CERN Bulletin

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BL4S, OR HOW CERN SETS THE STAGE FOR TEENAGE SCIENTISTS

Launched in 2014, the Beamline for Schools (BL4S) competition allows high-school students between 16 and 18 years old to run a real experiment at CERN's PS accelerator (go to: http://cern.ch/go/6xts). For two years, students and schools worldwide have risen to the challenge and taken part enthusiastically in the competition. To ensure that it runs smoothly and enjoyably, over 100 CERN people work behind the scenes. *The Bulletin* lifts the curtain.

Student teams from Greece and the Netherlands – the winners of CERN's first Beamline for schools competition – came to CERN to work on their experiments using a test beam.

Turning young high-school students into real physicists who use a high-energy beam, set up an experiment and deal with data acquisition and analysis, is no game. For the people at CERN, the first step is to select the best proposals from those received from schools worldwide. "In 2015, over 40 scientists helped us select the best proposals," explains Markus Joos, a software engineer from the PH department who acted as BL4S project leader this year. "Once we had selected the winners, we needed to 'translate' the students' proposals into real and feasible projects."

Two young support scientists were asked by the project leader to coordinate this crucial phase of the project. In 2015, Tim Brooks from Royal Holloway, University of London, and Candan Dozen from Çukurova University (Turkey), worked on preparing the experimental environment for the students. "It was a fantastic opportunity, getting hands-on experience assembling the components of a full high-energy physics experiment from the ground up," says Tim. Candan agrees: "Being responsible for implementing an experiment that was proposed by a team of ambitious students was no small burden in the beginning. The ten days we spent with the students have been an incredible experience and have helped me a lot to develop skills that will be essential for my professional career."

In addition to the young support scientists, BL4S involves people from various departments and units, including hardware, software, beam and safety experts. "It's a true collaboration," says Joos. "However, in the case

(Continued on page 2)

BREAKING THE RULES

This week it's the turn of heavy-ion physics to take the spotlight as the Quark Matter 2015 conference takes place in Kobe, Japan. This is the year's most important conference for the ALICE collaboration, but there have also been many results presented by ATLAS, CMS and LHCb.

(Continued on page 2)

In this issue

NEWS

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A word from the DG

(Continued from page 1)

BREAKING THE RULES

ALICE presented a wide range of results elucidating the behaviour of the hot, strongly interacting state of matter produced when conditions mimicking those present in the first instants after the Big Bang are recreated in lead-ion collisions at the LHC. Taken together with the lead-ion studies carried out by the other LHC experiments, these have significantly advanced our understanding of the nascent Universe. Further details can be found on: http://cern.ch/go/XB8h.

Next week sees a very different kind of conference with the third edition of TEDxCERN. As with previous editions, this is CERN's chance to showcase science and the essential role it plays, and must continue to play, in all areas of society. This year, we have chosen the theme "Breaking the Rules", and have put together a line-up of speakers who really are pushing the boundaries of their fields. If you were lucky enough to get a ticket, I look forward to seeing you there. If not, then you might be near to one of the many watching parties around the world, or you can follow the event by webcast through cern.ch/tedxcern.

The final topic that I wish to touch upon this week is the subject of one of the talks at TEDxCERN. One of the SESAME laboratory's first staff scientists will be giving us a glimpse of her aspirations for this new regional light source for the Middle East as it approaches its 2016 commissioning.

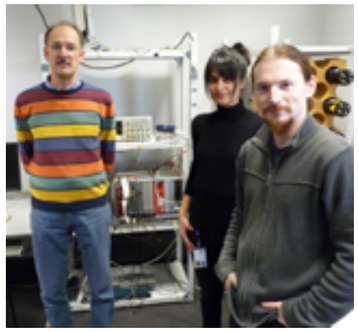
CERN has a significant stake in the new laboratory. CERN theorist Sergio Fubini was an early promoter of Middle Eastern scientific collaboration. Thanks to an EU grant, we are coordinating the construction of SESAME's main ring magnets. The first President of the SESAME Council was former CERN Director-General Herwig Schopper, and when the current President, Chris Llewellyn Smith, also a former CERN Director-General, reaches the end of his term, I will succeed him in the role. It is a vitally important role, since SESAME will bring excellent science to the region and show how a different, collaborative reality is possible. For this reason, we have added a SESAME strand to our high-school programmes, and it was my pleasure to welcome high-school teachers and students from SESAME member states to CERN this week.

