



# CERN Bulletin

Nos 20 & 21 – 16 & 23 May 2012

## Life after discovery: a look at the SPS of 2012

Teams changing an SPS magnet during a technical stop (image courtesy of Franck Baisi.).



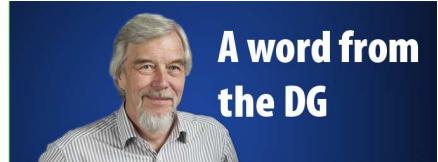
**I**t's the 1970s and the Super Proton Synchrotron (SPS) is at the top of the charts. It's accelerating protons at an unprecedented 400 GeV, and its discoveries will make it the first (and, so far, the only) CERN accelerator to generate a Nobel Prize. Fast-forward to 2012 and the SPS is running at 450 GeV – well beyond its original design parameters – and is an essential part of the LHC accelerator complex. Not bad for a machine entering its 40s.

While much of the SPS dates back to the original set-up, it has been in constant

evolution over the years. Except for a long shutdown in 2005 during the construction of the LHC, the SPS has not had much of a "break" in recent years. "The SPS has a lot of responsibilities: not just to the LHC but also to the North Area experiments and CNGS," explains David McFarlane, the SPS technical coordinator in the Engineering Department. "So even when the LHC is offline, we still have to operate."

Since the LHC first started up in 2008, the

(Continued on page 2)



**A word from  
the DG**



### How are we behaving?

**I**t's almost two years since CERN introduced a Code of Conduct. The results may not be immediately measurable, but I'd like to think it's made the lab a better place to be. The Code of Conduct is based on values that most of us immediately identify with, and so implementing it comes as second nature. Nevertheless, in an organisation of over 10,000 people, it's useful to have a set of guidelines and there have been occasions on which it's been necessary to remind people of them.

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SPS has had only short shutdowns – ranging from a single day to a few weeks. The last winter stop, for example, was nearly 4 months for the LHC – but that's the time between the LHC stopping the beam and receiving beam. The SPS cannot be offline that long, as it takes time to restart the chain to provide the LHC with beam. "The last winter stop was only 5 weeks long for the SPS," says David. "Although this time-frame does not allow us to carry out major upgrades, we are able to ensure essential maintenance is carried out."

But, for the SPS, "essential maintenance" often means more than checking a few cables. Every technical stop sees the change of at least one magnet in the SPS, often car-

ried out in a single day. "Once we actually changed 4 magnets over a 2-day technical stop, with one team moving a magnet out while another brought one in," says David. "It seems rather extraordinary, but the teams have got the process down to an art."

The long accelerator shutdown planned for 2013/2014 (LS1) will be an opportunity for the SPS teams to get significant work done on the accelerator, preparing it for the LHC's 14 TeV run. One major upgrade will combat current problems caused by electron clouds. A beam pipe coating has been developed to counteract these unwanted effects, and new magnets with coated chambers will be installed across one entire arc of the SPS. Another major upgrade, which will start

during LS1 but will not be completed until LS2 in 2018, is the upgrade of the radio-frequency cavities in the SPS. These cavities have to be replaced in order to meet the new beam intensity requirements of the High Luminosity LHC programme.

These upgrades will be just another impressive chapter in the life of a machine that has, over the past 36 years, exceeded every possible expectation. The SPS established CERN as a laboratory of discovery: accelerating everything from sulphur ions to positrons, acting as a proton-antiproton collider at 315 GeV, and injecting particles into LEP and the LHC.

Katarina Anthony



## A word from the DG

(Continued from page 1)

### How are we behaving?

I use the figure of 10,000 advisedly since the Code of Conduct applies to us all, those on the CERN payroll as well as users of the lab's facilities and people working for CERN contractors, as long as they are acting on CERN's behalf. The Code also applies to us whether we are on the CERN site or anywhere else. CERN is a major presence in the region. The way we behave can have a significant influence on how our neighbours perceive us, and how the lab relates to key local partners. To take one, seemingly innocuous, example, green plates make some of us very visible, and though we all drive just as courteously as anyone else, that fact means that whenever we're behind the wheel we have to remember that we're ambassadors for CERN. It's no accident that I've chosen this example: CERN has been held to account on just this subject on more than one occasion.

So I'd like to use my message this week as a reminder of what our Code of Conduct is about, and what it is not. The code is not a rigid set of rules, but rather an ethical framework built around the Organization's core values of integrity, commitment, professionalism, creativity and diversity. It describes the basic standards of behaviour that we can expect in the workplace, and is a practical guide to advise us in our conduct and treatment of others.

## LHC Report: Rocky re-start

A short, two-day machine development period was successfully com-

pleted on 21-22 April. It focused on topics relevant for the 2012 physics beam operation. This was then followed by a five-day technical stop, the first of the year. The technical stop finished on time on Friday 26 April.

The re-start with beam was somewhat tortuous and hampered by an unlucky succession of technical faults leading to extended periods of downtime. The planned intensity increase was put on hold for three days with the machine operating with 1092 bunches and a moderate bunch intensity of  $1.3 \times 10^{11}$  protons. This delivered a reasonable peak

**A rocky re-start with beam followed a successful machine development period and the first technical stop of 2012. Today, Friday 11 May, the machine began running again with 1380 bunches.**

luminosity of  $3.6 \times 10^{33} \text{ cm}^{-2} \text{ s}^{-1}$  to ATLAS and CMS. Higher than usual beam losses were observed in the ramp and squeeze, and time was required to investigate the causes and to implement mitigation measures.

As of 9 May, integrated luminosities of  $1.2 \text{ fb}^{-1}$  were delivered to ATLAS and CMS,  $0.11 \text{ fb}^{-1}$  to LHCb, and  $0.32 \text{ pb}^{-1}$  to Alice. Ahead is a running period for physics with the aim to quickly reach and exceed pre-technical stop peak luminosities and deliver a sizable amount of data in time for the summer conferences.

Barbara Holzer for the LHC Team

**The Code of Conduct applies to all of us. Following it not only makes CERN a better place to be, it also helps foster mutual understanding and promote the level of esteem in which we're held and hold others. And don't forget that the CERN Ombuds, a role created at the same time as the Code, is there to help in case of need. Differences between colleagues arise all the time in any work place, and most of the time can be resolved without recourse to a third party. The Ombuds is there for the rare occasions when that's not possible. The**

**Ombuds' mandate is to provide guidance in the application and interpretation of the Code of Conduct and to offer confidential assistance on interpersonal issues.**

**To conclude, I'd like to encourage you all to take a few minutes to re-familiarise yourself with the Code of Conduct, and to read the Ombuds' messages. After all, by keeping the Code of Conduct fresh in our minds, we can all contribute to ensuring that CERN remains a great place to be, and a respected part of the local community.**

Rolf Heuer

# Computing power on the move

CERN's computing department has been aiming to minimise human contact with the machines for a while now. "The problem is that people going in creates dust, and simply touching things may cause damage," explains Wayne Salter, Leader of the IT Computing Facilities Group. A first remote centre on the other side of Geneva was opened in June 2010 and a new one will open in Hungary next year. "Once the centre in Budapest is running, we will not be going there to operate it. As far as possible, we'll be managing it via the network."

CERN will take care of software configuration and the day-to-day running of the centre, such as responding to software alarms, remotely. "It's an important step for CERN IT, and quite a challenge," says Wayne, "because it's a new operational model for us. But I think we have the tools and know-how to make it work." The physical installation and hardware maintenance will be han-

**You might sit right next to your computer as you work, use the GRID's computing power sitting in another part of the world or share CPU time with the Cloud: actual and virtual machines communicate and exchange information, and the place where they are located is a detail of only marginal importance. CERN's new remote computer centre will open in Hungary in 2013.**

dled by the Hungarian host institution, the Wigner Research Centre for Physics.

The new centre was originally planned as a means of extending the Tier 0 capacity of the Grid for the LHC experiments, but it has also become an opportunity to ensure business continuity at CERN. "Should the computer systems located at CERN go down in the event of an emergency or a prolonged power cut, we will be able to transfer the critical functions to the centre in Hungary temporarily," explains Wayne. "It's a case of mitigating the risk of having all the Organization's computing in one location."

