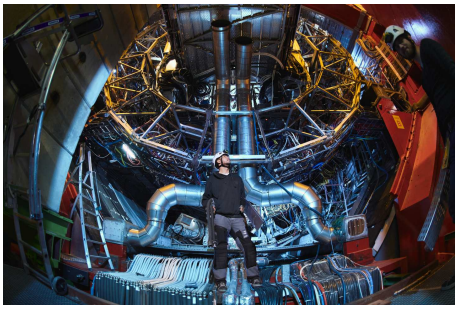
Want to take part in the 2019 mentoring programme as a mentor or mentee? Write to wit-mentoring-committee@cern.ch.

**The WIT group is independent and works on a voluntary basis. For more information, go to: https://women-in-technology.web.cern.ch/*

*Anaïs Schaeffer*

# UPGRADING ALICE: WHAT'S IN STORE FOR THE NEXT TWO YEARS?

**Major internal improvements await the ALICE detector during CERN's Long Shutdown 2 (LS2)**



*The ALICE team is ready for the challenge of upgrading the detector (Image: Maximilien Brice, Julien Ordan/CERN)*

With massive red doors weighing 350 tonnes each, it takes more than uttering “open sesame” to open the ALICE detector. Behind the doors lie the inner workings of a unique detector built to study the conditions of matter moments after the birth of the Universe, conditions which are recreated in the LHC.

When the CERN accelerator complex was switched off in December 2018, scientists and technicians entered the ALICE cavern, 56 metres underground, to open the massive shielding around the magnet and to start work on the detector. This maintenance and upgrade work will last two years, the time CERN has allocated for a technical break called Long Shutdown 2 (LS2). For ALICE, LS2 activities started at a fast pace, with a full programme planned of upgrades or replacements of subdetectors as well as of trigger and data-acquisition systems.

ALICE is dedicated to the study of quark-gluon plasma (QGP), a state of matter that prevailed in the first instants of the Universe. By colliding particles, namely protons and lead nuclei, from the Large Hadron Collider (LHC), ALICE can harvest data at the high-energy frontier.

Increased luminosity, first in 2021 and later in the High-Luminosity LHC (HL-LHC) project, will open up a range of possibilities and challenges for ALICE. An increase in luminosity – a measure of the number of collisions per unit of time – will allow ALICE to study rare phenomena and perform high-precision measurements, shedding light on the thermodynamics, evolution and flow of the QGP, as well as on quark and gluon interactions.

**Hunting for the right tracks, starting from the core** During this upgrade, a smaller-diameter beam pipe will replace ALICE's existing one. Inside the beam pipe, particles travel at almost the speed of light and smash together inside the core of the detector, generating many new particles. Scientists are interested in determining the position of the interaction point, and reducing the beam pipe's diameter improves this measurement by a factor of three with respect to the present detector. ALICE will also become better at detecting particles with a shorter lifetime, i.e. those decaying closer to the interaction point.

The need for a new beam pipe is linked to the replacement of the **inner tracking system (ITS)**, which surrounds it. The new ITS will be equipped with innovative, compact pixel sensor chips. This tracking system measures the properties of the particles emerging from the collisions, so it must be fast-acting and fine-grained to handle the higher collision rates in the future. The new system will dramatically improve the capacity of the detector to pinpoint and reconstruct the particle trajectories.

The sensor and readout chips built into the same piece of silicon for the new inner tracking system will also be employed in the **muon forward tracker (MFT)**, which tracks muons close to the beam pipe. This promises excellent spatial resolution, making ALICE not only more sensitive to several measurements, but also able to access new ones currently beyond reach.

A major upgrade of the ALICE **time projection chamber (TPC)**, an 88-cubic-metre cylinder filled with gas and read-out detectors that follows particles' trajectories in 3D, is also ongoing. Charged particles spraying out from the collision point ionise the gas along their path, liberating clouds of electrons that drift towards the endplates of the cylinder. These make up a signal that is amplified and then read. The current read-out, based on multi-wire proportional-chamber technology, will not be able to cope with increased interaction rates, so it will be replaced with multi-stage gas electron multiplier (GEM) chambers. This upgrade will increase the read-out rate of the detector by about two orders of magnitude.

