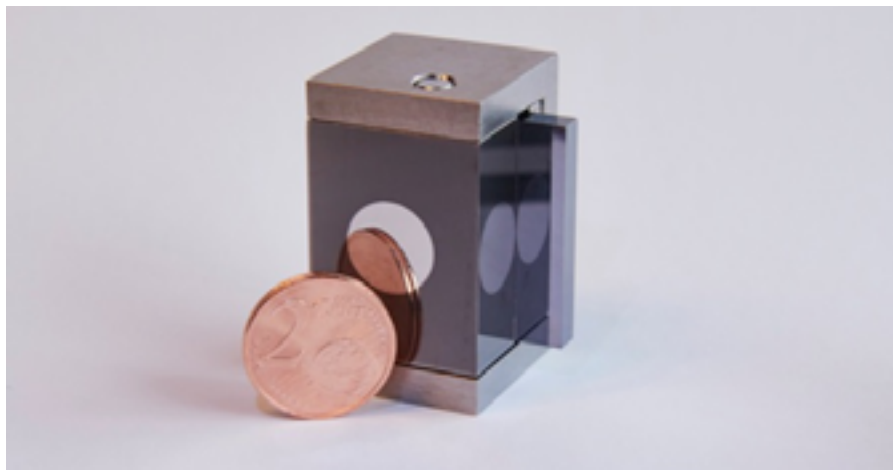


## CRYSTALS CHANNEL HIGH-ENERGY BEAMS IN THE LHC

Bent crystals can be used to deflect particle beams, as suggested by E. Tsyganov in 1976. Experimental demonstrations have been carried out for four decades in various laboratories worldwide. In recent tests, a bent crystal inserted into the LHC beam halo successfully channelled and deflected 6.5 TeV protons into an absorber, with reduced secondary irradiation.



Quasimosaic crystal for the LHC (developed by PNPI).

Bent crystal technology was introduced at CERN and further developed for the LHC by the UA9 Collaboration. For about ten years, experts from CERN, INFN (Italy), Imperial College (UK), LAL (France), and PNPI, IHEP and JINR (Russia) have been investigating the advantages of using bent crystals in the collimation systems of high-energy hadron colliders. A bent crystal replacing the primary collimator can deflect the incoming halo deeply inside the secondary collimators, improving their absorption efficiency. "The bent crystals we have just tested at the world-record energy in the LHC were built in Russia and Italy and then meticulously optimised in the H8 line at the SPS North Area," explains Walter Scandale, head of the UA9 collaboration. "The successful results were made possible by the strong support

we received from the Accelerator Sector Management and the EN-STI group in close collaboration with the LHC collimation team."

A full-size collimation system using a bent crystal as a primary deflector was initially installed in the SPS to evaluate the effectiveness of the technology and to provide a quantitative estimate of collimation inefficiency with proton and lead-ion beams. High-resolution goniometers built at IHEP were installed in the SPS vacuum pipe to orient the crystal planes. Loss rates were measured using detectors based on scintillation radiation built by INFN-Roma1 and installed around the beam pipe. Cherenkov radiation detectors built by PNPI, LAL, CERN and INFN-Roma1 were inserted into the vacuum pipe to intercept deflected

(Continued on page 2)



### PEACE IS MORE THAN THE ABSENCE OF WAR

Last week, the UN Office at Geneva (UNOG) issued an infographic that gives a snapshot of what international Geneva does to foster peace around the world. Its publication was part of the UN's ongoing campaign to show the remarkable breadth and depth of work carried out by Geneva's international organisations, and it was released through the Twitter account @GenevaImpact with the hashtag #FridayInfographic. Michael Møller, Director-General of UNOG, blogged about it in the *Huffington Post*.

(Continued on page 2)

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# A word from the DG

## PEACE IS MORE THAN THE ABSENCE OF WAR

In his blog, Mr Møller points out all the ways that the UN works every day to translate peace into food, shelter, water, healthcare, education and decent work, as well as freedom, rights, and equality. In Geneva, he says, organisations contribute to peace in all its different shapes and forms. And, he says, peace is much more than the absence of war.

The reason I'm drawing attention to this is that CERN takes pride of place in the infographic. With our user community of over 11,000 people of over 100 nationalities, CERN works every day to translate peace into mutual understanding and respect, along with knowledge, education and innovation that benefits all of humanity. Peace, after all, is also about overcoming cultural barriers for the common good.

It's pure coincidence that this particular infographic came out when it did, but with the recent atrocities in Paris, and equally appalling events around the world, it could not have been more timely. CERN's message of peace is more valid today than ever, a reminder that, as Mr Møller puts it, there are far more people in the world seeking peace than trying to disrupt it.

Just this week, for example, some 150 people from SESAME Members gathered in Amman to look forward to the exciting research programme that's set to get underway at the Middle East's regional light source in 2016. They were representatives of the SESAME user community, which has been growing steadily in number and in skill through training programmes aimed at boosting scientific capacity throughout the region. Topics discussed ranged from

medical research to the examination of archaeological artefacts, just as you might hear at any light-source user meeting anywhere in the world. For these mostly young people, peace is about being able to get together to discuss their shared ambitions and make plans for a bright future at SESAME, and it's about being able to go about their business free from fear.

Despite what has been happening around the world these last few weeks, let's not lose sight of the fact that the vast majority of people around the world are like these SESAME users, striving to live their lives in peace, and with dignity.

Rolf Heuer

# CRYSTALS CHANNEL HIGH-ENERGY BEAMS IN THE LHC



Strip crystal for the LHC (developed by INFN).

beams and Medipix detectors were inserted into Roman pots. Goniometers with sub-microradian accuracy, required for the LHC, were developed in cooperation with the EN/STI group and industrial partners in Italy, Switzerland and Germany. "Tests with stored beams – that is, stable beams

kept at high energy – demonstrated the feasibility of crystal-assisted collimation and a reduction by an order of magnitude of the very dangerous background induced by inelastic interaction in the primary collimator," says Scandale. "After many years of intense work and important results, UA9 proved

that the bent crystal technology was mature enough for investigating high-efficiency collimation in the LHC.

For the test carried out recently in the LHC, two prototypes of high-accuracy goniometers, equipped with two silicon crystals, were installed in the betatron cleaning insertion (IR7) of the LHC, where the beam is "cleaned" by hardware components that absorb part of the primary beam halo and part of the secondary radiation. "At the 1990 LHC workshop in Aachen, Giuseppe Fidecaro asked me if bent crystals could be used to extract beam halo in the LHC," recalls Walter Scandale. "My first impression at that time was that it was a dream, much beyond wishful thinking. Twenty-five years later we are closer to reality for crystal-assisted collimation, and crystal-assisted extraction may well be the next step forward in LHC beam manipulations."

These initial tests at reduced beam intensity were extremely successful. Higher intensity tests are being prepared to clarify if bent crystals could improve the baseline LHC collimation as a further step towards the collimation upgrade in the High-Luminosity LHC project.

CERN Bulletin

(Continued from page 1)

# LHC REPORT: PLUMBING NEW HEIGHTS

Following the end of the arduous 2015 proton run on 4 November, the many teams working on the LHC and its injector complex are naturally entitled to a calmer period before the well-earned end-of-year break. But that is not the way things work.



The CCC team after stable heavy-ion beams are declared in the LHC.

Instead, the subdued frenzy of setting up the accelerators for a physics run has started again, this time for heavy-ion beams, with a few additional twists of the time-pressure knob. In this year's one-month run, the first week was devoted to colliding protons at 2.51 TeV per beam to provide reference data for the subsequent collisions of lead nuclei (the atomic number of lead is  $Z=82$ , compared to  $Z=1$  for protons) at the unprecedented energy of 5.02 TeV in the centre of mass per nucleon pair.

The chain of specialised heavy-ion injectors, comprising the ECR ion source, Linac3 and the LEIR ring, with its elaborate bunch-forming and cooling, were re-commissioned to provide intense and dense lead bunches in the preceding weeks. Through a series of exquisite RF gymnastics, the PS and SPS

assemble these into 24-bunch trains for injection into the LHC. The beam intensity delivered by the injectors is a crucial determinant of the luminosity of the collider.

Commissioning of the LHC's 2.51 TeV proton cycle had to be interleaved with that of the new heavy-ion optics in the LHC, resulting in many adjustments to the schedule on the fly and specialist teams being summoned at short notice to the CCC. Besides the overall energy shift compared to the 6.5 TeV proton optics, there is an additional squeeze of the optics and manipulations of crossing angles and the interaction point position for the ALICE experiment. Rapid work by the LHC's optics measurements and correction team allowed the new heavy-ion magnetic cycle to be implemented from scratch (using proton beams) over the weekend of

14-15 November. Members of the collimation team also spent many hours on careful aperture measurements. At every step, one must be mindful of the strict requirements of machine protection.

The first lead-ion beams were injected on the evening of Monday, 16 November and brought into collision in all four experiments, by a bleary-eyed team, 10 hours later in the early morning.

The proton reference run resumed that Tuesday evening. After some unnerving down time, its luminosity target was comfortably attained on Sunday morning and the ion commissioning resumed with more aperture measurements and the process of verifying the "loss maps" to confirm that errant beam particles fetch up where they can do the least harm. These are very different from those of protons because of the many ways in which the lead nuclei can fragment as they interact with the collimators. A penultimate switch of particle species provided a bonus of proton reference data to the experiments overnight.