With 2015 being the International Year of Light, there is a deep symbolic significance to this. One of the main reasons that UNESCO declared this year to be the year of light is to celebrate the thousandth anniversary of a very significant scientific text on optics, penned by the Middle Eastern scholar Alhazen in an age of scientific enlightenment in that region. If ever proof that a different reality is possible were needed, there it is: such a reality has already existed.

Rolf Heuer

BL4S, OR HOW CERN SETS THE STAGE FOR TEENAGE SCIENTISTS

(Continued from page 1)



Left to right: Markus Joos (BL4S Project leader), Candan Dozen (Scientific support) and Tim Brooks (Scientific support).

of BL4S, most of the CERN people involved in making the project happen and run smoothly are actually working on a volunteer basis."

Obviously, the budget is also an issue. In 2014, the project was almost exclusively funded by CERN, but private contributors provided 50% of its budget in 2015. "Among our supporters are the Motorola Solutions Foundation and the Ernest Solvay Fund, managed by the King Baudouin Foundation," explains Joos. "National Instruments also made a very special contribution by developing LabVIEW 3D software especially for us. With this LabVIEW-based software, the students can visualise what is happening in their experiment, which also makes a very nice educational tool for all the high -school students."

Although CERN will remain the main sponsor of BL4S with its contribution in terms of beam time and services, the feasibility of the project in the coming years will also depend on funding from external supporters. If you are interested in supporting BL4S, go to: **http://cern.ch/go/S7xk**. In the meantime, the successful concept of making a beam line available to schools is spreading to other laboratories around the world: both the Italian National Institute for Nuclear Physics (INFN) and Fermilab in the US are inviting students from their countries who participated in BL4S to carry out their experiments at their beam facilities.

Antonella Del Rosso

Figures and winners

In 2014 and 2015, a total of 667 teams from 57 countries signed up and 411 proposals were submitted. The four winning teams (two each year) were:

- In 2014: **Odysseus' Comrades** from Greece, investigating the decay of charged pions to study the weak force, one of the four fundamental forces of Nature, and **Dominicuscollege** from the Netherlands, growing their own crystals to make a calorimeter, a detector that measures the energy of particles, and to test and calibrate it with different particles.
- In 2015: **Leo4G** from Italy, using and calibrating a particle detector built from common, low-cost materials and a customised web-cam and **Accelerating Africa** from South Africa, investigating the production of high-energy gamma rays using a crystalline undulator.

GUIDO ALTARELLI (1941 - 2015)

The CERN community was deeply saddened to learn that Guido Altarelli had passed away on 30 September.

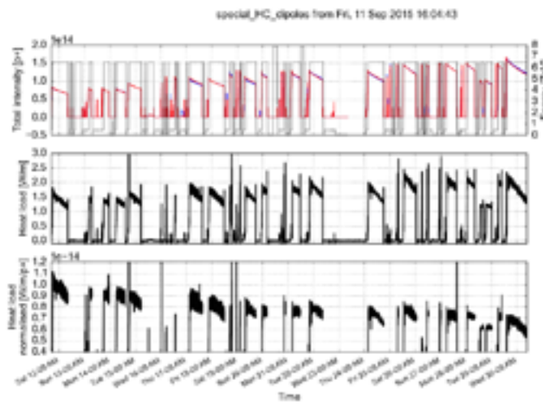
He was a true giant of particle physics and of CERN. His contributions to physics span all subjects, from strong to electroweak interactions, from neutrinos to theories beyond the Standard Model, and from the study of precision measurements to the analysis of apparent anomalies, whose interpretation in terms of new physics he often exposed as naïve and unjustified. He left milestones in the progress of our field wherever he went. The awards of the Sakurai Prize in 2012 and of the EPS Prize in 2015 rank him among the greats, and reflect only in part the wealth of knowledge he gave to high-energy physics.

Guido Altarelli was not only a great scientist, but also a person of great integrity. He was always available to make the bridge between experiment and theory and to share his time and wisdom with the experiments and the wider laboratory. The scientific community has lost a great scientist and a great friend.

The Director-General has sent a letter of condolence to his family and a full obituary will follow in the *CERN Courier*.