Critical functions, he explains, does not mean complete physics data handling. "In a major emergency, the experiments would probably not be taking data anyway, and if

the problem did only affect the computer centre, the experiments could use their capacity to buffer a certain amount of data and the physics programme would not be affected." The back-up in Hungary is primarily planned for the computing which allows us to do our every day work at CERN – from e-mail to legal and HR databases and the pay system. "It can take several days to restore a database if it loses power unexpectedly, and some of the data may be irredeemably corrupted," underlines Wayne. "Of course we hope this never happens, but the new remote centre gives us the chance to be prepared!"

No matter where the machines are located, the end user will notice no difference in the quality of the response.

*Joannah Caborn Wengler*



Artist's impression of the new Wigner Data Centre. (Image: Wigner).



## Did you know?

The new centre in numbers

Surface: 3 rooms, each of 275m<sup>2</sup>.  
IT Load: Increasing from 600kW in first year in steps of approximately 300kW/ annum.

First year:

- Roughly 18k processing cores;
- Roughly 5.5 PB disk storage.

Increasing annually by:

- Roughly 9k processing cores;
- Roughly 2.7 PB disk storage.

# CERN openlab enters new phase

Eleven years ago, the creation of the CERN openlab created a long-term link between industrial partners

and the Organization. Its framework has allowed industry to carry out large-scale IT research and development in an open atmosphere – an “Open Lab”, if you will. For CERN, openlab has contributed to giving the computing centre and, more broadly, the LHC community, the opportunity to ensure that the next generation of services and products is suitable to their needs.

Now entering its fourth phase, openlab will take CERN computing to the next level. The focus will be on innovative computing that can accommodate record LHC data requirements. “We’ll also be looking at new subjects, such as cloud computing,” says Bob Jones, Head of CERN openlab. “This wasn’t

The newest phase of CERN’s openlab framework was inaugurated this week during a meeting of the openlab partners. This phase will last three years and will bring together existing openlab partners and a new contributor: Huawei.

as relevant during the last phase of openlab – where the focus included storage and GRID computing – but it is now an area of great potential for CERN computing.”

CERN openlab will also be working more closely with different aspects of the LHC experiments, for example the trigger and data acquisition systems. “The experiments will be looking at upgrades of these systems during the upcoming long shutdowns,” explains Bob. “Most of their systems were developed in the early 2000s, so they’ll want to re-examine their choice of technologies. CERN openlab will be providing them with an environment where they can do that.”

The fourth phase may also provide the opportunity to collaborate with other research labs, such as ESRF, ILL and European XFEL which have similar data acquisition and control needs to the LHC. European Commission projects may also be incorporated, as Horizon 2020 has placed significant emphasis on partnerships between public and private bodies. “In short, we’re looking into a lot of possibilities,” says Bob. “One of the great things about openlab is that nothing is set in stone – we just go wherever the technology takes us!”

For more information about the fourth phase of openlab, read the official CERN press release (<http://press.web.cern.ch/press/PressReleases Releases2012/PR13.12E.html>). Also, be sure to check out openlab’s new website:

<http://openlab.web.cern.ch/>

Katarina Anthony



Group picture taken at the first CERN openlab IV annual Board of Sponsors meeting, in the presence of the CERN Director-General, the partners and the openlab team members. © Fons Rademakers (CERN Photo Club).

# Tailor-made training for digital library software

"We plan to use Invenio to build a portal for all African university dissertations to make them accessible to the global academic community. We need a system which can

harvest data from various existing platforms, then convert the bibliographic records and make them available at one central point," explains Essaid Ait Allal, network and system administrator at the Moroccan Institute for Scientific and Technical Information. Guillaume Rewende Nikiema nods. He can identify with the need outlined by Essaid, working as he does for the African and Madagascan Council for Higher Education located in Burkina Faso, which also means bringing together library information from many different sources and platforms.

**Six librarians and IT engineers from Senegal, Mali, Burkina Faso, Ivory Coast and Morocco are currently spending several weeks at CERN as a follow-up to the 5-day CERN-UNESCO Digital Libraries School held in Dakar, Senegal, last year. During their stay, they are honing their mastery of CERN's Invenio digital library management platform in order to put it to a variety of uses once they return home.**

"Our interest is rather different," says Fama Diagne Sene, chief librarian at the University of Bambe in Senegal. "All the original documents from the French colonial administration of what are now eight independent African states, dating from 1895 to 1958, are in Senegal. Unfortunately, the papers are slowly deteriorating due to heat, moisture and simply the passing of time. So by learning more about Invenio, we are building up the expertise to digitalise these unique historical records to preserve them and make them available to researchers not just in Africa but worldwide."

These are just two examples of the kind of important and ambitious projects envisaged which need advanced digital library technology and training in how to use it. This is why this group of six librarians and IT specialists is intensifying its knowledge of Invenio at CERN. "It's crucial to have these follow-up sessions, which are partly financed by UNESCO, like we did after the previous school too," underlines Jens Vigen, head of CERN's Scientific Information Services and organiser of the training. "This way, we can enable in-depth training for selected participants in so-called 'multiplier' positions. These are decision-makers and specialists in key institutions who can 'multiply' and pass on the knowledge gained at CERN as part of their day-to-day work."

As for the participants, they appreciate the unique quality of this training at CERN. "The advantage of being here is that we are sitting in offices right next to the people who develop the system and work with it every day," explains Abdrahamane Anne from the University of Bamako, Mali. And Jens' organisation of the training is making sure that proximity translates into productive contact. "Whenever we hit a problem, Jens puts us in touch with the right person or arranges a workshop," says Abdrahamane. "That way the training is truly tailor-made to our needs."

"It's also an opportunity to share," adds Eric Guedegbe from the United Nations African Institute for Economic Development and Planning. "Sometimes we ask the developers things they hadn't thought about before. We have also been able to participate in an international Invenio user group workshop. So being here has really allowed us to become active in the international Invenio community."

*Joannah Caborn Wengler*



From left to right: Essaid Ait Allal (Morocco), Guillaume Nikiema (Burkina Faso), Eric Guedegbe (Senegal), Fama Diagne Sene Ndiaye (Senegal), Abdrahamane Anne (Mali) and Jens VIGEN (CERN). Cécile Coulibaly (Ivory Coast), who was also taking part in the training programme, is not in the picture.

# A Monte Carlo code for ion beam therapy

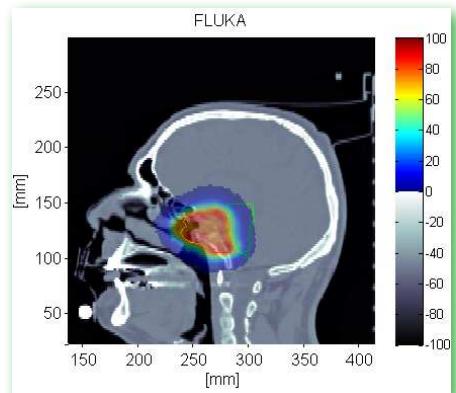
**F**luka is a Monte Carlo code that very accurately simulates electromagnetic and nuclear interactions in matter. In the 1990s, in collaboration with NASA, the code was developed to predict potential radiation hazards received by space crews during possible future trips to Mars. Over the years, it has become the standard tool to investigate beam-machine interactions, radiation damage and radioprotection issues in the CERN accelerator complex.

Recently, the medical community has shown great interest in Fluka for a different type of application: ion beam therapy for cancer treatment. As this type of intervention uses particle beams to target tumour cells, it is very important to predict accurately how they will interact with the patient's body. "Currently, we are working in collaboration with the National Institute for Nuclear Physics (INFN) in Italy, the Heidelberg Ion-beam Therapy Center (HIT) in Germany and the National Hadrontherapy Center for Cancer Treatment (CNAO) in Italy to develop and adapt

**Initially developed for applications in detector and accelerator physics, the modern Fluka Monte Carlo code is now used in many different areas of nuclear science. Over the last 25 years, the code has evolved to include new features, such as ion beam simulations. Given the growing use of these beams in cancer treatment, Fluka simulations are being used to design treatment plans in several hadron-therapy centres in Europe.**

Fluka for various applications in ion beam therapy, which exploits proton and carbon ions beams," says Alfredo Ferrari, one of the main authors of the code. "Indeed, medical physicists and radiation oncologists have quickly realized how useful Fluka can be to help them choose the best beam configuration to use during treatment."