Finally, on 23 November the lead ions had the LHC to themselves and commissioning resumed with tuning of injection, RF and feedback systems. And many more loss maps.

Stable beams for physics with 10 bunches per beam was finally declared at 10:59 on 25 November and spectacular event displays started to flow from the experiments. Further fills should increase the number of bunches beyond 400.

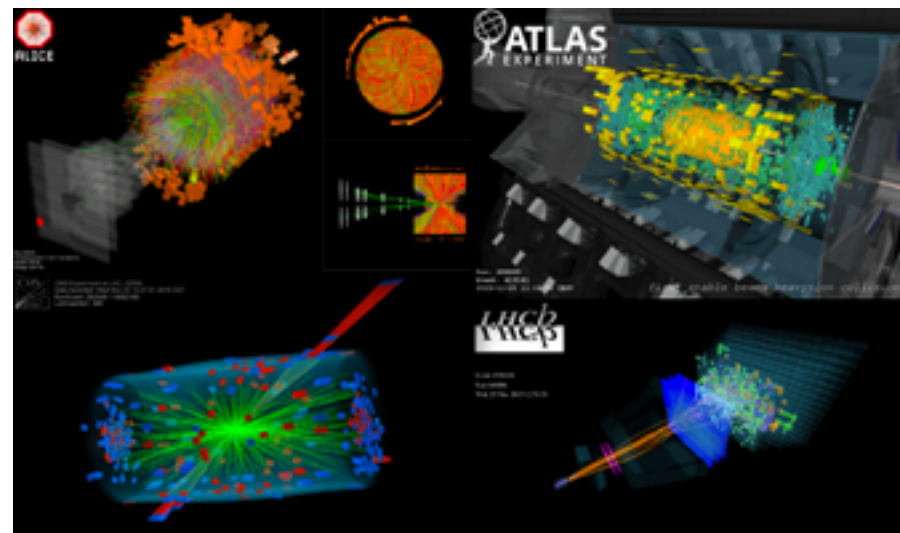
The remaining weeks of the run will continue to be eventful with physics production interrupted by ion-source oven refills, van der Meer scans, solenoid polarity reversals and studies of phenomena that may limit future performance. These include tests of magnet quench levels with collimation losses and the use of crystals as collimators. We also plan to test strategies for controlling the secondary beams emerging from the collision point due to ultraperipheral ("near miss") interactions.

John Jowett for the LHC team



# LEAD-ION COLLISIONS: THE LHC ACHIEVES A NEW ENERGY RECORD

After the Bevatron (Berkeley, 1954) – which broke the energy barrier of billions of electronvolts – and the Tevatron (Fermilab, 1987) – which reached a trillion electronvolts – the LHC is now reaching the peta- (quadrillion) electronvolt level with its heavy-ion collisions. However, one should remember that the average energy per colliding nucleon pair, within the 1 PeV “fireball”, is 5 TeV (compared to 13 TeV in the recent proton-proton collisions).



Heavy-ion collision events from the ALICE, ATLAS, CMS and LHCb experiments.

Two of the great particle accelerators of the past were named after the symbolic energy barrier that they broke. The Bevatron (for “billions of electronvolts synchrotron”), at Berkeley in 1954, was the first to break the barrier of a billion electronvolts or BeV (now known as a gigaelectronvolt or GeV) in the centre-of-mass, by a large enough margin to create the laboratory’s first anti-protons. Three decades later, in 1987, the Tevatron at Fermilab breached the barrier of 1 teraelectron volt or TeV, a trillion electron volts or 1000 GeV, at the centre-of-mass. The Tevatron beam energy itself was almost 1 TeV, yielding almost 2 TeV in the collisions of opposing beams.

Just under three decades since the Tevatron reached 1 TeV, the LHC has resumed its programme of colliding lead nuclei at a new

energy, enabled by the work done on the LHC during Long Shutdown 1. The total centre-of-mass energy in the collisions will be 1045 TeV, breaking the symbolic barrier of a quadrillion electronvolts, or 1 PeV (petaelectron volt). However, the lead isotope accelerated in the LHC contains, besides its 82 protons, 126 neutrons that have no electric charge for the accelerating fields to work on. So, the total energy of the nucleus is shared among 208 nucleons, each of which has 82/208 or 39.4% of the energy that the LHC imparts to single protons. In nuclear physics literature, it is customary to quote the average centre-of-mass energy of pairs of colliding nucleons, which will be 5.02 TeV.

On the other hand, with all due respect to our colleagues in the experiments, this convention is a perennial nuisance in

accelerator physics, where we consider the dynamics of particles to be based on a certain mass, charge and energy and the “energy per nucleon” does not appear naturally in the equations. Observant watchers of the “LHC Page 1” display will have noticed a “Z” inserted into the beam energy value to take care of this (the preceding number being the energy per charge which is the same as for protons). The same display worked neatly for both beams when we collided protons with lead in 2012 and 2013.

The SPS, for its part, has been sending lead ions at 36.9 TeV (or 177 GeV per nucleon) to the LHC and to fixed target experiments for many years.

From the perspective of the early 1950s, the energies attained by the Tevatron and the LHC would have seemed like science fiction. But thanks to breakthroughs in accelerator physics and technology in subsequent decades, they are now real. In the case of the LHC’s heavy-ion collisions, the concentration of so much energy into the tiny nuclear volume is enough to create huge particle densities and temperatures about a quarter of a million times greater than those at the core of the Sun. In this way, heavy-ion collisions recreate the quark-gluon plasma, the extreme state of matter that is thought to have filled the universe when it was only microseconds old. The LHC experiments study the collective behaviour of quarks and gluons when they form this state.

Therefore, although we are far from having the capability to collide single protons at 1 PeV (the “Pevatron” perhaps?), we can still celebrate the breaking of a new symbolic energy barrier.

John Jowett

# CERN’S TECHNICIAN TRAINING EXPERIENCE NOTCHES UP ANOTHER SUCCESS!

The programme was set up almost three years ago to help address a Europe-wide shortage of highly skilled technicians, with the participants gaining valuable skills and experience in an international environment. It’s clear that the programme works: some of the technician fellows who have taken part are being snapped up by major science projects and the high-tech industry.

Fay Chicken (see *UK news from CERN 59*) has just accepted a job offer from the European Spallation Source in Sweden, where she will be working in the detector development team: “I’m also going to be setting up a new workshop where prototype detectors will be built. When I went to Lund, I was shown a big, empty room – it’s up to me to equip it!”

This level of responsibility is a big step up for Fay, but there is no doubt that her time at CERN has both built her confidence to take on the role, and convinced ESS that she can do it.

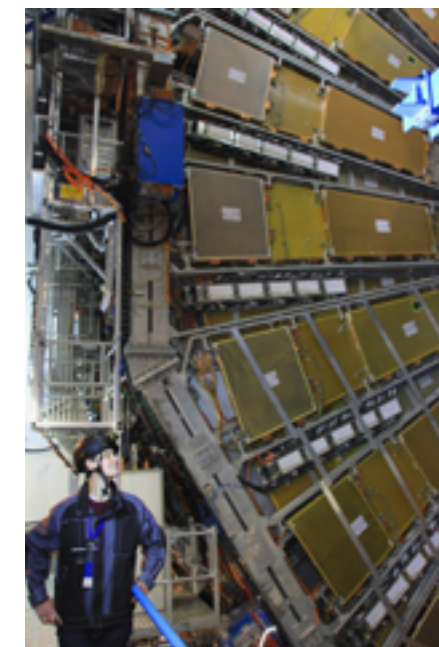
One of the key requirements of the ESS job description was that candidates should have experience of working in an international environment and, as Fay says, “you can’t get much more international than CERN.” Having spent almost two years in Geneva, she has also demonstrated that she is willing to live and work outside her home country, and that’s an important consideration for any international employer.

“Working at CERN has been an amazing opportunity – I’m leaving with so much experience on my CV and I’ve been very lucky to work with a really nice group of people,” says Fay. “I’ve definitely made the most of my time here.”

Fay’s career has clearly benefited from the TTE, and similar opportunities are available to any recently qualified apprentices with a technical diploma. For more information and to apply, go to: <http://cern.ch/go/QL8W>. The next round of applications will open shortly, with a closing date in March.

This article was originally published in UK news from CERN.

Stephanie Hills



Going underground: Fay Chicken at work in ATLAS.

# NO SPEED LIMITS IN MEDICAL IMAGING (AND HIGH-ENERGY PHYSICS)

Speed, or high time resolution, is becoming increasingly important, if not crucial, in the high-energy physics domain, both for particle acceleration and detection systems. Medical-imaging technology also vitally depends on high time resolution detection techniques, often the offspring of today’s large particle physics experiments. The four-year FP7 Marie Curie Training Project “PicoSEC-MCNet”, which draws to a close at the end of November, was designed to develop ultra-fast photon detectors for applications in both domains. The project has achieved important results that promise to trigger further developments in the years to come.