LHC REPORT: CLOUDY WITH SUNNY SPELLS

The LHC is continuing its 25 ns intensity ramp-up and has now reached 1465 bunches per beam. Performance is reasonable and the experiments have seen some long fills with steadily increasing luminosity delivery rates. Some now familiar issues continue to make life interesting.



The image shows the heat load evolution as measured in specially equipped dipoles. (Image: Giovanni Iadarola). ***Top frame****: energy and intensity.* ***Middle frame****: measured heat load in W/m.* ***Bottom frame****: heat load normalised to total beam intensity.*

One of the key challenges of 2015 was always expected to be electron clouds. The two scrubbing runs that were performed in the summer successfully qualified the LHC for up to around 1500 bunches. However, the final phase of the scrubbing, which saw the move from regular 25 ns beam to the doublet beam, proved difficult, and the scrubbing team concluded that the machine was not yet well-enough scrubbed for the doublets to be used effectively.

The 25 ns intensity ramp-up has thus had to contend with significant but manageable electron clouds. The main consequence of this has been heat load to the beam screens in the cold sectors of the machine. The beam screens' primary function is to intercept beam-induced heat loads at a temperature well above that of the magnets. They are actively cooled by a forced flow of supercritical helium with a regulated outlet temperature (of the beam screens) between 17 K and 20 K. The additional and quite considerable heat load from the electron clouds is proving a challenge for the regulation of the cryogenics system, in particular during the sharp transitions at injection and during the energy ramp. This has led the operators to opt for a non-aggressive approach, allowing the cryogenics team time to fully adjust following each increase in the number of bunches. On the positive side, by operating with electron clouds, the machine continues to scrub slowly.

UFOs are still present in considerable numbers, but thanks to the judicious beam-loss monitor thresholds, most are below the dump level and only a few fills have been lost to UFOs since resuming the intensity ramp-up after the last technical stop.

With 1465 bunches per beam, the peak luminosity is around 3.5 x 10^{33} $cm^{-2}s^{-1}$. This is around half the luminosity of the peaks seen with the 50 ns beam in Run 1. However, the beam seems happy at 6.5 TeV and is enjoying the benefits of a relatively modest bunch population, synchrotron radiation damping and a relaxed squeeze. Because of these factors, the instantaneous luminosity is falling slowly, allowing for some gratifyingly long fills. For example, Tuesday to Wednesday saw a 17-hour fill that delivered around 160 inverse picobarns to both ATLAS and CMS.

Lionel Herblin & Mike Lamont for the LHC team

ENLIGHT ENVISIONS ITS FUTURE

Last week, the European Network for LIGht-ion Hadron Therapy (ENLIGHT) met in Cracow to discuss how to best imagine its future. Over its 13 years of life, the network has succeeded in blending traditionally separate scientific communities with the common goal of more effective treatments against cancer and improving patient outcome.

Today, ENLIGHT includes over 300 members from more than 20 countries. Clinicians, physicists, biologists and engineers with experience and interest in particle therapy are working in unison under the network's umbrella. ENLIGHT has run four EU-funded projects – ULICE, PARTNER, ENVISION and ENTERVISION – and has managed to gather experts from the various fields to design common strategies to fight cancer with particles. "ENLIGHT has worked as an open collaborative network and has served as a common multidisciplinary platform for all the communities involved," says Manjit Dosanjh, deputy head of CERN's Medical Applications office and ENLIGHT coordinator. "The network has identified and tackled the technical challenges, trained young researchers, supported innovation and lobbied for funding."

The annual 2015 ENLIGHT meeting was held in Cracow and was hosted by Paweł Olko, the Scientific Director of the Polish Institute of Nuclear Physics and Director of the Bronowice Cyclotron Centre, Poland's proton-therapy centre. The meeting featured several presentations and even a poster session. The speakers reported on the status of research (in hadron therapy, imaging, radiobiology and data sharing), as well as on the current medical trials using ions.