Fluka computes physics data – ion types, beam models, different energies, etc. – to generate a database. This database is then used in conjunction with individual patient data to optimize the treatment plan. "Fluka is a valuable tool to compute doses for patient treatment very accurately," explains Till Böhlen from CERN, who is currently working on developing Fluka for ion beam therapy in the framework of the PARTNER European network. "This is especially useful in critical situations - for example, if the patient has a metal implant in the target area of the intervention."



*Fluka calculates the dose distribution for a patient treated at CNAO with proton beams. The colour-bar displays the normalized dose values.*

Future developments of Fluka include the improvement of physics models for new ions, such as oxygen and helium, with a view to their possible use in hadrontherapy. The code is also increasingly employed to simulate the secondary radiation produced during treatment by the beam interacting with the patient. This feature is crucial as secondary radiation is being studied as a very powerful tool to perform in-vivo monitoring during treatment.

*Anaïs Schaeffer*

# ARDENT to develop advanced dosimetric techniques

The ARDENT (Advanced Radiation Dosimetry European Network Training) project is both a research and a training programme, which aims at developing new dosimetric

techniques while providing 15 Early-Stage Researchers (ESR) with state-of-the-art training. The project, coordinated by CERN, is funded by the European Union with a contribution of about 3.9 million euros over four years.

The ARDENT initiative will focus on three main technologies: gas detectors, in particular Gas Electron Multipliers (GEM) and Tissue Equivalent Proportional Counters (TEPC); solid state detectors such as Medipix and silicon microdosimeters; and track detector techniques. "ARDENT researchers will address the potential uses of instruments based on these technologies," explains CERN's Marco Silari, a member of the Radiation Protection Group and the scientist in charge of the programme. "The challenges of radiation dosimetry are to disentangle the various components of a radiation field, determine the dosimetric quantities that are due to each component, obtain information on the energy distribution of the various components (spectrometry) and ideally measure the "quality" of

Earlier this week, the EU-supported Marie Curie training network ARDENT kicked off at a meeting held at CERN. The overall aim of the project is the development of advanced instrumentation for radiation dosimetry. The applications range from radiation measurements around particle accelerators, onboard commercial flights and in space, to the characterization of radioactive waste and medicine, where accurate dosimetry is of vital importance.

the radiation field. The instruments that ARDENT aims at developing should be able to do this in a very accurate way."

State-of-the-art dosimetric instrumentation can be exploited to characterize the stray radiation field around particle accelerators used not only in fundamental research but also for industrial applications and in the medical field for radionuclide production and in cancer radiation therapy. "The assessment of secondary doses received by patients undergoing radiation therapy due to the stray photon and neutron radiation outside the treatment field is a very important issue in cancer therapy," says Marco. "The measurement of the properties of clinical hadron beams such as the transverse beam profile, the depth dose distributions, field homogeneity and the fragmentation of carbon ions is an important tool for medical doctors who have to design the best treatment plan for patients."

ARDENT involves 12 institutes (7 Full Partners and 5 Associate Partners), repre-

senting both research and academic organisations and industry, from Australia, Austria, Canada, the Czech Republic, Germany, Italy, the US and, of course, CERN. "At the kick-off meeting we approved the composition of the various boards of the ARDENT organisational structure, reviewed the overall goals of the project and the scope of its training and outreach, and discussed the programme of the first annual workshop which will take place in Vienna towards the end of the year," says Marco. "We are currently in the recruiting phase. We received 34 applications for 15 vacancies and have just selected the four ESRs who will be based at CERN. Most of the other partners are also well advanced in their recruitment."

"The participation of CERN (in particular DGS/RP and PH/ESE) in ARDENT will help us to develop radiation monitoring techniques that could be used at CERN as well as elsewhere in various domains. I am happy that the Radiation Protection Group has a leading role in this project," concludes Doris Forkel-Wirth, head of the Radiation Protection Group in the Health & Safety and Environmental Protection Unit.

More information on the ARDENT programme can be found on the dedicated website:

<http://ardent.web.cern.ch/ardent/ardent.php>

*Antonella Del Rosso*

# Laser acceleration... now with added fibre

The International Coherent Amplification Network (ICAN) is studying the potential of lasers for collision physics. CERN is a beneficiary of the project and will collaborate with 15 other institutes from around the world, including KEK in Japan, Fermilab in the USA, and DESY in Germany. "The network is looking into existing fibre laser technology, which we believe has fantastic potential for accelerators," says Gerard Mourou, ICAN co-ordinator at the École Polytechnique in France. "The hope is to make laser acceleration com-

**Laser acceleration technology is plagued by two main issues: efficiency and repetition rates. In other words, lasers consume too much power and cannot sustain accelerating particles long enough to produce collisions. ICAN, a new EU-funded project, is examining how fibre lasers may help physicists tackle these issues.**

petitive with traditional radio-frequency acceleration techniques."

Laser acceleration is currently limited by the "single-shot" nature of the technology. As there is no way to remove the excess heat created by lasers, they cannot be sustained for high-energy acceleration. However, using fibre lasers may resolve this issue.

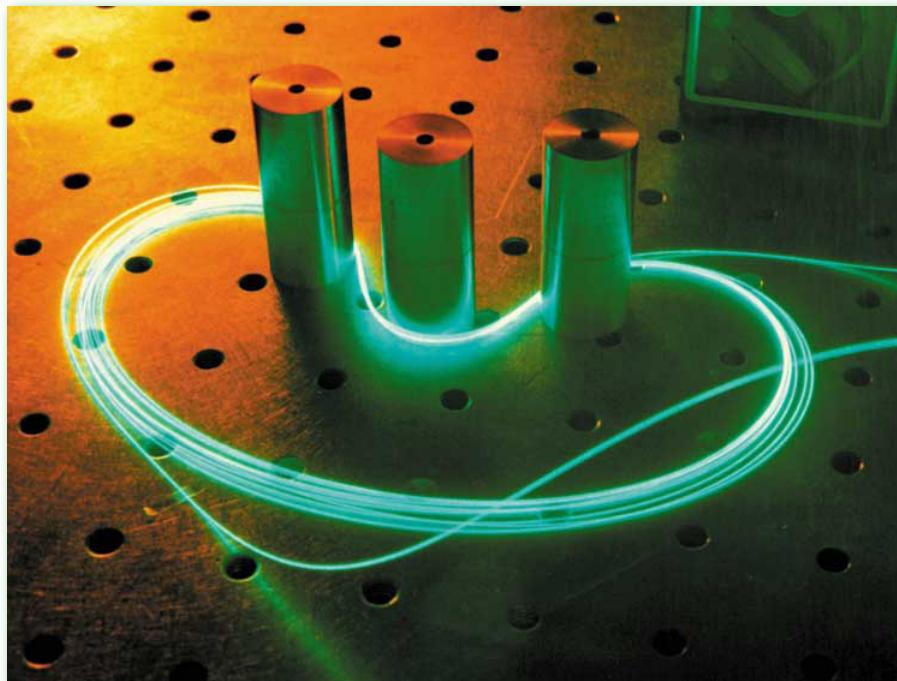
By using laser diodes to pump the laser through typical optical fibres, fibre lasers absorb the heat created, thus giving fibre lasers very high repetition rates. This, in turn, may allow the laser to be sustained long enough to accelerate particles into collisions. Fibres should also improve the overall power efficiency of lasers by 35-40%, making them more economically feasible for experiments. "ICAN is studying whether we can turn the potential of fibre lasers into feasible technology," says Gerard. "Once we have achieved this, we can then look at direct laser applications for accelerators."

"CERN accelerator experts will advise collaborating institutions to define the requirements useful for collision physics," says Jean-Pierre Koutchouk, CERN advisor for international relations in accelerators and technology. "CERN's contribution to the ICAN project is part of a wider strategy to encourage the development of laser acceleration technologies. By supporting ICAN and similar research projects, CERN will be contributing to the R&D of potentially ground-breaking accelerator technologies."

