CERN Bulletin

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LS2 REPORT: 2000 KILOMETRES OF CABLE

At CERN, 40 000 cables will be installed or removed during LS2. Laid end to end, they would stretch for 2000 kilometres!

During LS2, 20 000 optical fibres contained within 220 cables lie at the heart of the ALICE experiment (Image: CERN)

Some 40 000 cables will be installed or removed at CERN during LS2. Laid end to end, they would stretch for 2000 kilometres!

The work involves two types of cable: copper cables, which transmit signals to the accelerator systems and supply the magnets, and fibre-optic cables, which transmit data in the form of light signals. The latter weave through all of CERN's installations, from Meyrin to Prévessin, including the accelerator tunnels, experiments and technical halls, like an enormous spider's web.

“Optical fibres and copper cables transmit all the information collected or sent by the detectors, beam instrumentation, sensors, control panels, computing infrastructure, and so on,” explains Daniel Ricci, the leader of the section in charge of cabling (EN-EL-FC) within the EN department. “Our work covers all of CERN's service networks: optical fibres and copper cables are everywhere.”

They are indeed, and in impressive quantities: for example, some 20 000 optical fibres contained within 220 cables lie at the heart of the ALICE experiment, and 1200 copper signal cables are being installed in the SPS in the framework of the Fire Safety project.

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LS2 REPORT: 2000 KILOMETRES OF CABLE

The EN-EL-FC section is also contributing to other major CERN projects during LS2, including the LIU (LHC Injectors Upgrade), the renovation of the East Area, the renovation of the SPS access system, the commissioning of the ELENA extraction lines and the HL-LHC.

“CERN is probably the only place in the world where several thousand kilometres of radiation-resistant optical fibre are needed,” says Daniel Ricci. “We maintain very close ties with industry, where our expertise is used to adapt and improve this type of fibre.”

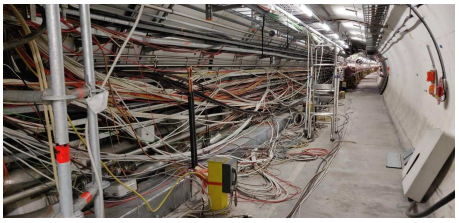
Of the 40 000 cables to be dealt with during LS2, 15 000 are obsolete copper cables that need to be removed. But first, they need to be identified. Since CERN was founded 65 years ago, some 450 000 cables have been installed, and many of them are still snaking through the nooks and crannies of the Laboratory. “Since LS1, we have been methodically going through all of CERN's old paper cable databases, identifying each cable and listing it in our digital database,” explains Daniel Ricci. “Of the 95 000 cables to be retained, 50 000 have already been digitised.”

CERN's biggest ever cable removal campaign has been under way since 2016. During the most recent year-end technical stops (YETS and EYETS), the Booster and middle ring of the PS were relieved of their old, obsolete cables. Cable removal is currently under way at points 3 and 5 of the SPS.

To complete this gargantuan task, the EN-EL-FC section, which usually comprises 20 people, has recruited some outside help. Sixteen extra people – fellows, project associates and members of other groups – are lending a hand during LS2. The contractors' teams, which comprise several dozen technicians working on site, have also been reinforced in order to keep up with the breakneck pace of work during the long shutdown. “Coordination, planning and teamwork are indispensable if we are to successfully complete the 120 cabling and cable removal projects scheduled for LS2,” says Daniel Ricci. “We're lucky to have a very versatile team who are able to advise clients on different types of cable, carry out technical studies, organise logistics and coordination between the various parties and supervise the worksites.”

No fewer than 140 members of the CERN personnel and contractors' personnel are working on the various LS2 cabling and cable removal projects, collaborating with the end users to ensure that quality control is as efficient as possible. “We would like to thank all the teams and users for their professionalism and their commitment. They are working to an extremely high standard while scrupulously respecting both deadlines and safety,” says Daniel Ricci.

Water-cooled cables in the LHC tunnel. These cables carry the current (up to 13 000 amperes) from the power converters to the power supplies (Image: CERN)



Many cables that are still needed for operations were pulled out of their cable trays in order to facilitate the removal of obsolete ones (here, in the SPS) (Image: CERN)

Anaïs Schaeffer

DUTCH AND US STUDENTS WIN 2019 CERN BEAMLINE FOR SCHOOLS COMPETITION

Two teams of high-school students, one from the Praedinius Gymnasium in Groningen, Netherlands, and one from the West High School in Salt Lake City, USA, have won the 2019 Beamline for Schools competition

The 2019 CERN Beamline for Schools winners: (from left) Team from the West High School in Salt Lake City, USA (Image: Kara Budge) and team from the Praedinius Gymnasium in Groningen, Netherlands (Image: Martin Mug).