“New requirements in high-energy physics force us to push the limits of photon detection speed, as future high-luminosity accelerators will force us to cope with the unprecedentedly short bunch crossing intervals needed to produce sufficient luminosity,” explains Tom Meyer, chair of the PicoSEC-MCNet Supervisory Board. “In parallel, new high-speed photon detectors would have tangible benefits for today’s imaging techniques, such as positron emission tomography, where they could deliver significant reductions

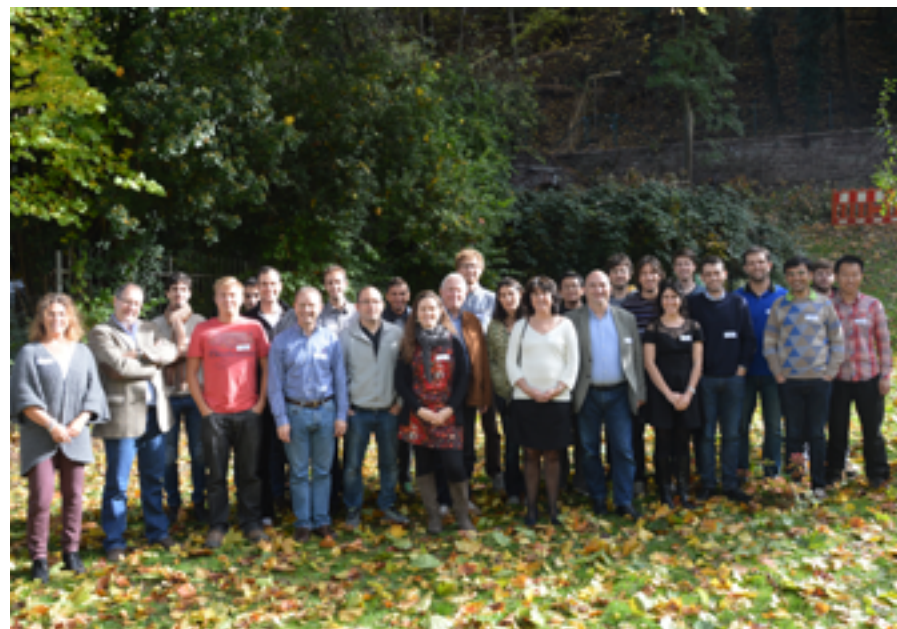
in background signal. As a consequence, tumours would be detected at an earlier stage and with a lower radiation dose delivered to the patient. This would produce an overall improvement of imaging quality.”

PicoSEC-MCNet was a multidisciplinary training network coordinated by CERN. It comprised seven public research and four industrial partners in six European countries, and recruited 22 young researchers from 15 countries worldwide to work on the overall

improvement of photon detection. Research and training covered areas from scintillator light output and transfer, optimisation of photon detectors (SiPMs), electronics and data acquisition, to system integration and data analysis. “I am very happy with the scientific achievements of the Network,” says Etienne Auffray, the Network’s Coordinator. “PicoSEC-MCNet was a very valuable opportunity for all the partners to exchange information and best practices effectively, and this happened not only between the various academic institutes but also with commercial companies.”

A large number of the researchers involved with the network’s activities – both research and training – were young. For them, PicoSEC-MCNet was also an opportunity to be exposed to a wide variety of different cultures and, for some of them, to get to know CERN. “It was an enriching experience, both from the





The PicoSEC-MCNet project participants.

scientific and cultural point of view,” confirms Mythra Varun Nemallapudi from India, one of the four CERN PicoSEC-MCNet researchers. “During round-table meetings of the Network, it could very well happen that each participant came from a different country, from a different culture,” he added. “Working together on an international collaborative project, as opposed to “classical” research in only one lab, gives you a much broader perspective,” confirms Pawel Modrzynski from Poland, another of the CERN fellows.

“We can proudly say that we truly executed our European mandate to make knowledge flow across borders and disciplines, in order to train a new generation of young European scientists,” concludes Auffray.

For more information on the scientific achievements, go to: <http://cern.ch/go/k8Ns>.

Rita Giuffredi & Tom Meyer

## 1 REPORT, 6 AUTHORS? EASY!

**In 2016, the CERN E-Publishing Service will be testing three co-authoring platforms to decide which is the most suitable for CERN. Whatever type of documents you co-write – scientific papers, internal reports or proceedings – a co-authoring tool will simplify the process. To make such a service available at CERN, the E-Publishing team needs your help.**

At CERN, the E-Publishing Service is responsible for copy-editing scientific texts such as CERN reports, scientific papers, school or conference proceedings, etc., and provides support to CERN people regarding the style and layout of their publications. As part of its efforts to simplify the lives of CERN authors, the E-Publishing Service has decided to evaluate the benefits of a new service: a co-authoring platform.

If you write on LaTeX or Word-like software, use a messaging application for comments and a calendar for deadlines, and then distribute the file by e-mail (as many times as necessary) – then a co-authoring platform would be a great tool for you. Any document shared on the co-authoring platform becomes visible to all the related collaborators and everyone can comment on it, add or delete information, make corrections, etc. – and the system always keeps a record of who did what and when. Of course, the entire modification history remains available, and you can go back to any of the previous versions at any time. Furthermore, as the platform is a browser-based tool, no installation is needed and the documents are accessible everywhere.

“People at CERN contacted us suggesting we incorporate such a platform into the CERN E-Publishing interface,” explains Valeria Brancolini, member of the E-Publishing team. “Actually, a lot of scientists at CERN already use public co-authoring platforms, but we are convinced that such a tool integrated into the CERN environment could be of great use to all departments.”

So the E-Publishing team selected three popular co-authoring platforms – Authorea, DoDoc and Overleaf – to be tested and evaluated by the CERN authors themselves. “The idea is to identify the platform that best responds to the needs of CERN people, whatever their department or the types of documents they produce,” adds Sebastian Witowski, also a member of the team. “And to define the needs of CERN people, we need CERN people.” That’s where you come into play!

The E-Publishing team is looking for volunteers to test the three platforms “First, we will interview the participants to learn about their writing needs and habits,” says Nikos Kasioumis, the third member

of the E-Publishing team. “Then, at the beginning of next year, they will be asked to follow a precise test scenario on each of the three platforms to evaluate the tools. Of course, they are absolutely welcome to work on their own projects on these platforms! Also, CERN authors will be able to export documents using common CERN templates and other physics journals’ templates. We will be available to provide assistance throughout the whole process.”

If you are afraid that your confidential file or scientific work-in-progress may be lost or made public, don’t be. The CERN co-authoring service will be exclusively internal – in other words, all the documents uploaded onto the platform will be stored on CERN servers. “While we are now testing the co-authoring service to evaluate the potential demand, we are pretty sure that, once they’ve tried it, CERN authors won’t be able to do without it,” concludes Nikos Kasioumis.

If you are interested in helping the E-Publishing team with the evaluation of the platforms, subscribe on: <http://cern.ch/go/PD8Q>. If you want to learn more on the subject, contact the E-Publishing team at [e-publishing@cern.ch](mailto:e-publishing@cern.ch).

Anais Schaeffer

## PRINCESS OF THAILAND RETURNS TO CERN

**On Tuesday, 17 November 2015, HRH Princess Maha Chakri Sirindhorn of Thailand visited CERN. Princess Sirindhorn was visiting the Laboratory for the fifth time, following her last visit in 2010.**



Princess Maha Chakri Sirindhorn of Thailand (center) witnesses the signing of the collaboration agreement between CERN and SLRI, represented by Rolf Heuer (right) and Professor Sarawut Sujitjorn (left) respectively.

The Princess was accompanied by a delegation that included the Director of the Synchrotron Light Research Institute (SLRI) in Thailand, Professor Sarawut Sujitjorn, and a large group of Thailand’s Diplomatic Representatives in Switzerland. Upon her arrival, Princess Sirindhorn was welcomed by CERN Director-General Rolf Heuer and the Director-General Designate, Fabiola Gianotti.

At CERN, the Princess was given a brief update on the Laboratory’s activities since her last visit, in April 2010. Later on, she witnessed the signature of the framework collaboration agreement between CERN and the SLRI, represented by Rolf Heuer and Sarawut Sujitjorn respectively. This cooperation agreement is the latest development in the context of CERN’s well-established scientific relations with Thailand.

Afterwards, the Princess and her delegation met a small group of young Thai scientists working at CERN before concluding their visit with a guided tour of the ISOLDE facility and the LEIR accelerator.

Stefania Pandolfi

## CAS COURSE ON INTENSITY LIMITATIONS IN PARTICLE BEAMS AT CERN

**The CERN Accelerator School (CAS) recently organised a specialised course on Intensity Limitations in Particle Beams, at CERN from 2 to 11 November, 2015.**

Many accelerators and storage rings, whether intended for particle physics experiments, synchrotron light sources or industrial applications, require beams of high brightness and the highest possible intensities. A good understanding of the possible limitations is required to achieve the desired performance. This course covered the interaction of beams with their surroundings and with other beams, as well as further collective effects. The lectures on the effects and possible mitigations were complemented by tutorials.

The course was very successful, with 66 students representing 14 nationalities

attending. Most participants came from European countries, but also from Armenia, China and Russia. Feedback from the participants was positive, reflecting the standard of the lectures and teaching.

