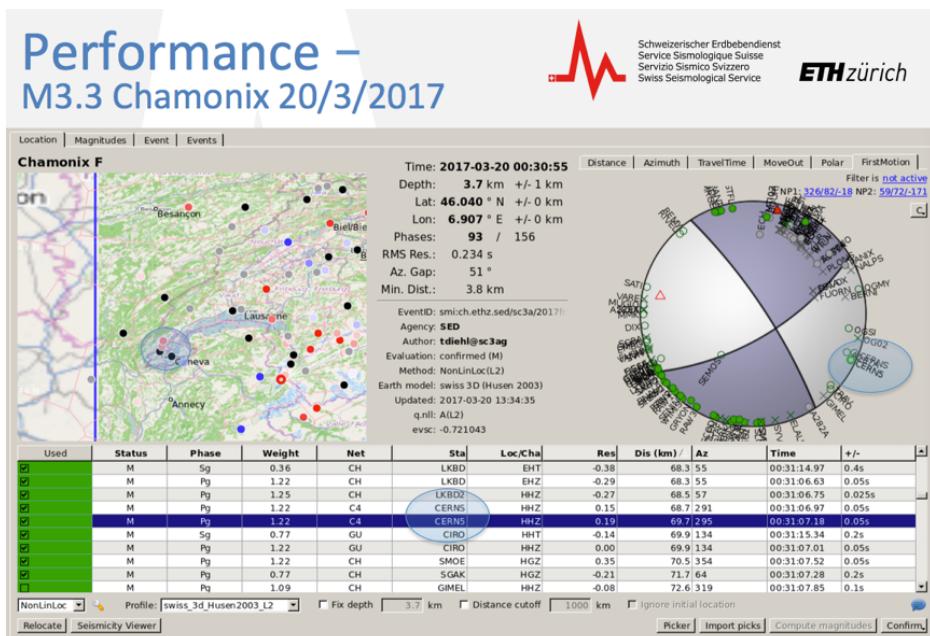


CERN IS KEEPING ITS EAR TO THE GROUND



CERN's sensors recorded the 3.3 magnitude tremor that hit the Chamonix region on 20 March. (Image: Service Sismologique Suisse)

In Spring 2018, the first civil engineering work for the High-Luminosity LHC (HL-LHC) project will begin. Two new pits will be excavated near the ATLAS and CMS sites (LHC Points 1 and 5) giving access to new tunnels close to each of the experiments. Work on this scale requires meticulous preparation to avoid the slightest impact on the operation of the LHC.

To assess the potential impact of this work having on the stability of the LHC tunnel and its equipment, which are extremely sensitive to vibrations, the mechanical measurement laboratory team of the EN-MME group has set up three seismic monitoring stations, two of them underground (at LHC Points 1 and 5) and one at ground level on the Prévessin site. "These stations enable us to monitor the earth's vibrations practically in real time," explains Michael Guinchard, head of the mechani-

cal measurement laboratory. "This will enable us to keep the LHC teams (BE-OP) as well as the teams responsible for the civil engineering work (SMB-SE) continuously informed so that corrective measures can be taken if the amplitude of the vibrations presents a risk for LHC operation. Once the LHC is operating at high luminosity, seismic monitoring will continue so as to keep risks for the equipment to a minimum, especially in the event of low-level seismic activity in the region or larger tremors coming from elsewhere."

The installation of three seismic monitoring stations at CERN is also of interest to the Geneva cantonal authorities, who have been looking to strengthen their seismic monitoring capabilities in the local region.

(Continued on page 2)

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CERN IS KEEPING ITS EAR TO THE GROUND

The reason for this is that they have launched a programme called *Geothermie 2020*, aimed at developing the use of geothermal energy in the region. The techniques currently used in this field can generate micro-seismic events of 2 to 3 on the Richter scale, which calls for close seismic monitoring during the deep (1 km) boring phases. Switzerland's national seismology service (Service Sismologique Suisse, or SED) therefore invited CERN to integrate its monitoring stations into the national network. "Being part of the SED network is a real boon for CERN," notes Michael Guinchard, "because it gives us access to data from across Switzerland and Europe, and improves our monitoring capabilities on all scales. Not to mention the expert assistance the SED can provide to us!"