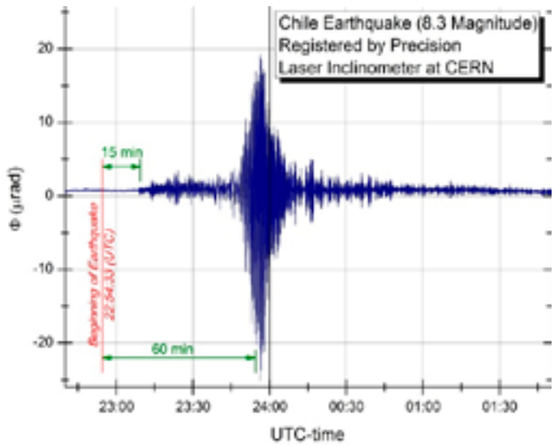
With two new dual-ion therapy centres – in Marburg (Germany) and in Wiener Neustadt (Austria) – and the proton-therapy centre in Cracow that will start treating patients in the coming months, the members of ENLIGHT have many reasons to celebrate. However, many challenges still lie ahead, including securing funding and succeeding in harmonising data, which is key to sharing information and best practices within the various communities. Focussed discussions took place at the final round table where the various speakers tackled the issue of the future of ENLIGHT and its vital role for the hadron therapy community. "We discussed various scenarios for ensuring the continuity of ENLIGHT and enhancing its role in education and training in particular, which, together with fundraising actions, is a key aspect," concludes Dosanjh. "The first step will be the creation of a small working group that will help me establish the future structure of ENLIGHT, which will include a scientific committee – a core group of members covering various disciplines and nationalities. The hope is to drive and guide ENLIGHT towards a bright future."

ENLIGHT suppports the ICTR-PHE conference that will be held from 15 to 19 February, 2016. The deadline for submitting abstracts has been postponed to 30 October. Registration is open at: ***http://cern.ch/go/NJX8****.*

Antonella Del Rosso

MONITORING UNDERGROUND MOVEMENTS

On 16 September 2015 at 22:54:33 (UTC), an 8.3-magnitude earthquake struck off the coast of Chile. 11,650 km away, at CERN, a new-generation instrument – the Precision Laser Inclinometer (PLI) – recorded the extreme event. The PLI is being tested by a JINR/CERN/ATLAS team to measure the movements of underground structures and detectors.



The earthquake that struck Chile on 16 September at 22:54 UTC was recorded 15 minutes later by the PLI, a new precision instrument designed to follow any ground movement.

The Precision Laser Inclinometer is an extremely sensitive device capable of monitoring ground angular oscillations in a frequency range of 0.001-1 Hz with a precision of 10^{-10} rad/Hz$^{1/2}$. The instrument is currently installed in one of the old ISR transfer tunnels (TT1) built in 1970. However, its final destination could be the ATLAS cavern, where it would measure and monitor the fine movements of the underground structures, which can affect the precise positioning of the giant detector.

The device, initially proposed by Julian Budagov and Mikhail Lyablin with colleagues from the Joint Institute for Nuclear Research (JINR), is currently being developed and tested at CERN by a joint JINR-CERN team in collaboration with Jean-Christophe Gayde's team in the Large Scale Metrology section (EN-MEF-SU) and Beniamino Di Girolamo, the former ATLAS Technical Coordinator. The instrument developed by the JINR team is a new kind of ground oscillation detector, which is able to record any angular seismic activity in the Earth's surface accurately. The Chilean earthquake's angular signal in μrad registered by the PLI is shown in the image on the left on a Coordinated Universal Time abscissa. The maximum amplitude of the signal corresponds to an angular variation of 40 μrad, compared with the background of micro-seismic ground motions at a level of ~0.1 μrad and corresponding to the superposition of seismic waves travelling both through the Earth and on its surface.

For confirmation of the PLI's measurements, teams at ATLAS compared the PLI data with the seismogram of the earthquake recorded by a seismometer located in Chile and obtained from the Incorporated Research Institutions for Seismology. By comparing the two graphs, the experts were also able to evaluate the expected delay of the signal caused by different speeds of propagation of surface- and body-seismic waves. For the body waves the arrival time at CERN was about 15 minutes later and for the surface waves it was approximately 60 minutes, showing an agreement with the wave speed ranges expected according to existing literature.

Antonella Del Rosso

TWO GENERATIONS OF KLYSTRONS REUNITED

As the newest accelerator on the block, Linac4 is a hotbed of fresh technology and innovation. But among its many new elements you'll find some familiar pieces, including eleven klystrons from CERN's former flagship, LEP.

Suitbert Ramberger, project engineer for the Linac4 DTL, with the third and final DTL module. (Image: Stephan Russenschuck.)