Geneva and Hamburg: Two teams of high-school students, one from the Praedinius Gymnasium in Groningen, Netherlands, and one from the West High School in Salt Lake City, USA, have won the 2019 Beamline for Schools competition (BL4S). In October, these teams will be invited to the DESY[1] research centre in Hamburg, Germany, to carry out their proposed experiments together with scientists from CERN and DESY.

Beamline for Schools is a unique international competition that is open to high-school students all over the world. The students are invited to submit a proposal for an experiment that uses a beamline. Beamlines deliver a stream of subatomic particles to any given set-up, making it possible to study a broad variety of properties and processes in various scientific disciplines. They are operated at laboratories such as CERN and DESY.

Since Beamline for Schools was launched in 2014 almost 10,000 students from 84 countries have participated. This year, 178 teams from 49 countries worldwide submit-

ted a proposal for the sixth edition of the competition.

Due to the second Long Shutdown of CERN's accelerators for maintenance and upgrade, there is currently no beam at CERN, which has opened up opportunities to explore partnerships with other laboratories, namely DESY.

“It is a great honour for us to host the finals of this year's Beamline for Schools competition at DESY,” said Helmut Dosch, Chairman of the DESY Board of Directors. “We are really looking forward to meeting the extraordinary students who made it through with their proposals and we wish them a successful and rewarding time at the lab. We at DESY are committed to fostering the next generation of scientists, which CERN's Beamline for Schools project does brilliantly.”

“We are all very excited to welcome this year's winners to DESY. This is a new chapter in the history of this competition because, for the first time, we are taking the finals of the competition to another research laboratory. As always, the more then 60 voluntary experts from CERN and DESY evaluated all the proposals for their creativity, motivation, proposed methodology, feasibility and their overall ability to explore some of the concepts of modern particle physics” said Sarah Aretz, BL4S project manager.

The two winning teams of 2019 will look at fundamental differences between matter and antimatter. When electrons at high energies collide with a target, such as a piece of graphite, some of their energy gets transferred into photons. These photons can, in turn, transform into other particles. Eventually, a shower of particles at lower energy will develop. The team “Particle Peers” from the Praedinius Gymnasium, Groningen, Netherlands has proposed to compare the properties of the particle showers originating from electrons with those created from positrons, the antimatter partner of the electron.

“I couldn't stop smiling when I heard the news that we'd won. It's unbelievable that we'll get the opportunity to conduct our experiment with amazing scientists and meet new students who are just as enthusiastic about physics as I am,” said Frederiek de Bruine from the “Particle Peers” team.

The “DESY Chain” team from the West High School, Salt Lake City, USA, focuses on the properties of scintillators in its proposal. These are materials that are used for particle detection. The students aim to study the performance of these scintillators and compare their sensitivity to electrons and positrons. This may lead to more efficient particle detectors for a wide range of applications.

“I'm so excited by the prospect of working at DESY this autumn, it's such a once-in-a-lifetime opportunity. I'm proud to be a part of the first USA team to win the BL4S competition, especially because it provides access to equipment and systems I would otherwise never have dreamt of even seeing,” said August Muller from the “DESY Chain” team.

The shortlist consisted of 20 teams, ten of which received a special mention. This is the second time that a Dutch team has won the competition. Previous winners came from schools in the Netherlands, Greece, Italy (twice), South Africa, Poland, the United Kingdom, Canada, India and the Philippines.

Beamline for Schools is an Education and Outreach project funded by the CERN & Society Foundation and supported by individual donors, foundations and companies. For 2019, the project is partially funded by the Wilhelm and Else Heraeus Foundation; additional contributions have been received from the Motorola Solutions Foundation, Amgen Switzerland AG and the Ernest Solvay Fund, which is managed by the King Baudouin Foundation.