One of the prerequisites for joining the SED was that CERN had to change the format of its seismic data. "To facilitate international collaboration, seismic data is exchanged across the world in the same format,

known as Mini-Seed," Michael Guinchard explains. "Unfortunately, our seismic monitoring stations, which were chosen for their ability to withstand the accelerator environment, do not produce data in this format. So, in collaboration with our colleagues in the EN-STI group, we had to develop a system to convert our raw data into Mini-Seed data." The seismic data harvested by CERN will thus be available 24/7, notably on Timber but also across Europe on the seismic data exchange platforms.

Seismic monitoring station installed above ground on the Prévessin site. (Image: Morgane Cabon)

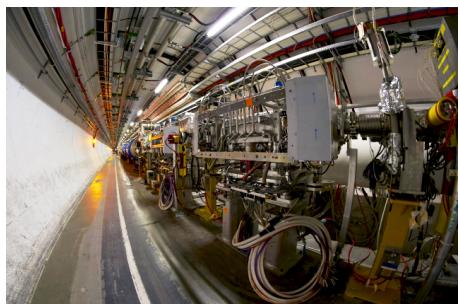


Seismic monitoring station installed in UL16, at Point 1. (Image: Morgane Cabon)



Anaïs Schaeffer

LHC REPORT: (EM)POWERING THE LHC



On Thursday, 13 April, the extended year-end technical stop (EYETS) was officially declared complete and the machine handed over from the team coordinating the technical stop to the Operations team.

However, before starting operations with beam, the hardware had to be recommissioned. This operation included cooling down the sectors and performing the electrical quality assurance and powering tests.

To do that, all sectors have been progressively cooled down to their nominal operating temperature, 1.9 Kelvin, over the last few weeks, whereas they had been kept at about 20 K during most of the EYETS.

As soon as the sectors were at nominal operating conditions, the electrical quality assurance (EIQA) test could take place, to check the integrity of the electrical insulation of the magnets. This test concerned only the three main (13 kA) circuits for all sectors except for sector 1-2, where all circuits had to be qualified because a magnet has been replaced. It was right in this sector that a defective instrumentation cable for magnet protection was found in the warm part, possibly damaged during the heavy activities in this sector. The problem was fixed and this last sector finally released.

Once the EIQA test had been completed, the power converters and quench protection systems could be unlocked. The circuits were then ready to be powered.

The powering tests of the LHC superconducting circuits, taking place in the second half of April, are a big part of the recommissioning, since almost 1600 circuits have to be switched on and tested in just a few weeks.

These tests aim to verify the correct behavior of the protection functionality of each

circuit and confirming the capacity of the magnets to reach the currents at which they will be operated along the year. This is a crucial phase in the preparation of the machine, as a protection failure could result in a catastrophic event; if a circuit fails to reach the desired current, it could limit the performance of the machine during the year. About 10 000 test steps are executed, powering circuits at currents ranging from 60 A for the small orbit correctors to 13 kA for the 3-km-long dipole and quadrupole chains.

An incredible amount of work has been done in the last few years to continuously optimise the powering tests and to automate their execution and analysis. This effort has resulted in a reduction in the time needed to qualify the entire machine from several months down to a few weeks. Nevertheless, a large number of tests have to be performed in less than three weeks and lots of information has to be processed and analysed by the experts. That's why, for the execution of the tests, we rely strongly on several software applications and many equipment experts. After heavy software debugging, due to the numerous modifications done during the EYETS, the

powering tests were able to start and are now progressing at a good pace: seven sectors have already been qualified and the tests in sector 1-2 (delayed due to the fault investigation) are at a good stage. All superconducting circuits will be ready before the end of the week and the machine

check-out (the last phase of verification of all systems working together) will finalise the preparation for the beam.

After four months of frenetic work at every point of the machine, all activities are close

to completion and the LHC is now getting ready for a new, long year of physics.

Mirko Pojer for the Operation group and powering test team

ALICE'S WONDERS REACH OUT TO KIDS IN PRÉVESSIN



The entrance to the new "ALICE School" in Prévessin-Moëns. (Image: Virginia Greco/CERN)

On Saturday, 11 March, a primary school named "ALICE" was inaugurated in the village of Prévessin-Moëns in neighbouring France. The name was chosen by the municipal council as a tribute to the ALICE ex-

periment at CERN, "which is contributing to a better understanding of the origin of the universe".