View of the Linac4 hall. The LEP klystrons (front and centre of the image) are surrounded by lead shielding. (Image: Suitbert Ramberger.)

The Linac4 accelerator is powered by both new, state-of-the-art klystrons and former LEP klystrons. In fact, the first Drift Tube Linac (DTL) module is powered completely by these LEP klystrons. The last of the DTL modules has only just been installed in the Linac4 tunnel – a milestone that will soon take the accelerator up to 50 MeV, allowing it to act as a back-up machine for Linac2 for a few years before the complete handover to the CERN accelerator chain.

It's been a long journey to this point. Linac4 was first conceived in the early 2000s, and its design overlapped with the end of the LEP era. "While we were dismantling LEP, we kept aside 44 klystrons that we knew could be reincorporated into other projects – Linac4 being the chief among them," says Olivier Brunner, who led the team responsible for the LEP high-power RF system. "As Linac4 was still on the drawing board, its klystron frequency could be chosen to match that of LEP klystrons."

For the decade-long wait, the LEP klystrons were kept under vacuum and monitored closely. During this time, they were adapted to accommodate Linac4's pulsed RF operation: "LEP klystrons were designed for a continuous wave machine," says Brunner, "and so we had to modify them for pulsed operation. They then passed high-voltage tests and were revalidated, ready for their installation in Linac4."

Just like old light bulbs, klystrons are consumables that, eventually, have to be replaced. The team has ten additional LEP klystrons available as back-ups, which will be validated once the Linac4 installation has been completed. However, once all the LEP klystrons reach the end of their lifetime, they will be replaced with new klystrons - one new for every two old.

As for the other remaining LEP klystrons? Most have found new homes around the world, from China to Sweden to France. While the LEP era may have passed, the legacy of the machine lives on!

Find out more about Linac4 in these Bulletin *articles:*

- *Injecting new life into the LHC – May 2015*
- *First Linac4 DTL & CCDTL cavities installed in tunnel – July 2014*
- *The Very Model of a Modern PI-Mode Structure – March 2014*
- *Bringing up beams – December 2013*
- *Just a few metres… but the stakes are high – March 2013*
- *The new building for Linac4 is ready ahead of schedule – November 2010*

Katarina Anthony

CBI STUDENTS: READY FOR NEW CHALLENGES

Twenty-seven students from four universities and over ten countries gathered at IdeaSquare to start their Challenge-Based Innovation (CBI) course (go to: http://cern.ch/go/N6bL). Labour mobility, food safety, literacy in the developing world and water safety are the four projects that the students will work on now that they are back at their home institutions. The final ideas and prototypes will be presented at CERN in December.

The CBI students enjoy some training sessions at IdeaSquare. (Image: Joona Kurikka for IdeaSquare)

The intensive first week of the four-month CBI Mediterranean course took place from 14 to 18 September. The students, from four universities – ESADE, IED and UPC in Barcelona and UNIMORE in Italy – gathered at CERN to meet researchers and carry out need-finding and benchmarking studies. "The idea of CBI courses is to get multidisciplinary student teams and their instructors to collaborate with researchers at CERN to develop novel solutions that meet societal needs," explains Joona Kurikka who, together with Tuuli Utriainen, coordinates the CBI courses at CERN. "The four projects we have in this first 'Mediterranean' edition of the CBI courses are at the crossroads of several disciplines, and we hope they benefit a lot from all the inspiration, ideas and technologies to which they are exposed at CERN."

The challenges that will be addressed by the CBI Mediterranean students are improving labour mobility, food safety, literacy in the developing world and water safety. "Students started to work on the projects a week before coming to CERN," explains Joona. "At CERN, they met researchers working in fields relevant to the specific technology. For example, the team working on food safety had the chance to meet experts in cryogenics, as an important aspect of food safety is the efficient preservation of food quality during the transport and delivery phases."

The basic requirement of CBI courses is that participating teams must include students from different fields of engineering and IT, as well as students from design faculties and business students. "We believe that developing novel solutions for the future of mankind is a challenge that can be tackled only by experts coming from different fields and who are willing to share their expertise," says Tuuli.

Three of the four projects are currently sponsored by private companies and NGOs interested in developing new solutions for these challenges. However, all the results of the students' work will be in the public domain. If you want to know more about the current status of the projects, have a look at the presentations the students gave at the end of their first week at CERN (on: **http://cern.ch/go/TK9k**). They will come again from 19 to 23 October for their second sessions with the CERN experts, and then for the final phase of their project, when they will present their ideas and proof-of-concept prototypes at the final CBI event on 10 December.