Shortlist drawn up by CERN and DESY experts:

A Light in the Darkness (USA)

Centaurus Warriors (USA)

Cosmic Conquerors (Thailand)

DESY Chain (USA)

DESYners (USA)

JT/High Pawns (Pakistan)

Jubarte Team (Brazil)

Leftover Leptons (India)

Magic Doubly Magic Nuclei (Poland)

My Little Positron(Australia)

Particle peers (The Netherlands)

Raiders of the Lost Quark (UAE)

RAM FAM (Australia)

Salvo Krevas (Malaysia)

Team John Monash Science School (Australia)

The Baryonic Six (Sweden)

The Lumineers (Pakistan)

The Weak Force (South Africa)

Unstoppable SPAS (China)

Young Researchers (Ukraine)

Special Mentions:

Antimatter Tracker (Argentina)

Cherenkoviously Brilliant (UK)

EthioCosmos (Ethiopia)

Kics Team (Sudan)

Kleine Wissenschaftler (Iran)

Observers of the microcosm (Ukraine)

Quantum Minds (Mexico)

SolarBeam (Thailand)

Team Pentaquark (Bangladesh)

YKS_Young Kurdish Scientists (Iran)

Further information

Video from the team “Particle peers”, Praedinius Gymnasium in Groningen (https://praedinius.nl/index.html), Netherlands: https://youtu.be/va1ZnjllFDk

Video from the team “DESY Chain”, West High School in Salt Lake City (https://west.slcschools.org), US: https://www.youtube.com/watch?v=sdexfXt2o30

http://beamline-for-schools.web.cern.ch

https://beamlineforschools.cern/2019-edition

https://beamlineforschools.cern/updates/2019/04/evaluation-sixth-beamline-schools-competition-finally-starts

Previous winners: http://beamlineforschools.cern/bl4s-winners

1. DESY is one of the world's leading particle accelerator centres. Researchers use the large–scale facilities at DESY to explore the microcosm in all its variety – ranging from the interaction of tiny elementary particles to the behaviour of innovative nanomaterials, the vital processes that take place between biomolecules and the great mysteries of the universe. The accelerators and detectors that DESY develops and builds at its locations in Hamburg and Zeuthen are unique research tools. DESY is a member of the Helmholtz Association, and receives its funding from the German Federal Ministry of Education and Research (BMBF) (90 per cent) and the German federal states of Hamburg and Brandenburg (10 per cent).

ARTS AT CERN: A TRANSFORMATIVE IMMERSION

After their three-month residency at CERN in the framework of the Arts at CERN programme, Anne Sylvie Henchoz and Julie Lang have produced an artwork that explores the relationship between humanity, art and science

Anne Sylvie Henchoz and Julie Lang (both on the right) during one of the artistic workshops conducted during their residency at CERN (Image: Anne Sylvie Henchoz and Julie Lang)

“We immersed ourselves. We probed the scientific world. We listened to scientists without any preconceived ideas.” This is how Anne Sylvie Henchoz, an artist working in various media, describes the residency at CERN that she shared with Julie Lang, an art history and sociology researcher from the University of Lausanne. The two women won the Collide Genève 2018 prize, run by Arts at CERN in collaboration with the Republic and Canton of Geneva and the City of Geneva, which aims to encourage artistic expression in the context of fundamental research.

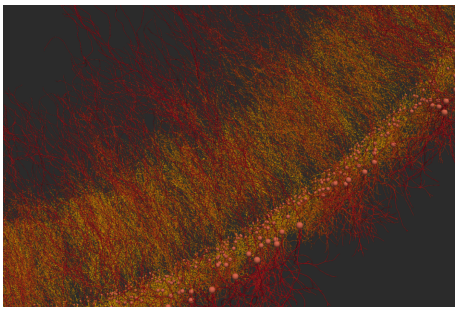
Prior to October 2018, CERN was somewhere “not far away, but a complete unknown all the same” for Geneva resident Anne Sylvie, and “a totally mysterious universe” for Julie, who lives in Vaud. But a few weeks at CERN were enough to transform the pair into science enthusiasts. “The meetings we had were the key to understanding this universe,” explains Julie. “The worldviews of some of the scientists resonated with our respective backgrounds in an intense and unexpected way. We didn't just try to get to grips with the science, we tried to understand the people and their visions.”

After an initial exploratory phase, the artist and the researcher set up meetings with various women at CERN, notably Sara Anne Arezt (S'Cool Lab, CERN), Ana Barbara Rodrigues Cavalcante (EPFL), Francesca Giovacchini (AMS-02 Experiment), Claire Lee (ATLAS), Antonella Del Rosso (ECO-CERN) and Tamara Vazquez Schroeder (ATLAS). “From the outside, CERN seems quite homogeneous but on the inside you discover that it has many different facets and you discover questions being asked about the world and the universe that are very similar to our own,” observes Julie.