In addition, a new **fast interaction trigger detector (FIT)** will detect particles that scatter with a small angle relative to the beam direction and will replace three current trigger detectors. It will remove unwanted signals, including interactions of the beam with the residual gas in the beam pipe.

**A factor of 100 gain in statistics** As a consequence of the increased luminosity and interaction rate, a significantly larger amount of data will have to be processed and selected. More powerful electronics, data processing and computing systems

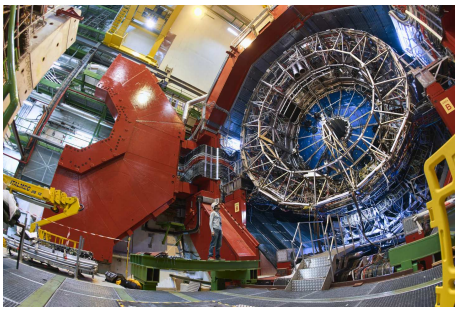
have therefore been designed to sustain high throughput and performance. The ALICE collaboration is currently installing a new data centre above ground to improve computing capacity. When the new LHC run starts in 2021, the significantly improved detector will offer a factor of 100 gain in statistics.

When ALICE's magnet doors close again in summer 2020, they will hide an even more powerful instrument, ready to embark on more collisions and more data-taking.

Read more in “ALICE revitalised” in the latest *CERN Courier*, which also has LS2 highlights from ATLAS, CMS and LHCb.

---

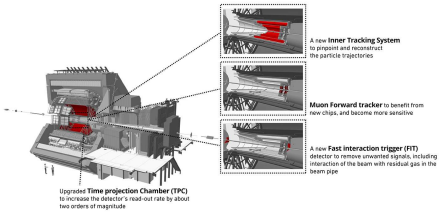
More photos from LHCb are available on CDS (*https://cds.cern.ch/record/2651016*)



*The 16-metre-tall doors of the ALICE experiment magnet, each weighing 350 tonnes, are now open to allow scientists and technicians to work on the detector upgrade. (Image: Julien Marius Ordan/CERN)*

*Work has begun on the inner sub-detectors of the ALICE experiment ahead of the installation of new equipment. (Image: Maximilien Brice/Julien Marius Ordan/CERN)*

*Letizia Diamante*




*This diagram of the ALICE detector shows some of the maintenance and upgrade work in store in the coming two years*

# TRANSFORMING LHCB: WHAT'S IN STORE FOR THE NEXT TWO YEARS?

**The LHCb detector will undergo a metamorphosis during CERN's second long shutdown (LS2)**

*Opening of the LHCb detector in early December 2018 (Image: Maximilien Brice/CERN)*

The LHCb experiment will undergo a metamorphosis over the coming two years, during CERN's maintenance and upgrade period known as Long Shutdown 2 (LS2). When the Large Hadron Collider (LHC) restarts in 2021, the proton–proton collision rate at LHCb will be increased by a factor of five, and the collaboration is upgrading its detector to be ready for it.

The LHCb experiment is trying to solve the mystery of why nature prefers matter over antimatter : small asymmetries between the two could explain why matter emerged from the aftermath of the Big Bang while antimatter did not. In particular, LHCb is hunting for beauty or bottom (b) quarks, which were common at the infancy of the Universe and can be generated in their billions by the LHC, along with their antimatter counterparts, beauty antiquarks.

**Forty is better than one** As every second of the LHC corresponds to several million proton–proton collisions, a detector's trigger system needs to decide which data are important to keep and which can be discarded.

Within the LHC, bunches of protons travel in two beams, clockwise and anticlockwise, at almost the speed of light. The beams cross one another in a detector every 25 nanoseconds, corresponding to a frequency of 40 MHz (40 million times per second). In previous years, LHCb filtered down this “event rate” to 1 MHz, using fast electronics to select the most interesting events. Those events were then processed and sifted further. But from 2021 onwards, this will change radically: the whole detector will read at the full rate of 40 MHz to allow event selection to be done more precisely and flexibly by the software. For this reason, the electronics of essentially all the subdetectors will be modified and the computing power of the LHCb event selection system (trigger) will become more powerful.