ICAN is only the beginning and, if all goes as expected, we will be seeing more accelerator projects based on fibre lasers. "We're considering ICAN as an 18-month-long preparatory phase, vetting the laser technology for a possible longer project based on ICAN laser concepts," concludes Gerard.

The ICAN kick-off meeting was held at CERN on 22 February 2012. The network has received half a million euros in the framework of the FP7 Capacities programme.

Katarina Anthony



A diode-pumped fibre laser. (Image courtesy of Institute of Applied Physics, Germany.)

# The European Nuclear Science network touches base at CERN

ENSAR (<http://www.ensarf7.eu>) involves 30 partner institutes, which include the seven large nuclear physics facilities in Europe. A large part of the European nuclear physics community is represented in ENSAR, in particular scientists who are performing research related to nuclear structure, nuclear astrophysics and applications of nuclear science. In 2010, the project was awarded 8 million euros from the European Union to be used over four years.

"ENSAR includes networking and research activities for the development of state-of-the-art technologies needed for the next generation large-scale facilities for nuclear physics as well as to improve the performance of the presently running facilities," says project co-ordinator Muhsin Harakeh (KVI/GSI/GANIL). "The core aim is to facilitate access to the seven world-class infrastructures that are participating in the project:

**ENSAR (European Nuclear Science and Applications Research) is an EU-supported project, which aims at fostering cooperation within the European low-energy nuclear physics community through the active sharing of expertise and best practices. The project also includes a transnational access programme to allow a large community of users to access the participating facilities, which include CERN's ISOLDE. In the last week of April, CERN hosted the General Assembly and Programme Coordination Committee meetings, about 18 months after the project's kick-off.**

ALTO and GANIL in France, GSI in Germany, LNL-LNS in Italy, JYFL in Finland, KVI in the Netherlands, and ISOLDE at CERN. Together, these facilities provide stable and radioactive ion beams of excellent quality ranging in energy from tens of keV/u to a few GeV/u."

Almost halfway through the four-year period, the ENSAR project recently held its annual general meeting at CERN. This was an opportunity for all the partners to touch base on the work already done and on the issues that remain to be addressed. "We have put a great deal of effort into the dissemination of our activities but we think that we could still improve this essential aspect of the project, for example

by improving the website. This is a main objective as the multidisciplinary applications and some of the work packages have direct benefit to society," says Ketel Turzó, the project's manager. "We will also need to optimize the schedule for transnational access to the facilities as some of them will be shut down for major upgrades during the duration of the programme."

CERN is participating in the project as ISOLDE is one of the facilities involved in the translational access activities. In addition, CERN's Thierry Stora is the coordinator of ActILab, a research activity within ENSAR that aims at developing new target technologies which will exploit actinides to produce new isotopes. CERN also leads the EURISOL Network aimed at promoting R&D and updating the scientific case for the future EURISOL facility.

Pooling the available resources including human capital where possible, developing new technologies, stimulating complementarity and ensuring broad dissemination of results is the job that ENSAR is doing for the nuclear physics community in Europe: a valuable investment for the future!

*Antonella Del Rosso*



Participants in the ENSAR project.

# Safety brings CERNois together

Two weeks ago, for the second year running, CERN's restaurants hosted World Day for Health and Safety at Work stands. And once again, the stands attracted considerable interest. "Many people consulted our experts on safety issues relating in particular to ergonomics and electrical risks, the two themes to which we devoted particular attention this time," explained Charles-Edouard Sala, a member of the BE Department's Safety Unit and co-organiser of the event.

The World Day for Health and Safety at Work, which was celebrated at CERN on 27 April, provided an opportunity for the safety professionals and members of the CERN personnel to get together to discuss joint concerns. It was a good opportunity for people to learn to distinguish between good and bad habits.

The cardiac massage competition organised by members of CERN's Fire Brigade attracted a large number of competitors. No fewer than 80 people, including our own Director-General, took part. The goal was to try and get as close to the natural heartbeat rate as possible. The winners were:



Members of the CERN Fire Brigade advise the Director-General.

Alain Grimaud, who won a Fnac voucher; runners-up Neus Lopez March and Alexandre Putzu each won a cardio watch; and Mathilde Favier and Elisa Gros, a box of chocolates each.

The ergonomics contest "Show us what has changed", which entailed improving the comfort and ergonomics of one's own workstation, was won by Katarina Anthony-Kittelsen, who received a 100€ Vitam' Parc voucher; runners-up Natasha Lavy-Upsdale and Anaïs Schaeffer each won a 50€ Vitam' Parc voucher; and Regis Buffet and Emeline Weymaere each won a box of chocolates.

The organisers from the BE Department and the HSE Unit would like to thank all those at CERN who contributed to the marked success of the World Day for Health and Safety at Work and for making it such an enjoyable occasion. They would also like to take this opportunity to thank all their colleagues, and in particular members of the BE-ASR-SU, BE-BI, HSE-SEE, EN-EL, GS-ME, GS-FB, and GS-SE-HE units, for making themselves available for consultations at the stands.

Please do not hesitate to contact the BE Department's Safety Unit ([BE-Safety@espace.cern.ch](mailto:BE-Safety@espace.cern.ch)) or the HSE Unit ([safety-general@cern.ch](mailto:safety-general@cern.ch)) for any further information or if you have any further questions.

CERN Bulletin

# Ready, set, move!

The CERN annual relay race is scheduled on 24 May this year. The CERN Medical Service will officially launch its "Move! & Eat Better" campaign at this popular sporting event. "We shall be on hand on the day of the race to strongly advocate regular physical activity," explains Rachid Belkheir, one of the Medical Service doctors. "We really want to pitch our campaign and answer any questions people may have. Above all we want to set an example. So we are going to walk the same circuit as the runners to underline to people that they can easily incorporate movement into their daily routine."

An underlying concern has prompted this campaign: during their first few years at CERN, young adults tend to adopt a sedentary existence, particularly as a result of long periods of work glued to their work stations, and they have a tendency to put on weight. As Rachid Belkheir points out: "This has been observed as a European trend. At CERN we have noted an average weight gain of between 1 and 2 kg each year during the first few years of professional activity. Obviously, this has an impact on physical health, especially cardiovascular health, as well as mental health."

This year, the CERN Medical Service is launching a new public health campaign. Advertised by the catchphrase "Move! & Eat Better", the particular aim of the campaign is to encourage people at CERN to take more regular exercise, of whatever kind.



Although the campaign officially starts on 24 May, no official end date has been set. "We're hoping that the campaign will instil a change in people's long-term habits because people at CERN need to be concerned about their well-being all year round," underlines Rachid Belkheir. The goal of the campaign is that, over time and with the efforts of the Medical Service, each of us will come to recognise the benefits of physical activity as an accessible means of improving and maintaining our health.

To be more physically active, you don't have to join the local sports club or to jog for three hours every week. There are enough opportunities in a typical day to get moving, such as the old favourite - using the stairs rather than being tempted to take the lift. Or why not a pleasant postprandial walk in the countryside? You could also cycle to work (see box) or take Shanks's pony (i.e. walk) whenever you go and buy your loaf of bread (wholemeal, while you're at it), or go to the post office or pharmacy.

## "Move! & Eat Better" in the coming weeks

- 1 to 30 June, take part in the Bike2Work event. Please note that registration for this event closes on 31 May. You should also note that in June CERN's Gate C will be open from 12 noon to 2 p.m. for the benefit of cyclists, runners and walkers.
- At 6:30 p.m. on 21 June, Dr Per Bo Mahler will give a conference entitled "Bouger pour la santé" in CERN's Main Auditorium.
- Other events will be organised throughout the year. The event programme for the "Move! & Eat Better" campaign will be published on Facebook at: <http://www.facebook.com/MoveEatBetter> and on the official campaign website at: [cern.ch/bpmm](http://cern.ch/bpmm)

But to return to wholemeal bread, your nutritional habits clearly also play a major role in your state of health. "Novae is one of our privileged partners," points out Rachid Belkheir. "They are also helping to remind us all of the rules of a balanced diet." So, ready to fire on all cylinders?