In addition to the academic programme, the participants also had an opportunity to take part in a typical Swiss excursion to Bern and Gruyères, and a short CERN tour, both of which were highly appreciated by all who took part.

Forthcoming CAS courses in 2016 will be: a specialised school on Free Electron Lasers

and Energy Recovery Linacs (FELs and ERLs) in collaboration with DESY in Hamburg, Germany in June; an Introductory School on Accelerator Physics to be held in Istanbul, Turkey in September; and a specialised school on Beam Injection, Extraction and Transfer (location to be decided), in November.

Further information can be found on the CAS website (<http://cas.web.cern.ch/cas/>).

CERN Accelerator School



## PROFESSIONALISM IN SECURITY, TOO

**At CERN, we apply a great deal of dedication and professionalism to all the work we do. This is necessary because of the complexity and sophistication of the devices we deal with. However, when it comes to computer security, we can all agree that there is room for improvement.**

In some cases, we've observed devices that are connected to our Intranet networks without the adequate level of protection. Also, in order to allow it to be disseminated easily with peers, information is often disclosed on public webpages, sometimes without appropriate consideration of important security-related aspects. Program code is lost due to a lack of proper version control or the use of central storage systems. Systems are brought down by "finger trouble", confusing the right and wrong IP addresses. Software or system development is done directly on production devices, impinging on their proper operation up to the point where the system grinds to a halt. Applications full of useful features lack adequate security reviews and fail simple penetration tests or security scans.

So, what about applying more professionalism to the realm of computer security? Ask

yourself! If you think your service or system deserves a security review, your data might be insufficiently protected, your devices might lack resilience or robustness, or your access or development procedures might be sub-optimal and need to be better secured - then let us help you. Also, if there are general principles that require more attention with regards to security, let us know. For example, critical system configurations and settings, including remote access to essential computing services or control systems should be protected by well-thought-out (and not commonly used) passwords.

If you have any doubts, why not let us help? We can probe your applications and improve access protection for critical or precious devices and systems. We can improve the resilience of software programs, straighten

out development processes and reduce the risk of misconfiguration.

For further information, questions or help, check: <https://security.web.cern.ch> or contact us at [Computer.Security@cern.ch](mailto:Computer.Security@cern.ch).

Do you want to learn more about computer security incidents and issues at CERN? Follow our Monthly Report: <https://cern.ch/security/reports/fr/monthly-reports.shtml>.

Stefan Lueders, Computer Security Team

## Ombud's Corner

### MORAL HARASSMENT – ARE YOU CONCERNED?

**Conflict happens, and in a large international organisation like ours it is often inevitable. Indeed, when it happens in the context of a confrontation of different ideas, opinions or methods it can be considered to be a healthy component of effective collaboration. Yet, when conflict becomes personal, when it is underpinned by unethical actions and hostile interactions, these interpersonal differences can rapidly deteriorate into moral harassment or bullying behaviour.**

Moral harassment or bullying behaviour occurs in the work environment when healthy relations break down between two people or between an individual and a group of people. As stated in CERN's Operational Circular No. 9, it is behaviour that is "contrary to the principles of equal opportunity, non-discrimination and mutual respect [and]... it is detrimental to health and safety at the workplace and the good functioning of the Organization in general". It often involves an

abuse or misuse of power, either positional or emotional, and tends to put its targets into a humiliating or disadvantageous situation, within which they may have difficulty defending themselves.

So when does a healthy conflict deteriorate into harassment? What are the signs by which we can recognise the difference and are there any particular contexts where this type of bullying behaviour may typically

arise? And what could be the consequences of such behaviour on our working climate and environment?

One of the key underlying factors in moral harassment is a lack of clarity and transparency: when roles are unclear, communication is evasive or non-existent, or when people are either marginalised, left out of decisions that concern them or actions are taken covertly and behind their backs... the risk of potential harassment becomes very real.

These situations lend themselves to negative behaviours such as the mobbing or isolation of colleagues – "don't inform her, she will argue every detail...", malicious gossip – "he's angling for the top job...", threats – "you had better not go to complain...", or labelling – "he's a

troublemaker...", all of which have long-lasting effects on people's work, their reputations and ultimately their physical and mental health and safety. Examples of other factors that may lead to this type of unacceptable behaviour include uncooperative behaviour, ambiguous personal relations or systemic alliances.

If you find yourself subjected to any kind of bullying behaviour, it is the time to take early action to put a stop to it, either by addressing it yourself directly or by requesting the support of a third person such as the Ombud, your supervisor or your HRA, as appropriate.

It is useful to keep a record of the specific occurrences and any witnesses, as well as your own attempts to address the situation. If the behaviour persists you may need to resort to a formal complaint, in which case an investigation will be carried out in line with the procedures established by the Organization.

Equally, if you recognise a tendency towards any of these behaviours in yourself, it is the time to acknowledge this to yourself and stop!

No one should have to put up with the sense of exclusion, unfairness or injustice that is

inflicted by moral harassment! Whether addressed through formal or informal means, such situations require timely action in order to prevent negative repercussions on people's morale, motivation and the corresponding loss of performance and productivity for the Organization.

All previous Ombud's Corners can be accessed in the Ombud's blog.

Sudeshna Datta-Cockerill

## LEV BORISOVICH OKUN (1929 - 2015)

**Soviet and Russian theoretical physicist Lev Borisovich Okun passed away on 23 November, 2015, after a long illness.**



Lev Okun was born in 1929, in western Russia and graduated from the Moscow Institute for Physics and Engineering in the early 1950s under the supervision of Arkady Migdal. Lev Okun came to the Institute of Theoretical and Experimental Physics (ITEP) in 1954 as a graduate student of Isaac Pomeranchuk, the head of the ITEP Theory Department. In 1956 he was instrumental in the proof of the Okun-Pomeranchuk theorem, establishing the asymptotic equality of cross sections of certain scattering processes.

A number of Okun's pioneering works were devoted to weak interactions of elementary particles. In particular, he was among the first to explain the special features of CP preserving neutral kaon decays, and his results on the false vacuum decay and domain walls

in cosmology are of paramount importance. His many textbooks on physics are well-known and cherished worldwide.

For many years Lev Okun was the heart of the ITEP Theory Department. He was devoted to physics beyond limits, believing that there can be nothing more noble in the world than theoretical physics. He taught his students to be as committed to physics as he was himself. Many of them became outstanding theorists, now scattered all over the world.

Lev was also a great supporter of the CERN programme. He regularly visited the Theory Division for many years, and was a member of the Scientific Policy Committee. His advice was always extremely valuable. We will miss the great scientist and also the kind, warm and wonderful friend.

His colleagues and friends

## Official news

### OFFICIAL HOLIDAYS IN 2016 AND END-OF-YEAR CLOSURE 2016/2017

**Application of Articles R II 4.38 and R II 4.39 of the Staff Regulations.**

Official holidays in 2016 (in addition to the special leave during the annual closure):

- Friday, 1 January: (New Year)
- Friday, 25 March: (Good Friday)
- Monday, 28 March: (Easter Monday)
- Thursday, 5 May: (Ascension Day)
- Friday, 6 May: (compensation granted for 1 May)
- Monday, 16 May: (Whit Monday)
- Thursday, 8 September: ("Jeûne genevois")
- Thursday, 22 December: (compensation for 24 December, Christmas Eve)

- Friday, 23 December: (compensation for 25 December, Christmas)
- Thursday, 29 December: (compensation for 31 December, New Year's Eve)
- Friday, 30 December: (compensation for 1 January 2017, New Year)

Annual closure of the site of the Organization during the Christmas holidays and days of special leave granted by the Director-General:

- The Laboratory will be closed from Thursday, 22 December 2016 to Wednesday, 4 January 2017 inclusive (without deduction of annual leave). The first working day in the New Year will be Thursday, 5 January 2017.

Human Resources Department  
Tel.: 73903/79257

### END-OF-YEAR CLOSURE 2015/2016

**As announced in CERN Bulletin No. 51-02/2015, the Laboratory will be closed from Saturday, 19 December 2015 to Sunday, 3 January 2016 inclusive.**

This period consists of:

- 4 days official holiday, i.e. 24, 25 and 31 December 2015, and 1 January 2016;
- 6 days special paid leave in accordance with Article R II 4.38 of the Staff Regulations, i.e. 21, 22, 23, 28, 29 and 30 December 2015;
- 3 Saturdays, i.e. 19 and 26 December 2015 and 2 January 2016 and 3 Sundays, i.e. 20 and 27 December 2015 and 3 January 2016.

## The first working day in the New Year will be Monday, 4 January 2016.

Further information is available from Department secretariats, specifically concerning the conditions applicable to members of the personnel who are required to work during this period.

Human Resources Department  
Tel.: 73903/79257

## EXTENSION OF THE PRE-RETIREMENT PROGRAMMES

Following a recommendation by the Standing Concertation Committee at its meeting on 9 November 2015 and approval by the Director-General, please note that:

- the Progressive Retirement Programme has been extended by one year, from 1 April 2016 until 31 March 2017;
- the Scheme of Part-Time Work as a Pre-retirement Measure has also been extended by one year, from 1 January 2016 until 31 December 2016.