The third and final month of the residency was devoted to production. “We created a conversation around the plural notion of 'temporality', which we developed in a philosophical, poetic and scientific way,” explains Anne Sylvie. “It was a three-way conversation, a trio between Tamara Vazquez Schroeder, Claire Lee and Julie, incorporating body movements, which we filmed in SMA18, a technical maintenance hall that we found very cinematographic.” The result is an art installation that will be exhibited in Rio de Janeiro in a few weeks' time: “We did a lot of research to put together, conceptualise and stage these encounters, and focused on the points that made the greatest impression on us. The installation will use three different forms of projection and the sound production is particularly unusual.”

The two women's residency at CERN has made such an impression on them that it now influences all their work “as is always the case when the interactions are so intense”.

SHARING CERN'S EXPERTISE IN BIG DATA WITH THE BIOMEDICAL COMMUNITY



A neurological cell simulation carried out through the BioDynaMo project (Image: Lukas Breitwieser/CERN, Jean De Montigny/Newcastle University)

On 6 and 7 June, CERN hosted a first-of-its-kind workshop on big data in medicine. It concluded a two-year pilot investigation into how CERN-developed IT technologies and techniques could be used to address challenges faced in biomedicine. The workshop's main goal was to establish terms for broader future collaboration with the medical and healthcare research communities.

In 2017, CERN adopted a specific knowledge-transfer strategy for medical applications with the aim of sharing knowledge and ideas of particle accelerators, detectors and computing with the medical and healthcare communities to identify relevant applications. Particle physics has pioneered large-scale, distributed, data-driven research models. Now that other scientific fields are collecting and processing ever more data, CERN technologies could help in facing the challenges with data infrastructures, computing technologies, and software applications.

This workshop brought together leaders from a variety of fields related to the application of big-data technologies and techniques in biomedicine, including the World Health Organization, the European Commission and a number of leading universities. Topics included personalised medicine, digital health ecosystems, blockchain, data handling and more. Discussions also focused on emerging technologies, such as machine learning and artificial intelligence (AI), as well as the ethics of these technologies — particularly when used in a biomedical context.

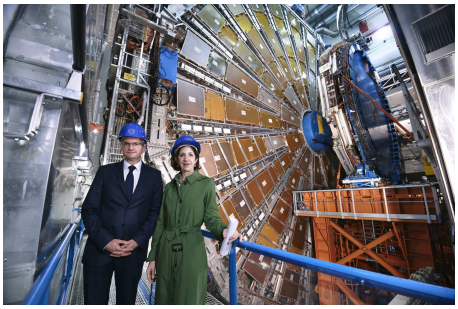
The discussions will serve as the basis for a white paper to be published later this year, setting out the main societal and economic challenges in medical research and healthcare systems, describing how collaborative platforms and big-data technologies can help addressing such challenges, and providing recommendations on how such multi-disciplinary efforts could be organised.

To find out more about the workshop read more on the CERN o penlab website (https://openlab.cern/sharing-cerns-expertise-big-data-biomedical-community) , and visit the event page (https://indico.cern.ch/event/800343/) to view the presentations.

Andrew Purcell

PRIME MINISTER OF THE REPUBLIC OF SLOVENIA RECEIVED AT CERN

The Prime Minister paid a visit to the Laboratory on 11 June



Marjan Šarec, Prime Minister of the Republic of Slovenia, with CERN Director-General, Fabiola Gianotti (Image: CERN)

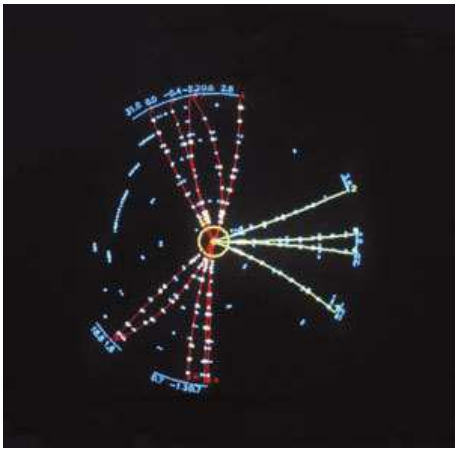
On 11 June, CERN welcomed Marjan Šarec, Prime Minister of the Republic of Slovenia. The Prime Minister was welcomed by the Director-General of CERN at Point 1 of the LHC, together with Eckhard Elsen, Director of Research and Informatics, Charlotte Warakaulle, Director of International Relations, Emmanuel Tsesmelis, Head of Relations with Associate and Non-Member States, and Christoph Schäfer, Senior Advisor on Relations with Slovenia.