The aim of the council members was to introduce young children to the fascinating world of science and to familiarise them with the research carried out next door at CERN. Some of the installations of our Laboratory are indeed located within the commune of Prévessin-Moëns and many inhabitants of the village work at CERN.

The name also brings to mind the famous tale of Alice in Wonderland, a young girl driven by curiosity and a thirst for discovery. The choice of a female name was also relevant because it brings to the forefront the importance of nurturing girls' interest in

science and encouraging them to study its disciplines.

The event, which saw the participation of many pupils of the school accompanied by their parents, as well as other inhabitants of the village, was organised by scientists of the ALICE experiment and staff from CERN's Education, Communications and Outreach group, who volunteered to offer play-and-learn workshops for children. Attendees even got the chance to peek at the real ALICE detector thanks to a live video link with the underground cavern.

This article is based on a longer piece in ALICE matters.

Virginia Greco

COMPUTER SECURITY: THE HIGGS DOES NOT... SEND MAIL!

"The Higgs boson does not exist!" stated an e-mail recently sent to many of our colleagues within CERN as well as with our global research community. We can definitely enter in a technical discussion about physic results produced by the LHC. But here, this is not the point. As many recipients noticed, this e-mail appeared as having been sent from an e-mail address "Fabiola.Gianotti@cern.ch", i.e. the address of our Director General. However, no worries! The mail has not been sent by her. And her account has not been compromised. Rather, the issue lies in the technical ways the email protocol is working and – like in this case – can be abused...

Technically, e-mails are delivered like normal "snail mail" letters. In a normal letter, you can put whatever contents or opinion you want. Love letters, or threats. True statements, or fake news. And you can put any sender on its envelope, as well as any purported sending address — not necessarily yours, but that of someone else, like that of our DG... Finally, but rather obvi-

ous, e-mails can be sent to any valid (and invalid) e-mail addresses. Due to our open and academic nature, CERN email addresses are published through the CERN phonebook and are available through many other webpages: conference participation lists, experiment memberships, service manager list, on-line/shifter duty lists, ...

Therefore, there is no good technical measure* to generally prevent such e-mails if sent from a fake ("spoofed") e-mail address world-wide. Also, locally for the protection of CERN mailboxes, this is not as easy. While the SPAM filter tries to catch such fake emails, the attacker repeatedly made many modifications in order to bypass those filters (the attacker even expressed his frustration with our filtering when sending a few mails with the subject "[...] you Service Desk"). Thanks to our email service managers, they engaged in that mouse-and-cat game... Mostly with success, but sometimes with mails going through. Apologies for that.

For the technical people: yes, "SPF (http://en.wikipedia.org/wiki/Sender_Policy_Framework)", "DMARC (<http://en.wikipedia.org/wiki/DMARC>)" and "DKIM (http://en.wikipedia.org/wiki/DomainKeys_Identified_Mail)" might theoretically help, but all those methods come with drawbacks resulting in delivery or compatibility problems, especially with standard mailing lists (see the experience made by Yahoo! in 2014. But that might get better in the future as e.g. mailing list software are trying to adapt (e.g. <http://wiki.list.org/DEV/DMARC>).

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). For further information, questions or help, visit our website (<http://cern.ch/Computer.Security>) or contact us at Computer.Security@cern.ch.

The Computer Security Team

DJANGO GIRLS - LET THE CODING BEGIN



Django Girls Geneva participants at IdeaSquare.
(Image: Marzena Lapka)

Who would ever think of spending a full Saturday indoors, coding for several hours, instead of enjoying a warm, sunny spring day? Highly motivated Django Girls participants!

But what is Django Girls? Django is a free and open source web application framework, written in Python programming language. The former helps its users to develop websites faster and easier. And since ICT is not a men's world only, a community of women decided to empower and help women without IT experience participate in free programming workshops: Django Girls was born. The organisation is entirely volunteer-run.

The success is such that 379 events in 260 cities from 72 countries materialised since 2014, revealing the joys of coding to over 9000 women.