Further information is available from the following sites:

- <http://cern.ch/go/Fd6m>
- <http://cern.ch/go/Q7Z5>

Human Resources Department  
Tel.: 79257 / 73903

## OFFICIAL NEWS RELATING TO CERN SAFETY RULES

The CERN Safety Rules listed below have been published on the official CERN Safety Rules website.

Safety Regulation SR-WS Works and services: this SR-WS (version 1) will cancel and replace the corresponding provisions of Safety Instruction IS50 "Safety Coordination on CERN Worksites".

- General Safety Instruction GSI-WS-1 Safety coordination for works and services: this GSI-WS-1 (version 1) will cancel and replace the corresponding provisions of Safety Instruction IS39 "Notice of Start of Works (AOC)" and of Safety Instruction IS50 "Safety Coordination on CERN Worksites"
  - Specific Safety Instruction SSI-WS-1-1 Safety coordinator for category 1 operations: this SSI-WS-1-4 (version 1) will cancel and

replace the corresponding provisions of Safety Instruction IS50 "Safety Coordination on CERN Worksites".

In order to limit the impact on the end-of-year technical stop, the Works and Services (WS) Safety Rules listed above shall enter into force as of 1 June 2016. Until this date IS39 and IS50 remain applicable.

- General Safety Instruction GSI-SH-1 v2 Visits on the CERN site: this GSI-SH-1 (version 2) cancels et replaces GSI-OHS1 (version 1).
- General Safety Instruction GSI-SH-2 Lone working: this GSI-SH-2 (version 1) cancels and replaces the corresponding provisions of Safety Code A6 "The two-person rule of working" and Safety Note NS8 "Two-person rule of working".
- General Safety Instruction GSI-WO-12 Workshop supervisor.

The three General Safety Instructions listed above enter into force as of their publication on the official CERN Safety Rules website, i.e. on 27 November 2015.

These CERN Safety Rules apply to all persons under the Director-General's authority.

HSE Unit

## 110TH ACCU MEETING

Agenda for the meeting to be held on Tuesday, 8 December 2015 at 9:15 a.m. in room Georges Charpak (Room F, 60-6-015).

- Chairperson's remarks
- Adoption of the agenda
- Minutes of the previous meeting
- News from the CERN Management
- Report on services from GS Department
- Report on services from IT department
- Strategic Communications Plan 2016-2020
- Reports from ACCU representatives on other Committees
  - a. Academic Training Committee
- Users' Office News
- Matters arising
- Any Other Business
- Agenda for the next meeting

Anyone wishing to raise any points under "Any Other Business" is invited to send them to the Chairperson ([Dragoslav.Lazic@cern.ch](mailto:Dragoslav.Lazic@cern.ch)) or to the Secretary ([ACCU.Secretary@cern.ch](mailto:ACCU.Secretary@cern.ch)).

Michael Hauschild (Secretary)

ACCU is a forum for discussion between the CERN Management and representatives of the CERN users in order to review the

practical means taken by CERN to support the work of Users of the Laboratory. The User Representatives to ACCU are:

- Austria** M. Jeitler ([manfred.jeitler@cern.ch](mailto:manfred.jeitler@cern.ch))
- Belgium** M. Tytgat ([michael.tytgat@cern.ch](mailto:michael.tytgat@cern.ch))
- Bulgaria** N.N.
- Czech Republic** S. Nemecek ([Stanislav.Nemecek@cern.ch](mailto:Stanislav.Nemecek@cern.ch))
- Denmark** J.B. Hansen ([Jorgen.Beck.Hansen@cern.ch](mailto:Jorgen.Beck.Hansen@cern.ch))
- Finland** K. Lassila-Perini ([Katri.Lassila-Perini@cern.ch](mailto:Katri.Lassila-Perini@cern.ch))
- France** F. Ferri ([Federico.Ferri@cern.ch](mailto:Federico.Ferri@cern.ch)) and A. Rozanov ([Alexandre.Rozanov@cern.ch](mailto:Alexandre.Rozanov@cern.ch))
- Germany** A. Meyer ([andreas.meyer@cern.ch](mailto:andreas.meyer@cern.ch)) and I. Fleck ([fleck@hep.physik.uni-siegen.de](mailto:fleck@hep.physik.uni-siegen.de))
- Greece** D. Sampsonidis ([Dimitrios.Sampsonidis@cern.ch](mailto:Dimitrios.Sampsonidis@cern.ch))
- Hungary** V. Veszpremi ([Viktor.Veszpremi@cern.ch](mailto:Viktor.Veszpremi@cern.ch))
- Israel** E. Etzion ([Erez.Etzion@cern.ch](mailto:Erez.Etzion@cern.ch))
- Italy** C. Biino ([Cristina.Biino@cern.ch](mailto:Cristina.Biino@cern.ch)) and C. Troncon ([Clara.Troncon@cern.ch](mailto:Clara.Troncon@cern.ch))
- Netherlands** G. Bobbink ([Gerjan.Bobbink@cern.ch](mailto:Gerjan.Bobbink@cern.ch))
- Norway** K. Røed ([Ketil.Roed@cern.ch](mailto:Ketil.Roed@cern.ch))
- Poland** K. Bunkowski ([Karol.Bunkowski@cern.ch](mailto:Karol.Bunkowski@cern.ch))
- Pakistan** W. Ahmed ([Waqar.Ahmed@cern.ch](mailto:Waqar.Ahmed@cern.ch))
- Portugal** F. Barão ([Fernando.Barao@cern.ch](mailto:Fernando.Barao@cern.ch))
- Romania** J. Maurer ([jmaurer@cern.ch](mailto:jmaurer@cern.ch))
- Serbia** D. Lazic ([Dragoslav.Lazic@cern.ch](mailto:Dragoslav.Lazic@cern.ch), Chair)
- Slovak Republic** A. Dubnicková ([Anna.Dubnickova@cern.ch](mailto:Anna.Dubnickova@cern.ch))
- Spain** S. Goy ([Silvia.Goy@cern.ch](mailto:Silvia.Goy@cern.ch))
- Sweden** E. Lytken ([Else.Lytken@cern.ch](mailto:Else.Lytken@cern.ch))
- Switzerland** M. Dittmar ([Michael.Dittmar@cern.ch](mailto:Michael.Dittmar@cern.ch))
- Turkey** B. Demirkoz ([Bilge.Demirkoz@cern.ch](mailto:Bilge.Demirkoz@cern.ch))
- United Kingdom** M. Campanelli ([Mario.Campanelli@cern.ch](mailto:Mario.Campanelli@cern.ch)) and H. Hayward ([helen.hayward@cern.ch](mailto:helen.hayward@cern.ch))
- Non-Member States** U. Mallik ([usha-mallik@uiowa.edu](mailto:usha-mallik@uiowa.edu)), B. Demirkoz ([Bilge.Demirkoz@cern.ch](mailto:Bilge.Demirkoz@cern.ch)), M. Sharan ([manoj.kumar.sharan@cern.ch](mailto:manoj.kumar.sharan@cern.ch)) and N. Zimine ([Nikolai.Zimine@cern.ch](mailto:Nikolai.Zimine@cern.ch))
- CERN** E. Auffray ([Etienne.Auffray@cern.ch](mailto:Etienne.Auffray@cern.ch)) and M. Ferro-Luzzi ([Massimiliano.Ferro-Luzzi@cern.ch](mailto:Massimiliano.Ferro-Luzzi@cern.ch))

The CERN Management is represented by Rolf Heuer (Director-General), Sergio Bertolucci (Director for Research and Computing), Sigurd Lettow (Director for Administration and General Infrastructure). The Physics department is represented by Catherine Decosse, Cecile Granier and Doris Chromek-

Burckhart (Head of the Users' Office), the Human Resources department by Ingrid Haug, the General Infrastructure Services department by Reinoud Martens, the Information Technology department by Mats Moller, the Occupational Health Safety and Environmental Protection unit by Ralf Trant,

and the CERN Staff Association by Michel Goossens.

Secretary: Michael Hauschild.

Other CERN staff members attend as necessary for specific agenda items. Anyone

interested in further information about ACCU is welcome to contact the appropriate representative, or the Chairperson ([Dragoslav.Lazic@cern.ch](mailto:Dragoslav.Lazic@cern.ch)) or Secretary ([ACCU.Secretary@cern.ch](mailto:ACCU.Secretary@cern.ch)).

<http://cern.ch/ph-dep-ACCU/>

## Take note

### CERN LIBRARY | SANDRINE SAISON-MARSOLIER, CORINNE PRALAVORIO AND MICHEL SPIRO PRESENT "SI TU DEVAIS ME DESSINER L'UNIVERS..." | 10 DECEMBER

Sandrine Saison-Marsollier, Corinne Pralavorio and Michel Spiro present *Si tu devais me dessiner l'Univers...*

Thursday, 10 December 2015 at 3.30 p.m.  
at the Library, Building 52-1-052  
Tea and coffee will be served at 3 p.m.