Following an introduction to CERN's activities by the Director-General, the Prime Minister took a tour of the LHC tunnel and the ATLAS experimental cavern. He also met representatives of the Slovenian community at CERN.

Anaïs Schaeffer

FOUR DECADES OF GLUONS

How a walk through CERN's corridors helped lead to the discovery of the gluon forty years ago at the DESY laboratory



A three-jet event detected by the TASSO detector at DESY (Image: Oxford PPU)

Forty years ago, in 1979, experiments at the DESY laboratory in Germany provided the first direct proof of the existence of gluons – the carriers of the strong force that "glue" quarks into protons, neutrons and other particles known collectively as hadrons. This discovery was a milestone in the history of particle physics, as it helped establish the theory of the strong force, known as quantum chromodynamics.

The results followed from an idea that struck theorist John Ellis while walking in CERN's corridors in 1976. As Ellis recounts, he was walking over the bridge from the CERN cafeteria back to his office, turning the corner by the library, when it occurred to him that "the simplest experimental situation to search directly for the gluon would be through production via bremsstrahlung in electron–positron annihilation". In this process, an electron and a positron (the electron's antiparticle) would annihilate and would occasionally produce three "jets" of particles, one of which being generated by a gluon radiated by a quark–antiquark pair.

Ellis and theorists Mary Gaillard and Graham Ross then went on to write a paper titled "Search for Gluons in e+-e– Annihilation" in which they described a calculation of the process and showed how the PETRA collider at DESY and the PEP collider at SLAC would be able to observe it. Ellis then visited DESY, gave a seminar about the idea and talked to experimentalists preparing to work at PETRA.

A couple of years later, and following more papers by Ellis, Gaillard and other theorists, PETRA was being commissioned and getting into the energy range required to test this theory. Soon after, at the International Neutrino Conference in Bergen, Norway, on 18 June 1979, researchers presented a three-jet collision event that had just been detected by the TASSO experiment at PETRA.

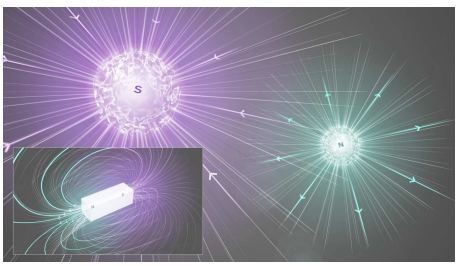
At the European Physical Society conference at CERN a couple of weeks later, the TASSO collaboration presented several three-jet events and results of analyses that showed that the gluon had been discovered. One month later, in August 1979, three other experiments at PETRA showed similar events that lent support to TASSO's findings.

Find out more about the discovery in DESY's coverage of the 40-year anniversary (*http://www.desy.de/news/backgrounders/40_years_of_gluon/index_eng.html*), in Ellis' account (*https://arxiv.org/abs/1409.4232*), and in this 2004 *CERN Courier* article (*https://cerncourier.com/twenty-five-years-of-gluons/*).

Ana Lopes

ATLAS HOMES IN ON MAGNETIC MONOPOLES

The ATLAS collaboration has placed some of the tightest limits yet on the production rate of hypothetical particles known as magnetic monopoles



Magnetic monopoles (larger image) and magnetic dipole (inset) (Image: CERN)

Break a magnet in two, no matter how small, and you'll get two magnets, each with a south and a north pole of opposite magnetic nature. However, some theories predict particles with an isolated magnetic pole, which would carry a magnetic charge analogous to a positive or negative electric charge. But despite many searches, such magnetic monopoles have never been spotted at particle colliders. A new search by the ATLAS collaboration at CERN places some of the tightest bounds yet on the production rate of these hypothetical particles. These results are complementary to those from CERN's MoEDAL experiment, which is specifically designed to search for magnetic monopoles.

Originally proposed in 1931 by physicist Paul Dirac, magnetic monopoles have since been shown to be an outcome of so-called grand unified theories (GUTs) of particle physics, which connect fundamental forces at high energies into a single force. Such GUT monopoles typically have masses that are too high for them to be spotted at particle colliders, but some extensions of the Standard Model predict monopoles with masses that could be in a range accessible to colliders.