IdeaSquare welcomed its Run 2 of Django Girls Geneva after the great outcome last year. Set up by the CERN IT Department, Diversity and Local Engagement teams, the permanence of this fruitful activity is under consideration.

Twenty-three enthusiastic and beginner participants aged 15-39 were very well mentored, in small groups, by 8 dedicated tutors from CERN – all passionate people working in the ICT field. Some of the participants travelled from Bern and one of the programmer-to-be was so motivated that she even drove from Zurich to attend the workshop!

Everything was ready to start... And as soon as the participants were finally registered on the CERN network, the event could finally kick-off: how to create a blog application and deploy it to the internet.

The volunteers were dedicated and eager to help the attendees, who demonstrated

continuous attention and willpower during the whole workshop. New friendships were built, exchanges were cheerful in a relaxed yet studious atmosphere. At the end of the day on Saturday, the new Django Girls had learnt the basics of computer programming and created their own website. A very productive and positive day indeed!

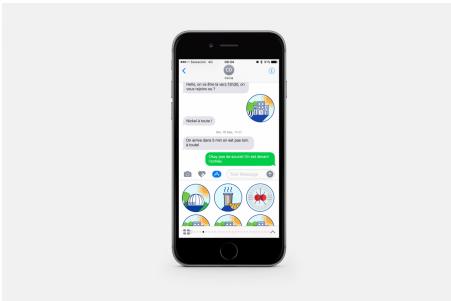
This year Django Girls was also set up as a satellite event of Girls in ICT International Day, an event organised by the International Telecommunications Union (ITU). Some participants from local schools will continue the journey and present there their achieved work during the programming workshop. And who knows, maybe their dawning passion?

We hope that this event motivated those women to enter the IT world and gave them the opportunity to consider it from a different perspective.

This would not have been possible without the help of the mentors, volunteers and organisers: a huge thank you to all of them!

Laurianne Trimoulla

SAY MORE WITH CERN “EMOJIS”



The newly released CERN stickers offer a new, less formal means of communication between people working at CERN. (Image: Esma Mobs/CERN)

A picture speaks a thousand words and we all know it's sometimes easier, and friendlier, to send an emoji thumbs up than just an 'OK'. But what if you could use pictures to explain your job at CERN, or show the things you saw during a visit?

Well, now you can, as CERN has launched its own set of virtual stickers for use on iOS – a collection of 35 images portraying the Organization's symbols and activities.

With their simple and user-friendly design, the CERN stickers are for everybody to use and enjoy, from people working at CERN to visitors and science enthusiasts.

The images include a collision event, a dipole magnet, the Globe of Science and Innovation, male and female scientists wearing CERN lanyards, and the colourful CERN safety helmets, known to every CERN visitor. These are just a few of the stickers already available, with more expected in the future.

“Our goal was to create an easily available and comprehensible way to showcase

CERN activities, who we are and what we do here. We would like for people who love science to feel part of a global CERN community by using them,” explains Esma Mobs, the designer of the CERN stickers.

The other purpose of the stickers is to introduce a new, less formal means of communication between people working at CERN. “For example, with the stickers of the three main restaurants on site, we now have a fast and visual way to ask somebody for lunch. There is also a sticker for the CERN community’s main fuel – coffee – which is even animated,” adds Esma.

If you are an Apple user, you can download your CERN stickers immediately from the App Store and use them on all your iOS devices. If you have any other kind of device, don’t worry – you can download the

full set of stickers and attach them to your messages and e-mails. Soon enough there

should also be a specially designed keyboard for Android devices.

You are welcome to send your image ideas to cern-stickers@cern.ch.

Do you want to add your personal contribution to the collection of CERN stickers?

Iva Raynova

Official communications

TAX DECLARATION: FOR THE ATTENTION OF MEMBERS OF THE PERSONNEL AND PENSIONERS LIVING IN FRANCE

Exchange rate for 2016

For 2016, the average annual exchange *HR Department* rate is **EUR 0.93 for CHF 1.**

TAXATION IN FRANCE | MEMORANDUM CONCERNING THE ANNUAL INTERNAL TAXATION CERTIFICATE AND THE DECLARATION OF INCOME FOR 2016

You are reminded that the Organization levies an internal tax on the financial and family benefits it pays to the members of the personnel (see Chapter V, Section 2 of the Staff Rules and Regulations) and that the members of the personnel are exempt from national taxation on salaries and emoluments paid by CERN.