Flowing at an immense rate of 4 terabytes per second, data will travel from the underground hall, straight from the detector electronics, via some 9000 300-metre-long optical fibres, into a new computer centre that is nearing completion. There, around 500 powerful custom-made boards will receive and transfer data to thousands of processing cores.

**A faster VELO** The vertex locator (VELO) – the subdetector that measures the distance between the collision point and the point where B hadrons (composite particles containing at least one b quark or antiquark) transform into other particles – is one of the key components being upgraded during LS2. The new VELO consists of pixel tracking layers, which offer improved hit resolution and simpler track reconstruction. It will also be closer to the beam axis: 5.1 mm as opposed to 8.4 mm. A new chip, the VELOPIX, capable of collecting signal hits from 256×256 pixels and sending data at a staggering rate of up to 20 Gb/s, was developed for this purpose.

**Mirror, mirror on the detector** The ring-imaging Cherenkov (RICH) detectors, which determine particles' identities, will be equipped with a new mirror system. This is required to deflect, focus and detect cones of light emitted by travelling particles in an environment with much larger particle densities.

**New silicon-microstrip sensors and SciFi tracking** Currently, the main tracking system reconstructs the path of charged particles in four tracking stations: one between RICH-1 and the LHCb dipole magnet, and three between the magnet and RICH-2. In the future, a new upstream tracker (UT) with innovative silicon-microstrip sensors will be installed in place of the station before the magnet. The three tracking stations after the magnet will be replaced by a new type of station based on scintillating fibres (SciFi), read out at one extremity by silicon photomultiplier (SiPM) arrays.

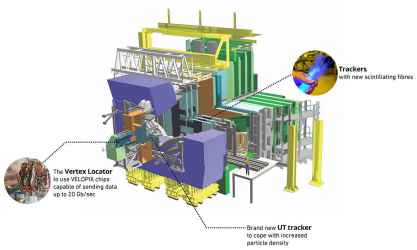
The SciFi tracker represents a major challenge for the collaboration, not only due to its complexity, but also because the technology has never been used for such a large area in such a radiation environment. Scientists ordered more than 11 000 km of fibre, which they meticulously verified and even cured of a few rare and local imperfections.

With the planned higher luminosity and a greatly improved ability to pick the most interesting events, the transformed LHCb can look forward to unprecedented results in the future.

Read more in “LHCb's momentous metamorphosis” in the latest *CERN Courier*, which also has LS2 highlights from ALICE, ATLAS and CMS.

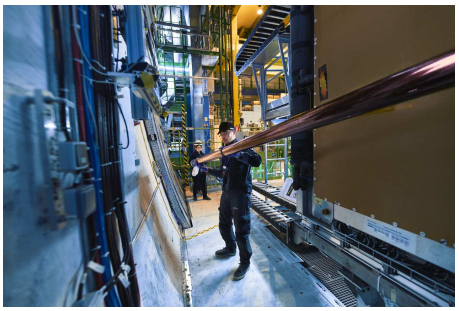
---

More photos from LHCb are available on CDS




*Highlights of the many LHCb upgrades taking place during LS2*

*Prototype vertex locator (VELO) pixel modules were developed last year ahead of the upgrade (Image: Julien Marius Ordan/CERN)*



*Removing the beam pipe of the LHCb experiment in early January 2019 (Image: Julien Marius Ordan/CERN)*

*Letizia Diamante*

# COMPUTER SECURITY: NEGATIVE LEGACY WHEN MOVING ON?

### Before you embark on your future journey, take care of your digital legacy at CERN

CERN's academic environment is highly volatile. Thousands of people join CERN every year. Thousands more leave during the same time span. Lots of comings and goings. Changes in contract. Affiliation. Home institute. Function. Great successes and accomplishments while at CERN lead to thrilling new challenges outside. The very idea of people moving on even forms part of CERN's educational mandate. But please, before you embark on your future journey, take care of your digital legacy at CERN.