The latest ATLAS search is based on data from proton–proton collisions produced at the Large Hadron Collider at an energy of 13 TeV. The collaboration looked for signs in the data of large energy deposits

that would be left behind by the magnetic monopoles in the ATLAS particle detector. The energy deposits would be proportional to their magnetic charge squared. Such large deposits are also an expected signature of high-electric-charge objects (HECOs), which may include mini black holes, so the search was also sensitive to HECOs.

The team found no sign of magnetic monopoles or HECOs in the data but improved previous work on several fronts. Firstly, the search achieves improved limits on the production rate of monopoles that carry one or two units of a fundamental magnetic charge called Dirac charge. The new limits surpass those from MoEDAL, although MoEDAL is sensitive to a larger range of magnetic charge – up to five Dirac charges – and can probe monopoles produced by two mechanisms, whereas ATLAS probed only one. MoEDAL researchers are also working towards pushing the experiment to probe monopoles with magnetic charges well beyond five Dirac charges.

In addition, the ATLAS search improves limits on the production of HECOs with electric charge between 20 and 60 times the charge of the electron. Finally, the search is the first to probe HECOs with charges greater than 60 times the electron charge, surpassing the charge probed by previous searches by ATLAS and also by the CMS collaboration.

For more information about these results, see the ATLAS website.

Ana Lopes

CERN OPEN DAYS: BECOME A VOLUNTEER!

Sign-up now to engage our visitors on an exciting journey of discovery at CERN

(Image: Ewa Lopienska/CERN)

The next CERN Open Days will take place on 14 and 15 September 2019. Hundreds of activities and visit circuits are being planned to welcome some 80 000 visitors to CERN's largest public outreach event.

Your contribution is invaluable for the success of this gigantic event.

Why volunteer at the 2019 Open Days?

- Take part in a unique event organised every five years by the largest laboratory for particle physics
- Share our enthusiasm for fundamental research and its fascinating technologies
- Be a CERN ambassador by sharing your personal experiences with the visitors
- Be part of the team: meet new colleagues from other departments in a friendly atmosphere

Who can volunteer?

All CERN personnel, no matter the contract (MPEs, MPAs, Official CERN guides, ENTC, TEMC) as well as Alumni and Club members, aged 18 and over. More information can be found about registration for Alumni and Club Members (*https://espace.cern.ch/OD2019/Volunteers/SitePages/Alumni%20and%20Clubs.aspx*).

What will I get?

All volunteers will receive exclusive Open Days 2019 volunteer kits as well as a lunch voucher. General and role-specific training sessions will also be organised. find out more about statuses and conditions (*https://espace.cern.ch/OD2019/Volunteers/Lists/Statuses%20and%20conditionss/English.aspx*).

What will I do?

Activities are aplenty: be a guide, a special-activity entertainer, an info agent, a crowd marshal, a shop assistant, etc. learn more about roles and trainings (*https://espace.cern.ch/OD2019/Volunteers/Lists/Roles%20and%20trainings/English.aspx*).

When and how to register?

Find all information and instructions to register on *http://cern.ch/od2019/volunteers*.

COMPUTER SECURITY: SERIOUS GAMING. . . FOR YOUR OWN GOOD

“Serious gaming” is the gamification of training for professional purposes. When you play a serious game, you are actually also improving your knowledge on a particular subject

"Serious gaming" is the gamification of training for professional purposes. When you play a serious game, you are actually also improving your knowledge on a particular subject. For example, in 2015, the CERN Computer Security Team ran, in collaboration with an external security provider, the "Kaspersky Interactive Protection Simulation" (KIPS). Attended by about 80 control and safety system experts, technicians and engineers, the goal of the game was to instruct our control system experts how best to secure their installations. In the game, teams of four to six people had to secure a water purification plant round-by-round, by buying new security features and making sure that attackers did not bring the water treatment process to a halt. The team that generated the most revenue and had the least losses won (see details on this in our *Bulletin* article "Protect your Plant: A 'Serious Game' about Control System Cyber-Security").

Nowadays, other online security games permit better in-depth training on a multitude of subjects. Take the CERN computer security course, for example, which you are supposed to complete to ensure you know the basics of computer security, password protection and CERN's rules. But there are more fancy ones:

- Google has produced an interesting quiz, challenging you to identify malicious e-mails;
- Radio Télévision Suisse 's serious game aims to raise public awareness of the implications of data protection and Big Data;
- Less related to "computer security", but great for aspiring programmers: why not learn through playing how to develop code with JavaScript, Python and other languages.