In 2014, CERN launched an art competition for local primary schools. Children were asked to come up with questions about the universe, matter and working as a researcher. The initiative was so successful that it has been turned into a book that teachers can explore with their pupils, discussing the questions and discovering the answers together. The book is laid out in double-page spreads, with the child's illustration on one page and the question and its answer opposite. The answers take the form of a short text written by Michel Spiro, the competition's scientific advisor, together with a cultural quotation whose purpose is to highlight the close association between science, literature and philosophy. The questions include: what was there before the Big Bang? Are researchers just like everyone else? Why don't the laws of physics change? Can we catch particles? What will physicists do when they have discovered what is inside particles? What is inside a black hole? Is any force capable of breaking electrons? Do particles grow when we grow? Does space go on forever?

*Si tu devais me dessiner l'Univers... : 50 questions sur l'Univers, la matière, les chercheurs - pour le primaire* by Sandrine Saison-Marsollier, Corinne Pralavorio, Michel Spiro and Marc Goldberg, Éditions le Pommier, 2015, ISBN 9782746509337.

CERN Library

### ACADEMIC TRAINING LECTURES | THE ART OF WAY FINDING | 9-10 DECEMBER

Please note that the next series of Academic Training Lectures will take place on 9 and 10 December. The lectures will be given by John Huth (Harvard University (US)).

**The Art of Way Finding (1/2)**  
on Wednesday, 9 December  
from 11 a.m. to 12 p.m.  
<https://indico.cern.ch/event/436443/>

**The Art of Way Finding (2/2)**  
on Thursday, 10 December  
from 11 a.m. to 12 p.m.  
<http://indico.cern.ch/event/436444/>

at CERN, Council Chamber (503-1-001)

**Description:** In the modern era we've become accustomed to the instantaneous transfer of information filtered by applications that act as a kind of guardian of information. In the realm of finding one's way, we use GPS and devices that take us from point A to point B without giving it a second thought. Are we slowly losing the cognitive processes that our ancestors had, and at what price? I use the theme of navigation as an avenue to explore the question of what we've lost in the information age. Cultures, such as the Polynesians, the Vikings and the early European explorers developed navigational schema that relied on a person's relation to the environment to find one's way. The concept of navigation often takes on a metaphorical meaning of how one lead's one's life or achieves goals. Recent work on the organisation of cognitive processes in the context of navigation has shown that this may be more than a simple metaphor: that navigation is a kind of template of how we organise our thoughts around future actions.

**Lecture 1: Mental constructs and the origins of celestial navigation**

Humans in particular, and mammals in general, possess a cognitive map that creates a neural replica of the environment. Recent work in neuroscience has found the basis of

this map. The nature of how this functions with respect to individual differences is illuminating. In particular the question of how people behave when they are lost speaks to the connection between cognitive processes and behaviour. In addition, I trace the development of celestial navigation with its curious origins in the practices of astrology.

**Lecture 2: Wave piloting in the Marshall Islands**

Of all the Pacific Island navigation cultures, the practice of wave piloting in the Marshall Islands is perhaps the most curious. Indigenous navigators employ the patterns of wave reflections and refractions with respect to the dominant swell to find their way among islands. Stick charts are a teaching aid and also a kind of map of wave formations for the apprentice navigator. Somehow the navigators are able to extract subtle information about the wave patterns in the presence of large backgrounds from wind-blown chop and the dominant swell. In this lecture I explore these practices, and the ingenious design of voyaging canoes in the Marshall Islands.

## ANNUAL CLOSURE OF THE CERN RESTAURANTS

- Restaurant No. 1 will close at 4 p.m. on Friday, 18 December 2015. The newspaper kiosk will close at 2.30 p.m. The 'Grab & Go' stand will not open at all that day.
- Restaurant No. 2 and the snack-bars in Buildings 6, 13, 30 and 40 will close at 3 p.m. on Friday, 18 December 2015. The snack-bar in Building 54 will close at 10.30 a.m.
- Restaurant No. 3 will close at 4 p.m. on Friday, 18 December 2015. The coffee bar in Building 864 will close at 10.30 a.m. and the one in Building 865 at 10.45 a.m.

All outlets will open again at the usual times on Monday, 4 January 2015.





**CERN SHOP CHRISTMAS SALE**  
30.11.2015 – 18.12.2015

**Looking for Christmas present ideas?**

CERN card holders will have a special reduction of 10% on all CERN shop articles  
SPECIAL OFFER: 50% reduction on Higgs DVD

*On Friday 18th December, CERN shop will be closed at 12*

**À la recherche d'un cadeau pour Noël ?**

Les détenteurs d'une carte CERN auront une réduction spéciale de 10% sur tous les articles de la boutique CERN  
OFFRE EXCEPTIONNELLE : 50% de réduction sur le DVD Higgs

*Le vendredi 18 décembre, la boutique CERN sera fermée à 12h*

 CERN SHOP Building 33

## Seminars

### MONDAY DECEMBER 07, 2015

17:00 **Miscellaneous:** York ATLAS meeting

### TUESDAY DECEMBER 08, 2015

11:00 **LHC Seminar:** CMS results

11:00 **CERN Computing Seminar:** Introduction to Rule Engines with Drools **Salle Dirac**

### WEDNESDAY DECEMBER 09, 2015

11:00 **Academic Training Lecture Regular Programme:** The Art of Way Finding (1/2) **Council Chamber**

14:30 **ISOLDE Seminar:** Low energy scattering of halo nuclei **26 1 022**

### THURSDAY DECEMBER 10, 2015

11:00 **Academic Training Lecture Regular Programme:** The Art of Way Finding (2/2) **Council Chamber**

14:00 **CERN Computing Seminar:** Jupyter IT **Amphitheatre**

### TUESDAY DECEMBER 15, 2015

15:00 **LHC Seminar:** ATLAS and CMS physics results from Run 2 **Main Auditorium**

## Supplemental

### NEWS

#### INNOVATION MEETS ENTREPRENEURSHIP

On Thursday 26 November, CERN openlab hosted an event on innovation and entrepreneurship. It was organised in collaboration with the CERN Knowledge Transfer Group and IdeaSquare.



Attended by 80 people, the event featured talks on commercialisation, public-private partnership, intellectual property, and other related topics. The participants also had the opportunity to discuss their own business ideas one-to-one with invited experts, who provided tailored advice.

The event was supported by CERN openlab partner company Intel as part of a joint project on innovation and entrepreneurship.

More information about the event is available on: <http://cern.ch/go/xq8V>.

Andrew Purcell

#### HIGHLIGHTS FROM E-EPS: PIA – PHYSICS IN ADVENT

With “PiA – Physics in Advent”, we have created a special and unique kind of advent calendar: a physics advent calendar. We introduce young scientists, and anyone who just wants to have a bit of fun, to 24 simple and yet ingenious experiments and physics puzzles. They aim to arouse interest in doing your own experiments and to inspire others.

From 1 to 24 December 2015, we will present a little experiment in a video clip every day. You can do the experiment yourself at home and answer the question on our web page throughout the day before seeing the solution video the next day.

Students in school years 5 to 10, complete school classes and entire schools are eligible to participate, particularly in Germany, Austria and Switzerland, but also any other country. Join in and win!

In addition to having fun with the experiments you can also win prizes. We will award prizes among the best participants in the individual categories, and in addition among the best school classes and schools. Furthermore, every participant or every team or class receives a certificate with their achievements to download and print.

This year for the first time we are offering PiA in German, English and with French subtitles. PiA is also popular among adults who like to solve science puzzles in competition with their colleagues at work, their friends or at home.

Participation in “PiA – Physics in Advent” is free. Registration started on 1 November 2015. For more information, go to: <http://cern.ch/go/G7F8>.

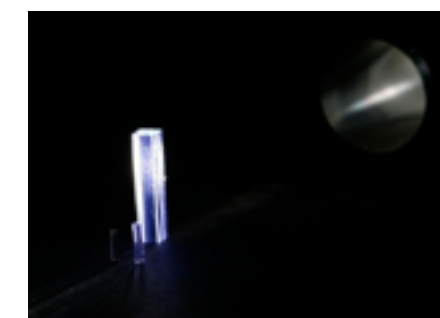
This article is from e-EPS News.

Arnulf Quadt

#### FROM THE CERN WEB: KNOWLEDGE TRANSFER, SUSTAINABILITY, CERN OPENLAB AND MORE

This section highlights articles, blog posts and press releases published in the CERN web environment over the past weeks. This way, you won't miss a thing...

**New Knowledge Transfer website to grow CERN's industry links**  
23 November – by Harriet Jarlett



Previous successful Knowledge Transfer enterprises have helped to develop several useful technologies, such as these photonic crystals, which glow when high-energy charged particles pass through, and are used for medical imaging.

CERN's Knowledge Transfer Group has just launched a new tool to encourage CERN researchers and businesses to share their technologies, ideas and expertise. It's hoped that by facilitating these exchanges the tool will inspire new ways to apply CERN technologies commercially, to help benefit industry and society.

Continue to read on: <http://cern.ch/go/dx9X>.

**CERN and research institutes discuss energy sustainability**  
18 November – by Harriet Jarlett



The power station at CERN's Préessin site. (Image: Margot Frenot/CERN).

On 29 October, CERN attended the third “Energy for Sustainable Science at Research Infrastructures” workshop at DESY in Germany. The bi-annual workshop, which was established in 2011, with ESS in Sweden and the European association of national research facilities (ERF), brought together delegates from research institutes worldwide to discuss energy consumption, strategies to improve energy awareness and plans for energy sustainability.