As a staff member or user working for CERN or at CERN, you are eligible for a multitude of computing resources: a mailbox, disk space, registered devices, databases, websites, virtual machines and more. Usually, these resources are categorised as “professional” or “personal”. “Professional” resources are usually deployed for the operations of the Organization, for its research programmes, to serve our community, for science, for controlling accelerators and experiments, for data-taking, for physics analysis. While one individual always has full responsibility for each resource, they are often used by many, such as computing clusters pledged to separate collaborations, disk space assigned to dedicated experiments, or software repositories managed by individual projects. On the other

hand, “personal” resources are usually directly registered under your name, and may hold private or personal information like your personal laptop or smartphone registered with CERN; your mailbox; private documents you store in your home folder on AFS, DFS, EOS or CERNbox; or your personal website hosting your CV, papers and other achievements. The CERN Computing Rules (OC5) explicitly tolerate personal use (OC5, Annex on “Rules for personal use”) as long as its duration is limited, the resources used are negligible, and the activity is not illegal or inappropriate – among other requirements*. That split between “professional” and “personal” is particularly important once your affiliation with CERN ends and you leave the Organization: Unless you request otherwise, “professional” resources are automatically reassigned to your supervisor, while “personal” resources are purged and lost forever after a short grace period of six months (some “test” resources are purged after a much shorter, but still defined time span).

This is where “negative legacy” might kick in: unfortunately it is a common occurrence for professional stuff to be stored under the “private” label – and purged after the aforementioned grace period. Software written by a summer student, stored in a local home folder, irretrievably lost. Personal virtual machines running an important control system, terminally purged. Project databases permanently deleted. Experiment websites gone forever... What about your legacy? And what about the legacy of your supervisees? If you are a resource owner, take a moment to review the usage of the computing resources registered under your name. If you are a supervisor, it is your responsibility and in your interest to guarantee a smooth handover when your supervisees or students leave! Check for example the CERN Resource Portal, the network database, or the OpenStack cloud service. Are there resources, e.g. webpages or virtual machines, which are labelled “personal”, but are technically “professional”? Is there software and code (snippets) which should be committed to your project's central software repository like CERN Gitlab ? Are all essential papers and presentations archived on the CERN Document Server ? What about technical documentation which should go to EDMS ? Better to have this sorted out now than to be surprised (and sorry!) once those resources are gone... Plan ahead for a positive legacy**!

*Where that fails, see our *Bulletin* articles on “Computing power for professionals... only!”, “Rules: what's allowed and what isn't” and “Virtual Misconduct – Real Consequence”.

** If you encounter orphaned resources that might become the victim of a “negative legacy”, please contact Computer.Security@cern.ch, who will be able to recover these resources in accordance with CERN's policy on “Third party access to users' accounts and data”.

---

*Do you want to learn more about computer security incidents and issues at CERN? Follow our Monthly Report. For further information, questions or help, check our website or contact us at Computer.Security@cern.ch.*

*The Computer Security Team*

# Official communications

## SUMMER WORK FOR CHILDREN OF MEMBERS OF THE PERSONNEL

**During the period from 17 June to 13 September 2019 inclusive, there will be a limited number of jobs for summer work at CERN**

During the period from 17 June to 13 September 2019 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 1510.- for this period.

Candidates should apply via HR Department's electronic recruitment system, SmartRecruiters: http://smrtr.io/VHpH. Completed application forms must be returned **by 1 April 2019 at the latest**. The results of the selection will be available by the end of May 2019.

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

*HR Department*

# OFFICIAL NEWS REGARDING THE CERN SAFETY RULES

**A new CERN Safety Rule has been published on the CERN website dedicated to the Safety Rules**

The CERN Safety Rule listed below has been published on the CERN website dedicated to the Safety Rules:

General Safety Instruction GSI-SO-13 “Establishment and revision of the CERN Safety Rules”: https://edms.cern.ch/file/2036572/ LAST_RELEASED/GSI-SO-13_EN.pdf

This General Safety Instruction replaces Safety Procedure SP-R1 “Establishment, updating and publishing CERN Safety Rules”.

The CERN Safety Rules apply to all persons under the Director General's authority. They are available under the following link: http://www.cern.ch/safety-rules

# TAXATION IN FRANCE - PUBLIC MEETING ON 26 FEBRUARY 2019

**A public meeting dedicated to taxation in France will take place on Tuesday, 26 February 2019, from 1.30 p.m. to 4.30 p.m. in the Main Auditorium (500/1-001)**

A public meeting dedicated to taxation in France will take place **on Tuesday, 26 February 2019, from 1.30 p.m. to 3.30 p.m. in the Main Auditorium** (500/1-001).