Give these a try and enhance your skills in protecting your mailbox, your data and CERN!

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.

(Image credit: Kaspersky)

The Computer Security Team

Official communications

ENHANCING STAFF INTERNAL MOBILITY OPPORTUNITIES

A new webpage and an Admin e-guide entry will keep staff members better informed about internal mobility at CERN

Career development of staff members, with the specific objective of promoting internal mobility (IM), was highlighted among our Director-General's top five priorities for the Organization's goals for the year 2018. Consequently, a dedicated CERN-wide working group was set up, comprising representatives from each sector and the Staff Association, to make recommendations, with a view to harmonising and streamlining processes and increasing efficiency in the way IM is managed at CERN.

As the Project Leader, Valeria Perez Reale, explains: "There have often been misunderstandings of the concept of internal mobility today. It is defined as a change in the professional situation of a staff member. This may take the form of a change of one's functions, within the same organic unit or in another department, or keeping one's functions but changing one's organisational unit."

A key deliverable of the project was a study and analysis of IM at CERN, based on data spanning the last five years, the legal and budget framework, feedback from key stakeholders, the latest research and benchmarking with similar non-profit international research organisations. The conclusions of the study, presented at the HR public meeting in September 2018 (*https://indico.cern.ch/event/737008/*), showed notably that internal mobility takes place at CERN at an average annual rate of ~2% of staff members on an ad hoc basis, with different practices across the Organization. Staff members were found to be generally positive about IM, although the definition, where to find opportunities and how the process unfolds were identified as key areas to clarify.

The working group's recommendations revolve around three key principles:

1. Defined organisational need: that internal mobility enables the Organization to meet its objectives with experienced internal staff;
2. Transparency: that the opportunities and the process are well documented, measured and known to all staff members in the Organization;
3. Flexibility: that the Organization be able to adapt to changing priorities.

A further five dimensions underpin these recommendations: purpose clarity, policy guidelines, process design, platform capability and performance measures.

James Purvis, Head of CERN's HR department, is particularly pleased to see the

project come to a successful conclusion: “Internal mobility has been a priority for the Organization for some time now. It has long been associated with diverse misconceptions, and in this context I am pleased to see the project come to fruition following comprehensive data collection, benchmarking and analysis to produce a new set of clear processes and tools for CERN that will further improve and enhance the possibilities and opportunities for internal mobility for all staff members.”

Concretely, all public job opportunities listed on Careers at CERN are by default open to staff members. Further, new dedicated Internal Mobility pages (*http://careers.cern/internalmobility*) list the specific internal mobility opportunities open exclusively to staff members, as well as the possibility to join the internal mobility pool.

The full internal mobility process is now published and detailed in the Admin e-guide (*https://admin-eguide.web.cern.ch/en/procedure/internal-mobility*). Metrics will be monitored throughout the year by the HR department and reported on an annual basis to the Organization's management.

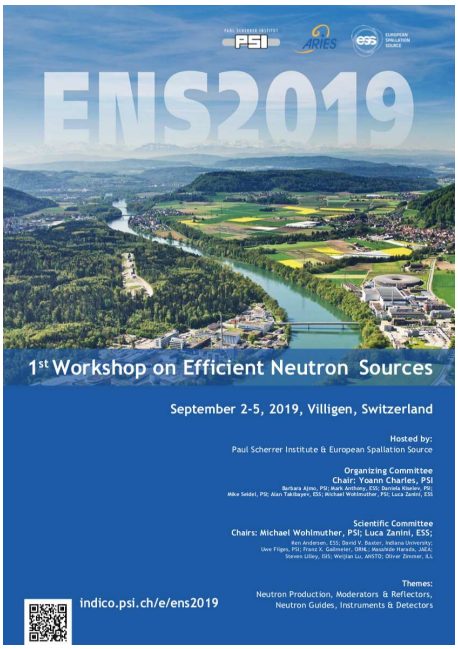
For more information, staff members are invited to consult the HR Internal Mobility webpage (*https://hr-dep.web.cern.ch/content/internal-mobility*).

HR Department

Announcements

WORKSHOP ON EFFICIENT NEUTRON SOURCES

The Workshop on Efficient Neutron Sources will take place in Villigen, Switzerland, on September 2-5 2019



(Image: PSI)

The **Workshop on Efficient Neutron Sources** – ENS2019 – will bring together nuclear physicists, chemists, material scientists and mechanical engineers to discuss the efficiency of neutron sources, and determine the most promising perspectives for improvement.