Continue to read on: <http://cern.ch/go/c8IM>.

**Faster research code wins student CERN openlab internship**  
16 November – by Harriet Jarlett



From over 1500 applicants, 40 students were selected to take part in the 2015 CERN openlab summer student programme.

CERN openlab and its partner company Intel jointly announced the winners of the Modern Code Developer Challenge on 14 November, at the annual Intel HPC Developer Conference. The overall winner, Mathieu Gravey from École des Mines d'Alès in France, was awarded the grand prize after he reduced the time it took to run a large dataset of code simulating brain development from 45 hours to just under eight and a half minutes. He'll join CERN openlab as a summer student next year.

Continue to read on: <http://cern.ch/go/8Whk>.



**DUNE and its CERN connection**  
13 November – CERN Courier

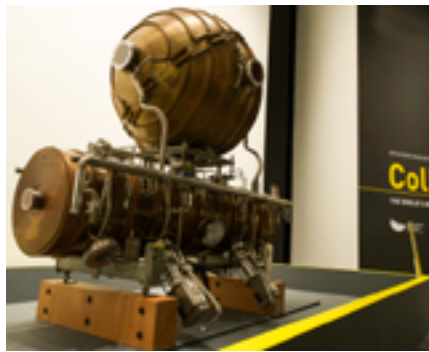


The Sanford Underground Research Facility, where DUNE will study neutrinos produced 1300 km away at Fermilab. (Image: Sanford Underground Research Facility.)

With almost 800 scientists and engineers from 145 institutes in 26 nations, the DUNE experiment is gaining global interest from the neutrino-physics community.

Continue to read on: <http://cern.ch/go/6ffH>.

**LHC arrives in Singapore**  
13 November – by Harriet Jarlett



An accelerating cavity from CERN's Large Electron Positron Collider is part of the Collider exhibition, now in Singapore. (Image: ArtScience Museum).

The Large Hadron Collider has reached Asia. On 14 November, the “Collider” exhibition opens at Singapore’s ArtScience Museum. This exhibition, which began life at London’s Science Museum back in 2013, has already travelled to Manchester and Paris. It showcases CERN’s activities through theatre, video and sound art. Visitors are guided through a digital control room and detector cavern, and interact with objects such as LHC magnets and parts of detector systems.

Continue to read on: <http://cern.ch/go/9w8V>.

## OFFICIAL NEWS

### FAMILY BENEFITS - OBLIGATION TO PROVIDE INFORMATION

Pursuant to Article R V 1.38 of the Staff Regulations, members of the personnel are reminded that they are required to inform the Organization in writing, within 30 calendar days, of any change in their family situation (marriage, partnership, birth of a child, etc.) and of the amount of any financial benefit of a similar nature to those provided for in the Staff Regulations (e.g. family allowance, child allowance, infant allowance, non-resident allowance or international indemnity) to which they or a member of their family may be entitled from a source other than CERN.

The procedures to be followed are available in the Admin e-guide:

<https://admin-eguide.web.cern.ch/en/procedure/change-family-situation>

Members of the personnel are also reminded that any false declaration or failure to make a declaration with a view to deceiving others or

achieving a gain resulting in a loss of funds or reputation for CERN constitutes fraud and may lead to disciplinary action in accordance with Article S VI 2.01 of the Staff Rules.

Human Resources department  
[HR-Family.Allowance@cern.ch](mailto:HR-Family.Allowance@cern.ch)

### TEMPORARY REINTRODUCTION OF BORDER CONTROLS AT FRENCH BORDERS INSIDE THE SCHENGEN AREA

The French authorities have informed CERN that, in view of the upcoming COP21 Paris Climate Conference, France will exceptionally reintroduce controls at its borders with Schengen states for one month from 13 November to 13 December 2015. All border posts and crossing points between France and Switzerland will be affected by this measure.

Members of the personnel are therefore reminded that, when crossing borders within the Schengen Area\*, they must carry:

1. either, in the case of citizens of European Economic Area (EEA) countries

- and Switzerland, an official identity document (identity card or passport);
2. or, in the case of non-EEA and non-Swiss citizens, an identity document together with a Schengen visa if they are subject to this obligation, or an identity document together with a residence permit issued by a Schengen state\*\* if they have one.

The French authorities will make every effort to limit the impact of this measure on cross-border traffic, and wish to thank the members of the CERN personnel for their understanding.

\* Please see: <http://cern.ch/go/ZJW8> and <http://cern.ch/go/Nq9d>.

\*\*The special residence permits issued by the French Ministry of Foreign Affairs and International Development and the “legitimation cards” issued by the Swiss Federal Department of Foreign Affairs are Schengen residence permits that allow travel within the Schengen Area. However, they are not recognised as official identity documents, irrespective of the holder’s nationality.

## TAKE NOTE

### PLEASE EXERCISE EXTREME CAUTION AT THE SAINT-GENIS ROUNDABOUT

In the interests of enhanced safety, a new pathway for pedestrians and cyclists has been constructed around the outside of the Saint-Genis roundabout. However, the markings of the previous cycle path, which is now closed to traffic, are still visible and can cause confusion. We therefore call on everyone to exercise extreme caution and to use the new pathway.

New two-way markings have been laid out, inviting pedestrians and cyclists coming from the direction of Saint-Genis-Pouilly to go towards the Swiss border or CERN Entrance E using the left-hand side of the roundabout (i.e. the Prévessin side). So, from now on, cyclists must no longer go around the roundabout on the right-hand side and pedestrians will no longer have to cross the D884 dual carriageway.

Similarly, people staying at the Saint-Genis hostel are invited to follow these new

markings to get to CERN or to return to the hostel, which means they will avoid having to cross the D35 highway at a spot where traffic is generally very fast.

EXTREME CAUTION must be exercised and the still-visible old road markings must not be followed.

### CERN’S 2016 BEAMLINE FOR SCHOOLS COMPETITION STARTS ON 17 NOVEMBER

Spread the word: CERN is offering high-school students from around the world the chance to create and perform a scientific experiment on a CERN accelerator beamline. What better way to learn about physics?

Now in its third year, the Beamline for Schools competition is open to teams of at least five students aged 16 and with at least one adult supervisor or “coach”.

Students can find out about the beamline and facilities via <http://cern.ch/bl4s>, then think of a simple, creative experiment. They can register their team from 17 November to start receiving e-mail updates. They then

submit a written proposal and a short video by 31 March 2016. The winners will be announced in June and will come to CERN, preferably in September 2016. Previous winners have tested webcams and classroom-grown crystals at the beamline, others have studied how particles decay and investigated high-energy gamma rays.

All participants will receive a certificate. Shortlisted teams will win a BL4S t-shirt for each team member and a cosmic-ray detector for the school, and some will be offered the chance to visit a physics laboratory near them. For the winning team(s), between five and nine members and up to two adult coaches per team will be invited to CERN, all expenses paid, for 10 days to carry out their experiments at the beamline.

Registration opens 17 November:  
<http://cern.ch/bl4s>.

The project is funded in part by the Alcoa Foundation; additional contributions are received from National Instruments.



# LEARNING

## PLACES AVAILABLE - TECHNICAL MANAGEMENT COURSES (UP TO THE END OF 2015)

Please find here the courses in the field of technical management scheduled up to the end of 2015 and which have places available.

For more details about a course and to register, please go to the Training Catalogue.

If you need a course that is not in the catalogue, please contact your supervisor, your Departmental Training Officer or the HR-LD group at [Communication.Training@cern.ch](mailto:Communication.Training@cern.ch).

## PLACES AVAILABLE - LEADERSHIP PROGRAMME (UP TO THE END OF 2015)

Please find here the courses in the field of leadership scheduled up to the end of 2015 and which still have places available.

For more details about a course and to register, please go to the Training Catalogue.

If you need a course that is not in the catalogue, please contact your supervisor, your Departmental Training Officer or the HR-LD group at [Communication.Training@cern.ch](mailto:Communication.Training@cern.ch).

## PLACES AVAILABLE - PERSONAL DEVELOPMENT AND COMMUNICATION COURSES (UP TO THE END OF 2015)

Please find here the courses in the field of personal development and communication scheduled up to end of 2015 and which still have places available.

For more details about a course and to register, please go to the Training Catalogue.

If you need a course that is not in the catalogue, please contact your supervisor, your Departmental Training Officer or the HR-LD group at [Communication.Training@cern.ch](mailto:Communication.Training@cern.ch).