The guest speakers at this meeting will be tax inspector Mr Gérard Polizzi, deputy head of the Bellegarde-sur-Valserine tax office, and senior tax controller Ms Françoise Héduy, who are experts in the subject and will answer any questions that members of the personnel living in France may wish to ask.

The following questions, among others, will be addressed:

- defining one's domicile for tax purposes and filing a declaration of income in France,
- what the income declaration should contain (in how to declare income from a French or foreign source),
- declaration of bank accounts abroad,
- liability for the payment of social-security contributions,
- housing tax (*taxe d'habitation*),
- taxation at source (“pay-as-you-earn”).

This public meeting will ONLY address questions of principle and we expressly invite you not to ask questions on personal matters.

For all questions on personal matters, including how to complete the various sections of your income declaration form given your own personal circumstances, you are invited to refer to the general information provided in the admin e-guide (*http://admin-eguide.web.cern.ch/procedure/declaration-des-revenus-en-france*) or to the instructions attached to the income declaration form, or to contact the tax office (*Service des Impôts des Particuliers*) for your place of residence.

Please note that this meeting will be held in French and that simultaneous translation into English will be provided.

Information on the Indico page.

*HR Department*

# Announcements

## CONFERENCE: SECURITY AT CERN | 26 FEBRUARY

**Tuesday 26 February from 11h00 to 12h30**
**CERN Main Auditorium (500-1-001)**
**The talk will be given by Lluis Miralles, Head of SMB Department**

CERN has established and implemented its security strategy to ensure the protection and safety of the personnel, the public, infrastructure and facilities against malicious acts. This is achieved through a combination of human, technical and organisational means designed to avert or reduce the risk of occurrence of such an act on the CERN premises.

CERN's specific activities and geographical environment, its status as an international organisation and the worldwide security situation make the implementation of a security strategy very particular. In the talk, details on the practical deployment of the strategy and its results are presented.

# Obituaries

## BASTIAAN DE RAAD (1931–2018)

*Bastiaan de Rad in 1975, in front of a map of the SPS accelerator (Image: CERN)*

It is with great sadness that we announce the death of our friend and colleague Bas De Raad.

A memorial service will be held on Sunday 24 th March at 14.30h at the Temple Protestant de Satigny.

A full obituary will be published in the May/June issue of the *CERN Courier* .

*His colleagues and friends*

# ANDRÉ MISCHKE (1972–2018)

**In memory of André Mischke, by the ALICE collaboration**

On Thursday, 8 November 2018, André Mischke passed away at the age of 46. He had been fighting a serious illness for more than a year, but had always been upbeat and optimistic about his recovery and the news of his passing came unexpectedly for many of us.

André had been involved in ALICE from before data-taking began and worked in the field of heavy flavour physics. He was one of the first to perform analysis on this topic in the Netherlands, starting with open heavy flavour, in particular D* resonances„and later moving on to heavy flavour leptons and jets. André attracted and supervised a large number of PhD students and postdoc fellows from different countries who took part in these studies, and many of them are still working with us at ALICE or in the field of heavy ion physics. Besides his research at ALICE, he also had an interest in developing medical applications for detector technology. In his work, André was always looking ahead and was very enthusiastic about new projects and future experimental programmes.

André had a keen sense for making new connections and was very passionate about training a new generation of researchers and stimulating young colleagues to participate in physics discussions. To this end, he co-organised several events in the Hot Quarks workshop series, which specifically targets young researchers, participated in several juries for prizes at conferences and was a founding member of the Young Academy of Europe. In addition, André brought several larger meetings to Utrecht, including the Heavy Flavour Workshop in 2012 and the Strange Quark Matter conference in 2017.

At the university, André was active in teaching at the Bachelor's and Master's levels, in shaping the curriculum of the courses and in supervising research projects.

André had an extensive network of colleagues and friends in the field, not only within the ALICE collaboration, but also in other experiments, such as STAR at RHIC, as well as among theoretical physicists. We remember André as an enthusiastic physicist and we will miss his presence at meetings and in discussions. Our thoughts go out to his wife and daughter and the other members of his family.