Anaïs Schaeffer

Watch the video at:

<https://cdsweb.cern.ch/record/1444608>

# Oxford engineering students to study new solutions for vacuum chambers

**Engineering Science students invited to design for CERN's Large Hadron Collider**

In April, eleven Engineering Science students in their third year were invited to the CERN laboratory in Geneva to present their ideas for new vacuum chamber designs for the experi-

**In April, eleven engineering science students in their third year at Oxford University were invited here to present their design ideas for new vacuum chamber materials to be used in accelerators. We publish below an abstract of the article that the University of Oxford featured on its website.**

ments of the Large Hadron Collider (LHC). Their design objectives were to propose alternatives to beryllium – the material used for some of the existing experimental

vacuum chambers. Beryllium (chemical element with the symbol Be and atomic number 4) is toxic, expensive, difficult to machine and join, and can have associated health problems if personnel were exposed to the element in a particle form caused by damage to a chamber.

The hadron beam at CERN's Large Hadron Collider is held in vacuum, and a structural vacuum chamber is needed around the entire 27 kilometre ring. It is paramount that, at the beam collision points, the chambers to be designed are transparent to particles created during a collision, so that the products can be detected, unimpeded, by the LHC experiments. Eleven Oxford students have worked in three teams and designed alternative systems to using beryllium. By exploiting advanced carbon composites they have developed alternatives with similar transparency but using safer materials. They also presented solutions for quick changeover of components, which could help minimise exposure of technicians to hazardous environments.

All three teams of students developed theoretical designs from intensive research on-line.

Access the full article at:

<http://www.eng.ox.ac.uk/public-relations/news/engineering-science-students-invited-to-design-for-cern2019s-large-hadron-collider>

*Department of Engineering Science  
University of Oxford*

*The 11 Oxford students who worked at CERN on alternatives to beryllium in vacuum chambers. (Photo courtesy of the Department of Engineering Science, University of Oxford.)*



## Train your brain: Don't put your password on paper!

You can do better! **Train your brain!**  
Here are some hints to help you choose good passwords:

I completely acknowledge that constructing a good password can be difficult. And remembering it for some time isn't easy, either. However, noting it down on a sheet of paper and hiding it in a drawer in your office (or even attaching a sticky note to your monitor) isn't a valid solution. It violates CERN Computing Rules (<https://security.web.cern.ch/security/rules/en/index.shtml>).

Choose a line or two from a song or poem, and use the first letter of each word. For example, "In Xanadu did Kubla Kahn a stately pleasure dome decree!" becomes "IXdKKaspdd!"

Use a long passphrase like the sentence "InXanaduDidKublaKahnAStatelyPleasureDomeDecree!" itself;

Alternate between one consonant and one or two vowels with mixed upper/lower case. This provides nonsense words that are usually pronounceable, and thus easily remembered. For example: "Weze-Xupe" or "DediNida3";

Choose two short words (or a big one that you split) and join them together using one or more punctuation characters. For example: "dogs+F18" or "comPIIUTer"

For a series of hints on how to choose a good one, please check out our password recommendations page (<https://security.web.cern.ch/security/recommendations/en/passwords.shtml>).

Also, remember that nobody legitimate will ever, ask you for your password. Never! So, if you are asked for it by your supervisor or team leader, the ServiceDesk or somebody else (like these fake phone calls pretending to come from Microsoft: <http://www.melani.admin.ch/dienstleistungen/archiv/01127/index.html?lang=fr>), please turn them down. They must not ask for your password. Your password is yours! Instead, report this to Computer.Security@cern.ch and we will take the appropriate action. If you think your password may have been exposed or stolen, then change it here: <https://account.cern.ch/account/>.

Of course, this is valid for every other password too, e.g. those you use on Amazon, Twitter, or Facebook. However, please do not use the same password for all those sites as this can increase the risk of exposure. You can do better and use one distinct password for every site. Again: **Train your brain!**

If you have any questions, suggestions or comments, please contact the Computer Security team or visit us at <http://cern.ch/security>.



### News from the Library

Just go to the Library's Online Particle Physics Information page (<https://library.web.cern.ch/library/rpp/>). There you'll find a wide selection of relevant information, as well as resources in particle physics and related areas. The

Are you looking for some specific information in particle physics? For example, the main literature databases, data repositories or laboratories...

collection covers all aspects of the discipline - in addition to traditional scientific information resources you can find, for example, a selection of relevant blogs and art websites.

This webpage is an extended and regularly updated version of the chapter on Online Particle Physics Information in the Review of Particle Properties. It is maintained by the CERN Library team which welcomes suggestions for additions and updates: [library.desk@cern.ch](mailto:library.desk@cern.ch).

CERN Library



## Ombuds' Corner Le coin de l'Ombuds

In this series, the Bulletin aims to explain the role of the Ombuds at CERN by presenting practical examples of misunderstandings that could have been resolved by the Ombuds if he had been contacted earlier. Please note that, in all the situations we present, the names are fictitious and used only to improve clarity.

# Use of sensemaking\* in ethical decisions

Taking ethical decisions can often be a dilemma - one that requires recognition and proper representation of multiple pieces of complex information, as well as an intuitive judgment about potential consequences. Pressure is particularly placed on organizational leaders, who are tasked with projects, partnerships and individuals. Constraining forces - be they personal, situational or environmental - can negatively influence any decision by decreasing ethical awareness, ethical sensitivity and ethical judgment. By creating mental compensatory models, the Sensemaking\* technique serves to counteract these constraining forces that narrow the search and evaluation of information, and lead to poor decisions.

For example, emotional reactions can negatively influence ethical decisions. These reactions require special compensating tactics, such as emotion regulation, cognitive reappraisal or relaxation - all of which can be learnt. Self-reflection and self-awareness could also improve ethical decision making by helping the leader reflect on his personal motives and prior experiences. Any ethical decision should also take into account the potential consequences involved. Mental models favoring forecasting include: focusing on a limited number of essential issues, identifying the most critical ones, and considering alternative consequences. Leaders also need to be aware of their biases when dealing with interpersonal crises. Techniques that develop an accurate and neutral integration of information also favour ethical decisions.

Let us take a look at a single situation between a supervisor and a supervisee, but handled with two different strategies: one including emotion regulation, self-reflection, forecasting and information integration; and the other marred by cognitive limitations. But first, let me set the scene:

Max\*\* is the leader of a large CERN unit responsible for the overall operations of the technical and scientific infrastruc-

ture of the Laboratory. Many people rely daily on his decisions which often cannot be delayed. Max is constantly stressed by the weight of his responsibilities and the urgency with which he should act. In this context, Diana\*\*, one of his supervisees, bursts in his office without warning and starts complaining about several people in his group who are making constant maintenance mistakes, to the point that she now believes that they may do it on purpose, retaliating against her last decisions to change the schedule of the shifts. This endangers the overall CERN scientific program and Diana asks for immediate action from her supervisor.

**[Case 1]** Max's heart rate immediately begins accelerating, as he feels put on the spot. Max dislikes Diana, who he finds distant and arrogant, so he is not surprised that some discontent is running through the team. So when Diana starts explaining the problem to him, Max interrupts her saying that he does not care about the details, which are not of his business. He tells her that such maintenance is a priority and, consequently, Diana has to satisfy the requests of her team in order to avoid any possible technical halts; he then, literally, shows Diana the door while saying that it is useless to discuss the issue further. At this point, Diana feels totally rejected, disapproved of by her team, and has a serious problem with maintenance and her leadership. Operations are almost guaranteed to stop, thus increasing the dispute even further.

**[Case 2]** Max takes a big breath and asks Diana to sit down first. This is a good opportunity to gently remind Diana of the reality of her job and to ask her to stop constantly using her laptop, especially during meetings, as he does not appreciate this. It is as though Diana finds the meeting so dull she cannot bother paying attention. When Max had been directly involved with the operations, he had suffered through similar circumstances, so he understands Diana's stress.

He then asks Diana to tell him - quietly - the full story. This is a dilemma: on one hand,

Diana is not wrong about modifying the schedule, as it provides a more efficient maintenance which is absolutely needed; on the other hand, the team is not prepared to "take it" from Diana, as it lowers their supplementary hours, and thus their money. Diana's authority is also at stake: what happens if she is not supported? What if the team gets the message that they can get anything by applying pressure? Max has nobody to replace Diana if she breaks down - but neither does he have another team. Max suggests that Diana evaluates the possible consequences of any given action, and find the most favorable, if not perfect, solution. After two hours, during which they review all the elements, solutions and consequences relating to the issue, they make an ethical decision: Diana will rework the schedule in the spirit of improving performance, while trying to limit the salary losses. Few people are expected to reject this new scenario, and may be convinced to agree by their colleagues. Both Max and Diana agree that they have found the best possible solution. They also feel like their working relationship had been strengthened by the crisis.