The Organization would like to remind members of the personnel that they must comply with the national legislation applicable to them, in particular for any other income they may receive (cf. Article S V 2.02 of the Staff Rules).

I-Annual internal taxation certificate for 2016

The annual certificate of internal taxation for 2016, issued by the **Finance, and Administration Processes Department**, is available since 21 February 2017. *It is*

intended exclusively for the tax authorities.

1. If you are currently a member of the CERN personnel you received an e-mail containing a link to your annual certificate, which you can print out if necessary.
2. If you are no longer a member of the CERN personnel or are unable to access your annual certificate as indicated above, you will find information explaining how to obtain one here (<https://admin-eguide.web.cern.ch/en/procedure/annual-internal-taxation-certificate>).

In case of difficulty in obtaining your annual certificate, send an e-mail explaining the problem to service-desk@cern.ch.

II-2016 income tax declaration form in France

The 2016 income tax declaration form must be completed following the general indications available at the following address: <https://admin-eguide.web.cern.ch/en/procedure/income-tax-declaration-france>.

IF YOU HAVE ANY SPECIFIC QUESTIONS, PLEASE CONTACT YOUR local *SERVICE DES IMPÔTS DES PARTICULIERS* (SIP, private citizens' tax office) DIRECTLY

This information does not concern CERN pensioners, as they are no longer members of the CERN personnel and are therefore subject to the standard national legal provisions relating to taxation.

HR Department

Announcements

CLOSURE OF ROAD RUTHERFORD BETWEEN BUILDINGS 361 AND 271

Due to works, half of Road Rutherford, between building 361 and building 271, will be closed to traffic until Friday 28 April at 5.30

pm. Traffic lights manage the alternating traffic.

Thank you for your understanding.

SMB Department

Ombud's corner

IT'S NEVER THE TIP OF THE ICEBERG...

Last month, CERN hosted a meeting of the European Ombuds and Mediator group, which brought together some 25 Ombuds from both the public and private sectors in Europe. It was an excellent opportunity for members of the network to connect with each other and share some of their processes and practice.

It seems equally an excellent opportunity for me to remind my CERN colleagues of the Ombud role, which was established seven years ago with the aim of providing an informal conflict resolution resource for members of personnel and any other person working at or on behalf of the Organization. The function represents a commitment by CERN, and its Management, to support the well-being of all its collaborators and to promote a respectful workplace environment. Visitors to the Ombud Office will find a "safe place to tell their story", get another perspective and obtain support in identifying options and working out strategies by which to manage the interpersonal issues with which they are confronted.

The principles by which the Ombud works are in line with the Code of Ethics of the International Ombudsman Association (IOA), and provide a common set of professional ethical principles to which they adhere in their organisational practice. The four basic principles underlying the function are confidentiality, impartiality or neutrality, informality and independence. Access to the Ombud is on an entirely voluntary basis.

The Ombud's mandate is to provide guidance with regard to the application and interpretation of CERN's Code of Conduct and to offer confidential assistance through listening, coaching or mediation, as appropriate. Action is taken only with the express agreement of the person(s) concerned.

By relying on the responsibility and autonomy of the parties, the Ombud seeks a fair and ethical solution to the issues raised, and provides a structured framework within which colleagues may share their own perceptions and experiences in search of a mutually acceptable outcome.

The Ombud function at CERN grew out of a growing awareness of the need to promote a respectful organisational culture and support people in resolving issues that may otherwise have a negative impact on their work and well-being. The obvious corollary to this is that we need to create an environment where people feel free to bring their issues to the surface in the sure knowledge that they will be heard and addressed. The Ombud is there to guide and support these initiatives, but in the end, it is up to each of us to engage proactively in creating a climate of trust that allows this to happen, and thus facilitate sustainable solutions together.

As one member of last month's Ombud meeting remarked, "it is never the tip of the iceberg that causes the damage [...] it is what lurks under the surface." Indeed the image of an organisation is not measured only by the success of its most prominent figures, but also by the way it treats its most vulnerable members.

Sudeshna Datta-Cockerill