Upcoming Technical Management courses (in chronological order)

	Language	Next Session	Duration	Available places
Procurement of supplies at CERN up to 200 000 CHF – e-learning	English	n/a	1 hour	n/a
Achats de fournitures au CERN jusqu'à 200 000 CHF – e-learning	français	n/a	1 hour	n/a
Project Scheduling and Costing	English	13/14 October	2 days	3
Managing by Project GDPM	English	21/22 October	2 days	2
Selecting the right person for CERN	English	19 November	1 day	6
Extra Session Procurement and Contract Management of Supplies	English	24 November	1 day	3
Project Engineering	English	10/11 December	2 days	8
New Innovation Management in Horizon 2020	English	11 December	5 hours	17
New Gestion de la maintenance	French	14/16 December	2.5 days	6

	Language	Next Session	Duration	Available places
Éléments essentiels de la gestion du personnel pour les superviseurs (adapté de « CDP pour superviseurs »)	French	Module 1 - 2, 9 November Module 2 - 11 December Module 3 - 21, 22 January	5 days	8 places
Comment, en tant que superviseur, tirer le meilleur parti de l'entretien annuel	French	20 November	1 day	8 places
How to get, as a supervisor, the most out of the annual interview	English	30 November	1 day	10 places

Newly launched communication course

Communiquer avec impact	French	12, 13 November	2 days	5 places
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	Language	Next Session	Duration	Available places
Voice and Nonverbal Behaviour in Speech Communication	English	19-20 November	2 days	4 places
Communicating to Convince	English	23-24 November	2 days	4 places
Négociation efficace	French	3-4 November	2 days	9 places
Les enjeux de la voix et du comportement non verbal dans la communication orale	French	5-6 November	1.5 days	6 places
Handling Difficult conversations	English	20 November 27 November 5 February 2016	3 days	3 places
Animer ou participer à une réunion de travail	French	30 November 1, 2 December	3 days	5 places
Communiquer pour convaincre	French	25-26 November	2 days	7 places

The following places are available on the newly launched Communication workshops:

	Language	Next Session	Duration	Available places
Communication: Science or Art? (Workshop 1)	English	19 November	1 day	7
Communication : Science ou Art ? (Atelier 1)	French	27 November	1 day	8
Communiquer avec succès en milieu interculturel (Atelier 2)	French	4 December	1 day	5
Effective Cross Culture Communication (Workshop 2)	English	20 November	1 day	7

## SAFETY TRAINING: PLACES AVAILABLE IN NOVEMBER AND DECEMBER 2015

There are places available in the forthcoming Safety courses. For updates and registrations, please refer to the Safety Training Catalogue on: <http://cern.ch/go/8tpW>.

Title of the course EN	Title of the course FR	Date	Hours	Language
Installation Specific Safety				
ALICE - Confined Space	ALICE - Espace confiné	05-Nov-15 to 09-Nov-15	14.00 - 16.00 and 9.00 - 10.00	English
ALICE - Underground - Guide	ALICE - Souterrain - Guide	10-Dec-15 to 14-Dec-15	14.00 - 16.00 and 9.00 - 10.00	English
CMS - Shift Leader in Matters of Safety (SLiMoS)	CMS - Chefs d'équipe en matière de sécurité (SLiMoS)	13-Nov-15	13.00 - 17.00	English
		27-Nov-15	13.00 - 17.00	English
		11-Dec-15	13.00 - 17.00	English
CMS - Underground - Guide	CMS - Souterrain - Guide	02-Nov-15	14.00 - 17.00	English
ISOLDE - Experimental Hall - Electrical Safety - Handling	ISOLDE - Hall d'expérience - Sécurité électrique - Manipulation	03-Nov-15	13.00 - 14.30	English
		17-Nov-15	13.00 - 14.30	English
		23-Nov-15	13.00 - 14.30	English
ISOLDE - Experimental Hall - Radiation Protection - Handling	ISOLDE - Hall d'expérience - Radioprotection - Manipulation	03-Nov-15	14.30 - 17.00	English
		17-Nov-15	14.30 - 17.00	English
		23-Nov-15	14.30 - 17.00	English
Electrical Safety (EL)				
Habilitation électrique - Electrician Low Voltage - Initial	Habilitation électrique - Électricien basse tension - Initial	09-Dec-15 to 11-Dec-15	9.00 - 17.30	English
Habilitation électrique - Electrician Low and High Voltage - Initial	Habilitation électrique - Électricien basse et haute tensions - Initial	17-Nov-15 to 20-Nov-15	9.00 - 17.30	English
Habilitation électrique - Electrician Low and High Voltage - Refresher	Habilitation électrique - Électricien basse et haute tensions - Recyclage	23-Nov-15 to 24-Nov-15	9.00 - 17.30	French
		07-Dec-15 to 08-Dec-15	9.00 - 17.30	English
Habilitation électrique - Non-Electrician - Initial	Habilitation électrique - Non-électricien - Initial	16-Nov-15	9.00 - 17.30	English
		01-Dec-15	9.00 - 17.30	English
Habilitation électrique - Non-Electrician - Refresher	Habilitation Electrique - Non-Electricien - Recyclage	30-Nov-15	9.00 - 17.30	English
Habilitation électrique - Person making tests in labs or on test-stands - Initial	Habilitation électrique - Personnel réalisant des essais en laboratoire ou en plate-forme d'essai - Initial	23-Nov-15 to 25-Nov-15	9.00 - 17.30	English
Habilitation électrique - Electrician Low Voltage - Working with power on	Habilitation électrique - Électricien basse tension - Travaux sous tension	19-Nov-15 to 20-Nov-15	9.00 - 17.30	French
		23-Nov-15 to 24-Nov-15	9.00 - 17.30	French
		07-Dec-15 to 08-Dec-15	9.00 - 17.30	French

Fire (FS)					
Fire Extinguisher	Extincteur d'incendie	05-Nov-15	10.30 - 12.00	French	
		05-Nov-15	14.00 - 15.30	French	
		12-Nov-15	14.00 - 15.30	English	
		13-Nov-15	10.00 - 11.30	French	
		16-Nov-15	10.30 - 12.00	English	
		16-Nov-15	14.00 - 15.30	English	
		20-Nov-15	10.30 - 12.00	English	
		20-Nov-15	14.00 - 15.30	English	
		24-Nov-15	10.30 - 12.00	French	
		24-Nov-15	14.00 - 15.30	French	
Mechanical Safety (M)					
Cryogenic Safety - Fundamentals	Sécurité Cryogénie - Fondamentaux	11-Nov-15	14.00 - 16.00	French	
Cryogenic Safety - Helium Transfer	Sécurité Cryogénie - Transfert d'hélium	19-Nov-15	9.30 - 12.00	English	
Electrical Palett Truck - Driving	Transpalette électrique - Conduite	16-Nov-15	8.30 - 12.30	French	
Overhead Crane - Operator and Slinger - Initial	Pontier-élingueur - Initial	10-Dec-15 to 11-Dec-15	8.30 - 17.30	French	
Overhead Crane - Operator and Slinger - Refresher	Pontier-élingueur - Recyclage	09-Dec-15	8.30 - 17.30	French	
Non-ionizing Radiation (NIR)					
Laser - Expert	Laser - Expert	09-Nov-15 to 10-Nov-15	9.00 - 17.30	English	
Laser - User	Laser - Utilisateur	19-Nov-15	9.00 - 12.30	English	
Radiation Protection (RP)					
Radiation Protection - Controlled Area - CERN Employees and Associates	Radioprotection - Zone contrôlée - Employés et associés CERN	02-Nov-15	9.00 - 17.00	English	
		16-Nov-15	9.00 - 17.00	English	
		25-Nov-15	9.00 - 17.00	English	
		26-Nov-15	9.00 - 17.00	French	
		02-Dec-15	9.00 - 17.00	English	
Safety Organisation (SO)					
Safety in Projects	Sécurité dans les projets	18-Nov-15	14.00 - 17.00	English	
Territorial Safety Officer (TSO) - Initial	Délégué à la sécurité territoriale (TSO) - Initial	01-Dec-15 to 03-Dec-15	8.45 - 17.30	French	
Safety and Health (SH)					
Ergonomics	Ergonomie	05-Nov-15	09:00 - 12:00	English	
Self-Rescue Mask - Initial	Masque auto-sauveteur - Initial	02-Nov-15	10.00 - 12.00	French	
		02-Nov-15	14.00 - 16.00	French	
		09-Nov-15	14.00 - 16.00	English	
		16-Nov-15	10.00 - 12.00	English	
		23-Nov-15	14.00 - 16.00	English	
		07-Dec-15	10.00 - 12.00	French	
		07-Dec-15	14.00 - 16.00	English	

Self-Rescue Mask - Refresher	Masque auto-sauveteur - Recyclage	03-Nov-15	10.00 - 12.00	French
		05-Nov-15	10.00 - 12.00	English
		12-Nov-15	10.00 - 12.00	English
		17-Nov-15	10.00 - 12.00	French
		18-Nov-15	10.00 - 12.00	English
		19-Nov-15	10.00 - 12.00	French
		24-Nov-15	10.00 - 12.00	French
		26-Nov-15	10.00 - 12.00	English
		01-Dec-15	10.00 - 12.00	French
		03-Dec-15	10.00 - 12.00	French
		08-Dec-15	10.00 - 12.00	French
		10-Dec-15	10.00 - 12.00	English
Worksite (WS)				
Confined space	Espace confiné	17-Nov-15	9.00 - 17.30	French
Scaffolding - Accepting	Échafaudage - Réception	23-Nov-15 to 24-Nov-15	9.00 - 17.30	French
Working at Heights - Using a harness	Travail en hauteur - Utilisation du harnais	04-Nov-15	9.00 - 17.30	English
		07-Dec-15	9.00 - 17.30	French