## Conclusion

Difficult decisions very often lead to a dilemma; there is no perfect solution. For these decisions, all elements have to be taken into account, including: past causes, current problems, and possible future consequences. Regulating emotions, self-reflection, forecasting and information integration are great ingredients which facilitate the possibility of reaching an ethical decision. Remember that an informal and confidential discussion with the Ombuds may also allow you to formulate a clearer decision, as you interact with a neutral party.

## Contact the Ombuds early!

<http://cern.ch/ombuds>

Vincent Vuillemin

\* See *Journal of Business Ethics* (2102) 107:49-64 by C.E.Thiel, Z.Bagdasarov, L.Harkrider, J.F.Johnson and M.D.Mumford.

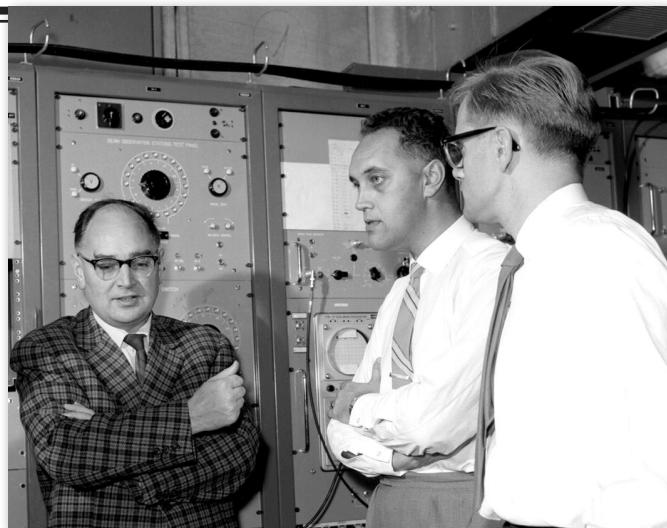
\*\* Names and story are purely fictitious.

# C.J. "Kees" Zilverschoon (1923 - 2012)

C.J. was one of the first staff to join CERN, in May 1954 – when there was no laboratory and only the beginnings of an organization, which was formally founded in September 1954. Most people coming to CERN at that time left a well-established position at home, choosing (as J. B. Adams said in an interview) an 'adventure against job safety'.

Coming from the University of Amsterdam as an applied physicist, where he had worked on isotope separators, his obvious place at CERN was with the construction project of the 25 GeV Proton Synchrotron. There, he took charge of general engineering and, later, installation and the setting up an operations group. He collaborated closely with C.A. Ramm and G.L. Munday, who were in charge of the PS magnet and the vacuum system, respectively.

When the PS was finished, C.J. chose to work on developing future projects and joined the Accelerator Research Division. He was thus one of the leading figures preparing the design and cost estimate of the next large projects of CERN: the Intersecting Storage Rings (ISR) and the 300 GeV syn-



C.J. Zilverschoon (middle), with A. Schoch and K. Johnsen in the PS Control Room, 1960.

chotron (now SPS). There was fierce competition between the two projects for several years: whether to increase the available collision energy by building a pair of 30 GeV storage rings (ISR) or by building a 300 GeV synchrotron (now SPS).

After the Council decision in 1965 in favour of the ISR, C.J. joined it as deputy project leader while still leading, for many years, the group examining proposals from many Member States for possible alternative locations of the SPS.

While the ISR installation was finalized and commissioning started in 1970, C.J. became Director of the PS Department, where a new 50 MeV LINAC and the 800 MeV Booster were added to the PS. At the same time, he assumed the charge of Director for Programme and Budget until 1975. After this, he returned to Long-term Studies, where he was co-leader of the study of the Electron-Positron Collider (LEP), later replaced by the LHC.

He was a member of the ISR Division till 1982 and of the LEP Division till 1988, when he reached retirement age. During these years – and for a few more years during his retirement – he was Chairman of Council's Committee in charge of the reform of the CERN Pension Fund.

Everyone appreciated C.J. as a very frank, friendly and unassuming senior colleague combining cheerfulness with a very natural authority. For more than thirty years, he was one of the leading personalities who formed CERN to become the laboratory of worldwide radiance it is today.

*His colleagues and friends*

# Piotr Doniec (1987-2012)

**I**t is with great sadness that we learned about the tragic loss of our valued technical student and friend Piotr Doniec. He was taken from us on 29 April, at the age of 25, while following his passion for mountaineering during a descent in the French Alps, near Thônes.

Piotr was a fifth year student of Computer Science at the Warsaw University of Technology, who came to CERN's TE department in July 2011 as a technical student. Selected for his wide-ranging skills, he quickly integrated into our team and became our reference for the software aspects of magnetic measurement technology. He was always eager to face difficult tasks and challenges and was known to everyone as a dependable and helpful colleague. During his stay he succeeded in creating a number of software components



that are essential to our work and that we will keep using for a long time to come.

It is always a challenge for any young person to leave his familiar surroundings, loved ones and friends, and to adapt linguistically and culturally to a foreign setting. Yet Piotr managed this with great skill while pursuing his career dreams. As climbing was his greatest passion, he enjoyed his stay at CERN not only for professional reasons.

Piotr was known for often choosing the harder route, embodying the words of John Paul II: "Demand of yourselves, even when no one else demands of you." His curiosity about life would never allow him to stay idle; he traveled vast distances on his bicycle reaching places considered hardly accessible. Some of his photos and stories can be found at his blog: <http://pejotr-w-cern.blogspot.com/>.

Piotr was a beloved son, brother and fiancé, and a faithful and trustworthy friend. We remain grateful for his all too brief stay with us. All of his workmates and colleagues here at CERN wish to express their profound sorrow and heartfelt sympathy to his family.

*His colleagues and friends*



Members of the personnel shall be deemed to have taken note of the news under this heading. Reproduction of all or part of this information by persons or institutions external to the Organization requires the prior approval of the CERN Management.

## ANNUAL REPORT 2011 FROM THE HUMAN RESOURCES DEPARTMENT

Annual Report 2011 from the Human Resources Department concerning the settlement of disputes and discipline under Chapter VI of the Staff Rules and Regulations.

### 1) Introduction

The 2011 Annual Report under Chapter VI ("Settlement of Disputes and Discipline") of the Staff Rules and Regulations (SRR) serves to report:

- cases of submission of requests for review,
- internal appeals,
- appeals to the ILOAT, and
- cases in which disciplinary action was taken.

### 2) Disciplinary Action

Under Article S VI 2.01 of the SRR, the Director-General may take disciplinary action against members of the personnel who, whether intentionally or through carelessness, are guilty of a breach of the SRR or of misconduct that is to the detriment of the Organization.

Article S VI 2.02 of the SRR stipulates that depending on the gravity of the breach or misconduct involved, the disciplinary action may be:

- a warning,
- a reprimand,
- suspension without remuneration or pay for a period not exceeding six months,
- loss of one or more steps, or
- dismissal.

The Joint Advisory Disciplinary Board (JADB) shall be consulted by the Director-General prior to taking any disciplinary action other than a warning or a reprimand (Article S VI 2.04).

In cases of particularly serious misconduct, the Director-General may decide to dismiss without notice and without consulting the JADB (Article S VI 2.05).

From 1 January 2011 through 31 December 2011, there were four cases of misconduct.

1. A case of late declaration regarding a change in personal status resulted in the issuance of a warning.

2. A case of driving while intoxicated on the CERN site resulted in the issuance of a reprimand.
3. A case of fraud with respect to unemployment benefits resulted in a suspension of contract without pay for a period of six months. The JADB was consulted by the Director-General prior to taking disciplinary action.
4. A case of fraud and misappropriation of the assets of the Organization resulted in a dismissal. The JADB was consulted by the Director-General prior to taking disciplinary action.