With the aim of reaching more efficient reactor and accelerator-based neutron sources, ENS2019 will include sessions dedicated to the following topics:

- Neutron Production
- Moderators & Reflectors
- Neutron Guides
- Instruments & Getectors

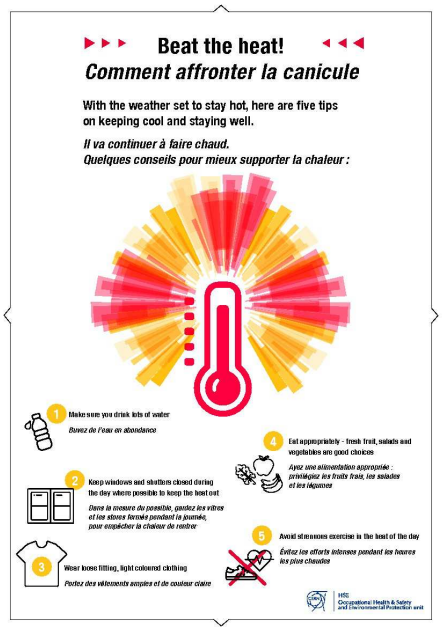
The Paul Scherrer Institut will host the workshop in Villigen, Switzerland, on September 2-5 2019. The workshop is jointly organized with the European Spallation Source (Sweden) and funded by ARIES, part of the EU-Horizon 2020 program.

You can register here: https://indico.psi.ch/event/7274/

BEAT THE HEAT!

With the weather set to stay hot, here are five tips on keeping cool and staying well

CERN Medical Service



(Image: CERN)

CERN RESTAURANTS: OPENING HOURS DURING SUMMER 2019

This summer the three CERN restaurants remain open during their usual hours. The 'Coin Brasserie' in restaurant 2 will be closed from Monday 29 July to Friday 23 August 2019 included.

The cafeteria will be open as follows:

- 6: normal hours
- 13: normal hours
- 30: normal hours
- 40: from 5 to 30 August: open from 8.30 to 16.30
- 54: from 5 to 30 August: open from 8.00 to 15.30
- 864: open from 9.30 to 10.30 and from 15.00 to 16.00 every day
- 865: open from 9.45 to 10.45 every day
- 774: normal hours

26 TO 27 JUNE: EXCEPTIONAL CLOSURE OF THE BIOMETRIC-REGISTRATION SERVICE

Please note that the biometric -registration service in building 55 will remain closed because of upgrades to the computer system.

The service will reopen with its regular working hours on 28 June.

Thank you for your understanding.

The SMB department

OPEN DAYS FOR THE CERN COMMUNITY

One afternoon of this year's Open Days will be reserved for CERN people as well as their families and friends

(Image: CERN)

On Friday, 13 September, from 1.30 p.m. to 5.30 p.m., underground visits will be reserved for anyone with an "@cern.ch" account.

Which sites can one visit?

The sites available for visits are:

- ATLAS (point 1 of the LHC)
- ALICE (point 2 of the LHC)
- CMS (point 5 of the LHC)
- LHC at point 4, with the accelerating cavities
- LHC at point 6, with the beam dump

Who can visit?

Each eligible person (with an "@cern.ch" account) can register up to six people aged 12 or older, including themselves. To allow as many people as possible to enjoy the visits, only one visit per person is possible.

How can one register?

You must use the the visitor registration platform (*https://opendays-registration.cern.ch/*), which will be available from 24 June at 3.00 p. m.

Don't forget that you can also sign-up to be a volunteer (*http:///news/news/cern/cern-open-days-become-volunteer*)! Of course, outside your slots as a volunteer, you can also attend the Open Days as regular visitors on 14 and 15 September.

STREET FOOD COMES TO THE RESTAURANT 1 TERRACE

For the whole of the summer, from Tuesday, 11 June onwards, a Novae food truck will serve street food on the terrace of Restaurant 1 from 11.30 a.m. until 1.30 p.m.

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Like the existing food truck project (see the menu here), this new lunch option aims to mitigate the overcrowding of the restaurants, notably during the summer student period.

You can find the Restaurant 1 street food truck menu here (*https://novae-restauration.ch/menus/menu-week/cern-api/112*).

Please note that the street food truck will be closed in bad weather.