# LOUIS BURNOD (1932–2018)

Louis Burnod, our friend and colleague, passed away suddenly on 20 December. We are all deeply affected by his passing. Although he had left the world of work to join the ranks of the retired, he remained very active, curious, dynamic and open, just as we had known him throughout his career at CERN.

A graduate of the *École nationale supérieure d'ingénieur en électrotechnique* at the University of Grenoble, Louis Burnod first worked at the Orsay linear accelerator laboratory (LAL), from 1957 to 1971. In 1963, he became the head of the linear accelerator service and at the start of the 1970s he was sent to CERN by LAL as a visiting scientist to work on the control system of the Proton Synchrotron (PS). In 1971, he became a member of the CERN personnel as an engineer and joined the Super Proton Synchrotron (SPS) project. He later moved to the Accelerators Directorate (AC-DI), where he remained until his retirement in 1999.

Louis Burnod came to CERN with an excellent knowledge of accelerators and quickly became an indispensable member of the teams working on the main project at the time, the SPS, to which he made hugely valuable contributions. He subsequently participated in all the development phases of the machine, in particular its transformation into a proton-antiproton collider.

In 1990, he joined the LHC management team, helping to drive this unique project towards its first approval in 1994 and final approval in 1996.

At work, his collaborative spirit, constructive remarks and sense of humour were much appreciated and contributed to a pleasant and relaxed atmosphere.

Those who worked with him could not help but praise his courtesy and the clear way in which he explained his requests, which were precise and exacting but never over-emphatic or over-complicated, since they were always logical and well-prepared.

He was also well-known for being a great lover and defender of nature. Through the AGENA (*Association Gessienne de Défense de la Nature*) association, he actively contributed to the promotion and creation of the *Haute Chaîne du Jura* national nature reserve.

He loved to introduce people to the Jura, a place that he had so championed. The mountains held no secrets for him and inspired a child-like joy that he could barely contain. He tore down the slopes like a mountain goat and, on his cross-country skis, he always went off-piste for maximum enjoyment. No one could hope to keep up with him.

We were lucky to have shared a meal with him a few days before he left us. He always enjoyed these reunions and never missed a chance to catch up with a few colleagues and talk about his many passions.

Our thoughts are with Jeanine, and his children and grandchildren, of whom he was

so proud. We will not forget Louis and how he always had time to help and listen to others.

*His former colleagues and friends*

# Ombud's corner

## SHARING KNOWLEDGE

Barbara* has accepted a new role in a new service, where she hopes to have more opportunities to use her skills as an analyst. But after her first few days on the job, she's already disillusioned, because the procedures and spreadsheets she's taken over from her predecessor are much more complicated than she expected. To make matters worse, there's no record of the work that's already been done and her predecessor has left CERN.

Barbara begins by closely analysing the spreadsheet formulae and macros to try to figure out the logic behind them, which takes her a long time. Her colleague Simon*, who's been working in the service for more than ten years, knows all its ins and outs and helped set up many of its systems, but he's always snowed under and is often glued to his work on the screen. Nevertheless, Barbara decides to ask him for some advice. Because it all seems obvious to him, he doesn't understand his new colleague's problems and loses patience with her apparent slowness. He doesn't realise the extent of the gap between his knowledge and hers. Barbara is deeply troubled by this state of affairs and her despondency gradually turns into anxiety.

After our meeting, Barbara understands that she needs to approach the situation differently: *"Simon, I know you're really busy and I've still got a lot to learn. I'd like to get to grips with my job as quickly as possible. I've learned a lot on my own, but I'm still really dependent on you in some areas. The sooner I know how to do things, the sooner I can take a few tasks off your hands, and then you'll be able to focus on the most complicated jobs."* After their discussion, Barbara and Simon arranged weekly work sessions together, which enabled Barbara to regain her confidence.

Given the substantial degree of personnel rotation at CERN, the transfer of knowledge to new arrivals is important and an integral part of the job of more experienced colleagues. Consider time spent training a new member of your team as an investment, rather than as "wasted" time. And don't forget: you also needed some training when you first arrived in your service!

**Names have been changed*

*Pierre Gildemyn*

*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 .*