### 3) Requests for Review and Appeals

Under Article S VI 1.01 of the SRR, members of the personnel may challenge an administrative decision by the Director-General where it adversely affects the conditions of employment or association that derive from their contract or from the SRR.

If permitted by the SRR, a decision may be challenged:

- internally within the Organization through a review procedure or,
- through an internal appeal procedure. In this, the Joint Advisory Appeals Board (JAAB) shall be consulted by the Director-General prior to taking any final decision on the merits.

A decision may be challenged externally by the filing of a complaint with the ILOAT:

- when internal procedures have been exhausted and the decision is final or,
- when an internal challenge is not permitted by the SRR.

#### Requests for review

From 1 January 2011 through 31 December 2011, there was one submission of a request for a review of an administrative decision taken by the Director-General. The staff member concerned challenged the rating of his performance as meritorious and the related decision of periodic advancement, e.g. the granting of one periodic step. The administrative decision was maintained following consultation of the hierarchy and the department head concerned.

#### *Internal appeals*

From 1 January 2011 through 31 December 2011, there was no internal appeal of an administrative decision by the Director-General.

#### *Appeals to the ILOAT*

From 1 January 2011 through 31 December 2011, there was no appeal filed with the ILOAT.

*HR Department*

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### REMINDER: SWISS AND FRENCH CARDS

Communication from the HR Department to members of personnel holding an employment or association contract, above 50% and for more than 3 months, with the Organization.

The HR Department would like to remind all members of personnel concerned that they are obliged to:

- **hold a valid Swiss Légitimation card AND a valid French card** ("Titre de séjour spécial" or "attestation de fonctions") at all times during the exercise of their functions in the Organization;
- return these documents as soon as their functions in the Organization cease.

Not following these rules could be prejudicial to the Organization and appropriate measures may be taken towards the member of personnel concerned.

Information and procedures concerning Swiss and French cards (first application, renewal, theft/loss, etc.) are available in the Admin e-guide ([https://admin-eguide.web.cern.ch/admin-eguide/cartes/proc\\_cartes\\_home.asp](https://admin-eguide.web.cern.ch/admin-eguide/cartes/proc_cartes_home.asp)).

Users and Unpaid Associates must contact the Users Office at:

<http://ph-dep-usersoffice.web.cern.ch/ph-dep-UsersOffice>Welcome.html>

*HR Department*  
Tel.: 72967 or 79494



## Official news

Members of the personnel shall be deemed to have taken note of the news under this heading. Reproduction of all or part of this information by persons or institutions external to the Organization requires the prior approval of the CERN Management.

### TAXATION IN FRANCE - MEMORANDUM CONCERNING THE ANNUAL INTERNAL TAXATION CERTIFICATE AND THE DECLARATION OF INCOME FOR 2011

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 external taxation on salaries and emoluments paid by CERN.

#### I - Annual internal taxation certificate for 2011

The annual certificate of internal taxation for 2011, issued by the Finance, Procurement and Knowledge Transfer Department, is available since 1st March 2012. It is intended exclusively for the tax authorities.

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.

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 at the following link: [https://cern.ch/admin-eguide/Impots/proc\\_impot\\_attestation\\_interne.asp](https://cern.ch/admin-eguide/Impots/proc_impot_attestation_interne.asp).

In case of difficulty in obtaining your annual certificate, send an e-mail explaining the problem to [helpdesk@cern.ch](mailto:helpdesk@cern.ch).

#### II - 2011 income tax declaration form in France

The 2011 income tax declaration form must be completed in accordance with the indications available at the following address: [https://cern.ch/admin-eguide/Impots/proc\\_impot\\_decl-fr.asp](https://cern.ch/admin-eguide/Impots/proc_impot_decl-fr.asp).

**IF YOU HAVE ANY SPECIFIC QUESTIONS,  
PLEASE CONTACT YOUR 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  
Contact: 7390*



#### CERN BULLETIN TO ARRIVE IN USER INBOXES

Starting next issue, the CERN Bulletin will be sent out to all User inboxes. At that time, Users who do not wish to receive the alert will receive the option to unsubscribe. Enjoy it!

*The CERN Bulletin Team*



#### RESTAURANT OPENING TIMES FOR THE ASCENSION AND WHITSUN WEEKENDS

For the weekends of Ascension (from Thursday 17th May to Sunday 20th May inclusive) and Whitsun (from Saturday 26th May to Monday 28th May inclusive), the restaurant opening times will be as follows:

Restaurant n°1 will be open from 7 a.m. to 10 p.m., with hot meals being served from 11.30 a.m. to 2 p.m. and from 6.30 p.m. to 8 p.m. (except Friday 18th May, when the restaurant will be open as normal).

Restaurant n°2 will be closed (except Friday 18th May, when the restaurant will be open as normal).

Restaurant n°3 will be closed.



## Take note

### HOW TO CONTROL CHEMICAL HAZARDS?

Improving protection against chemical hazards is one of the 2012 CERN safety objectives identified by the Director-General. Identifying and drawing up a complete inventory of chemicals and assessing the associated risks are important steps in this direction.

The HSE Unit has drawn up safety rules, guidelines and forms to help you to meet this objective. We should like to draw your attention to:

- safety guidelines C-0-0-1 and C-1-0-2 (now also available in French), which deal with the identification of hazardous chemicals and the assessment of chemical risk;
- safety guideline C-1-0-1, which deals with the storage of hazardous chemicals.

All safety documents can be consulted at:

<http://cern.ch/regles-securite>

The HSE will be happy to answer any questions you may have. Write to us at: [safety-general@cern.ch](mailto:safety-general@cern.ch)

*The HSE Unit*

### CERN RELAY RACE: INFORMATION FOR DRIVERS

The CERN relay race will take place around the Meyrin site on Thursday 24 May starting at 12:15. If possible, please avoid driving on the site during this 20-minute period. If you do meet runners while driving your car, please STOP until they have all passed. In addition, there will be a Nordic Walking event which will finish around 12:50. This should not block the roads, but please drive carefully during this time.

Thank you for your cooperation.

Details on how to register your team for the relay race can be found at:

<https://espace.cern.ch/Running-Club/CERN-Relay/default.aspx>



# Academic training

21, 22, 23 & 24 May 2012

ACADEMIC TRAINING LECTURE  
Regular Programme  
from 11:00 to 12:00  
Bldg. 31-3-004 - IT Auditorium

With the prevalence of modern information technologies and its increasing integration into our daily live, digital systems become more and more playground for evil people. While in the past, attacks were driven by fame & kudos, nowadays money is the motivating factor. Just the recent months have shown several successful attacks against e.g. Sony, PBS, UNESCO, RSAsecurity, Citibank, and others. Credit card information of hundreds of thousands of people got exposed. Affected companies not only lost their assets and data, also their reputation has suffered. Thus, proper computer security measures are essential. Without question, security must even more become an inherent ingredient when developing, deploying, and operating applications, web sites, and computing services.

These lectures shall give an overview of general computer and information security, subsequently focus on the problems of creating secure applications and computer services, highlight the importance of security operations (i.e. prevention, protection, detection and response), delve into the specifics of securing the critical infrastructure and their digital control systems as well as securing cloud and distributed computing, and discuss the impact of so-called Web 2.0 technologies to security and privacy.

21 May 2012

## Computer Security: Introduction to information and computer security (1/4)

by Sebastian Lopienski / CERN

*Sebastian Lopienski is CERN's Deputy Computer Security Officer. He works on security strategy and policies; offers internal consultancy and audit services; develops and maintains security tools for vulnerability assessment and intrusion detection; provides training and awareness raising; and does incident investigation and response. During his work at CERN since 2001, Sebastian has had various assignments, including designing and developing software to manage and support services hosted in the CERN Computer Centre; providing Central CVS Service for software projects at CERN; and development of applications for accelerator controls in Java. He graduated from the University of Warsaw (MSc in Computer Science) in 2002, and earned an MBA degree at the Enterprise Administration Institute in Aix-en-Provence and Haute Ecole de Gestion in Geneva in 2010. His professional interests include software and network security, distributed systems, and Web and mobile technologies.*

22 May 2012

## Computer Security: Cryptography and authentication (2/4)

by Remi Mollon / CERN

*Remi Mollon studied computer security at University and he first worked on Grids, with the EGEE project, for a French Bioinformatics institute. Information security being crucial in that field, he developed an encrypted file management system on top of Grid middleware, and he contributed in integrating legacy applications with Grids. Then, he was hired by CERN as a Grid Data Management developer, and he joined the Grid Operational Security Coordination Team. Remi has now moved to CERN Computer Security Team. Remi is involved in the daily security operations, in addition to be responsible to design Team's computer infrastructure, and to participate to several projects, like multi-factor authentication at CERN.*

23 May 2012

## Computer Security: Computer security threats, vulnerabilities and attacks (3/4)

by Antonio Perez Perez / Universitat Jaume I

*Antonio Perez Perez works in the Computer Security Team doing software development, sysadmin tasks and operations. He is also involved on grid security and does 1st line security support at CERN on ROTA.*

24 May 2012

## Computer Security: Security operations at CERN (4/4)

by Stefan Lueders / CERN

*Stefan Lueders, PhD, graduated from the Swiss Federal Institute of Technology in Zurich and joined CERN in 2002. Being initially developer of a common safety system used in all four experiments at the Large Hadron Collider, he gathered expertise in cyber-security issues of control systems. Consequently in 2004, he took over responsibilities in securing CERN's accelerator and infrastructure control systems against cyber-threats. Subsequently, he joined the CERN Computer Security Incident Response Team and is today heading this team as CERN's Computer Security Officer with the mandate to coordinate all aspects of CERN's computer security --- office computing security, computer centre security, GRID computing security and control system security --- whilst taking into account CERN's operational needs. Dr. Lueders has presented on these topics at many different occasions to international bodies, governments, and companies, and published several articles.*



## ORACLE SUPPORT PROVIDES A RANGE OF NEW TUTORIALS

The IT DB is pleased to announce a new series of Oracle tutorials, with the proposed schedule. Note that these tutorials will take place in the Filtration Plant (Building 222) and that no registration is required.

### 4 June (Monday)

#### 09:00 Oracle Architecture, Przemyslaw Adam Radowiecki

The objective is to go through Oracle database physical and logical structures, highlighting the consequences of some of Oracle's internal design choices for developers of database applications. The presentation defines Oracle-related basic terms and illustrates them based on the database architecture.

The following topics will be discussed:

- Database with its physical and logical structures (tablespace, segment, extent, block, database user, schema, user's quota)
- Single instance (significant memory structures: buffer cache, shared pool)
- Real Application Cluster (RAC)
- Connecting to the database (TNS, database service)
- SQL statement processing (hard and soft parsing, cursor, cursor sharing, execution plan)

#### 10:00 Database and Application Design, Katarzyna Maria Dziedziniewicz-Wojcik

The primary goal of this presentation is to show how to design a scalable application using Oracle that performs. We will start with schema design that allows storing the data in a way that is efficient, scalable and makes those data easily retrievable. In that part focus will be put on ER model and best practices in schema design. Later we will explain in detail SQL statement processing, with a number of tips/and tricks. The last part will talk about building a robust application using privileges, different connection types and a number of other features.

#### 11:00 Database Security, Szymon Jozef Skorupinski & Daniel Gomez Blanco

During the Database Security Tutorial we will focus on Oracle Database security from the developers' point of view. We'll cover a few topics, including authentication, roles and privileges, auditing, encryption and SQL injection attacks.

### 5 June (Tuesday)

#### 09:00 SQL and Advanced SQL, Marcin Blaszczyk

SQL (Structured Query Language) is a programming language designed for managing data in relational database management systems. The aim of the tutorial is to provide an overview of the SQL language basic capabilities and several selected advanced SQL features available in the Oracle Database Management System. The main part of this tutorial will focus on the use of advanced SQL such as: complex queries, analytical functions, set operators, views and temporary tables, materialized views, indexes and partitioning.

#### 10:30 PL/SQL, Zbigniew Baranowski & Stephan Petit

PL/SQL is Oracle's procedural extension of SQL. In this tutorial we will present the basic concepts behind PL/SQL and the general appearance of a PL/SQL program, covering general structure, control statements and basic units of the PL/SQL language.

We will then focus on best scripting practices -things that each developer should know in order to write efficient code and avoid common traps.

### 8 June (Friday)

#### 09:00 Tuning, Luca Canali & Dawid Wojcik & Eric Grancher

In this session, you will learn how to understand what prevents your application from running as fast as you would like (wait event, SQL monitor, Oracle Enterprise Manager, etc.). In the second part, we will share some indications on how to improve the performance (execution plan, table and index statistics, hinting, SQL baseline, etc.).

You will also learn the key points of how to address complex performance issues in a systematic way and to address performance issues in a quantitative way. A few examples and common pitfalls will be presented.

#### 10:30 Oracle tools and Bindings with languages, Mariusz Piorkowski & Others

This tutorial provides an introduction to common Oracle database administrative tools: how they work, how to install and configure them, how efficiently we can use them. We'll also provide some practice examples of usage. We will cover the following tools: PL/SQL Developer, rlwrap, Benthic Software – (Golden 6.0) and SQL Developer.

The second part of this presentation will address the topic of language bindings, including OCI, OCCI, JAVA, Perl and Python, for example.



## Seminars

### TUESDAY 15 MAY

#### COLLIDER CROSS TALK

11:00 - TH Auditorium, Bldg. 4

#### Collective flow and anisotropies in heavy ion collisions

A. BILANDZIC / NIELS BOHR INSTITUTE (DK),  
S. FLOERCHINGER / CERN

#### EP SEMINAR

11:00 - Filtration Plant, Bldg. 222-R-001

#### Physics and Detectors at CLIC

M. THOMSON / UNIVERSITY OF CAMBRIDGE

#### TH STRING THEORY SEMINAR

14:00 - TH Auditorium, Bldg. 4

#### Holographic Quantum Quench

S. DAS / DEPARTMENT OF PHYSICS AND ASTRONOMY,  
UNIVERSITY OF KENTUCKY

#### CERN COMPUTING COLLOQUIUM

14:00 - Salle Dirac, Bldg. 40-S2-D01

#### TBC

H. MARKRAM / EPFL

### WEDNESDAY 16 MAY

#### TH COSMO COFFEE

11:00 - TH Auditorium, Bldg. 4

#### Search for gravitational waves from gamma ray bursts with LIGO

M. WAS / ALBERT EINSTEIN INSTITUTE, HANNOVER

#### ISOLDE SEMINAR

14:30 - Bldg. 26-1-022

#### Quadrupole-octupole deformations and high-K isomeric states in heavy nuclei

N. MINKOV / INSTITUTE OF NUCLEAR RESEARCH AND NUCLEAR ENERGY

### MONDAY 21 MAY

#### ACADEMIC TRAINING LECTURE

#### REGULAR PROGRAMME

11:00 - IT Auditorium, Bldg. 31-3-004

#### Computer Security: Introduction to information and computer security (1/4)

S. LOPIENSKI / CERN

### TUESDAY 22 MAY

#### ACADEMIC TRAINING LECTURE

#### REGULAR PROGRAMME

11:00 - IT Auditorium, Bldg. 31-3-004

#### Computer Security: Cryptography and authentication (2/4)

R. MOLLON / CERN

#### CERN HEAVY ION FORUM

11:00 - TH Auditorium, Bldg. 4

#### Decoherence of QCD radiation in a quark-gluon plasma

K. TYWONIUK / LUND UNIVERSITY

### WEDNESDAY 23 MAY

#### ACADEMIC TRAINING LECTURE

#### REGULAR PROGRAMME

11:00 - IT Auditorium, Bldg. 31-3-004

#### Computer security threats, vulnerabilities and attacks (3/4)

A. PEREZ PEREZ / UNIVERSITAT JAUME I

#### TH COSMO COFFEE

11:00 - MAin Auditorium, Bldg. 500

#### Mode spectrum of the electromagnetic field in open universe models

J. ADAMEK

### THURSDAY 24 MAY

#### ACADEMIC TRAINING LECTURE

#### REGULAR PROGRAMME

11:00 - IT Auditorium, Bldg. 31-3-004

#### Computer Security: Security operations at CERN (4/4)

S. LUEDERS / CERN