*If you have ideas for current or future CBI teams and you would like to discuss them further, contact the IdeaSquare team (**idea.s@cern.ch**) or come over to Building 3179 for a coffee!*

Antonella Del Rosso

COSMIC VISITS

On Saturday, 19 September, ESA astronaut Luca Parmitano and Amalia Ercoli Finzi, Principal Investigator of the SD2 experiment on board the ESA Rosetta spacecraft, visited the AMS Control Centre and other CERN installations.

From left to right: Sergio Bertolucci (CERN Director of Research and Computing), Amalia Ercoli Finzi (Emeritus Professor in the Aerospace department of the Polytechnic University of Milan and Principal Investigator of the SD2 experiment on board the ESA Rosetta spacecraft), Maurice Bourquin (AMS-02 Senior Scientist and Honorary Professor in the Nuclear and Corpuscular Physics department of the University of Geneva) and Luca Parmitano (Major in the Italian Air Force and European Space Agency astronaut) in the AMS Payload and Operation Control Centre.

They were welcomed in the early morning by Sergio Bertolucci and then headed to the Prévessin site to visit the CERN Control Centre and the Payload and Operation Control Centre (POCC) of the Alpha Magnetic Spectrometer (AMS). The Italian astronaut was able to visit the "Houston" of AMS, the experiment assembled at CERN and flown in July 2011 to the International Space Station, where he spent six months in 2013.

The group then moved to the CERN Computing Centre, where Amalia Ercoli Finzi encountered one of her former students, Alberto di Meglio, now a staff member in the IT department and Head of CERN Openlab. Before leaving, they had a short visit to IdeaSquare, where Luca Parmitano was given an introduction to the SR2S project, which aims to build a superconducting magnetic shield to protect astronauts from cosmic radiation.

Stefania Pandolfi

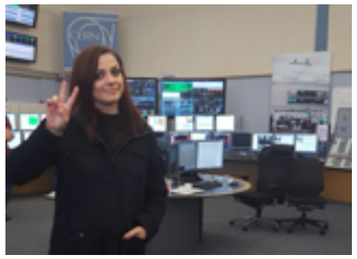
ITALIAN SINGER ANNALISA AT CERN FOR A WEEK OF FILMING

CERN welcomed Italian singer-songwriter Annalisa for a week-long visit to the Laboratory to shoot an Italian television production about the Laboratory.

The Italian artist has a degree in physics from the University of Turin, Italy. She is a singer and songwriter, famous for her successful participation in the Italian talent show, *Amici di Maria De Filippi*. She has recorded four albums as solo artist and has participated twice in the Sanremo Music Festival, the most important Italian song contest. She has also received numerous Italian music awards, and has earned international recognition.

Thanks to her knowledge of physics and her great influence with the Italian youth, Annalisa was selected to host an Italian television production about CERN aimed at young people.

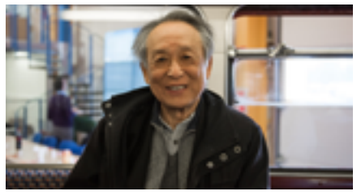
Stefania Pandolfi



Annalisa in the CERN Control Centre.

NOBEL LAUREATE IN LITERATURE VISITS CERN

Gao Xingjian, winner of the Nobel Prize for Literature in 2000, was invited to visit CERN as part of European Researchers' Night. During his visit to the Laboratory, he took time out to give us a dose of his optimism.



Gao Xingjian in IdeaSquare's bus during his visit to CERN.

"The idea of bringing scientists and artists together is wonderful!" An enthusiastic first-time visitor to the Laboratory, Gao Xingjian regaled his audience with his thoughts on human reality at the conference 'Made of Shadow and Light', in which he took part on 24 September, alongside Sergio Bertolucci, CERN's Director for Research and Computing.

Interested in science since his childhood (his marks in physics and maths at school were excellent, he explains with a smile), he draws an interesting parallel between human consciousness and dark matter: "The concept of dark matter makes complete sense to me," he explains. "The human consciousness and subconscious share the same characteristics: they are not visible, but they certainly exist."

Asked about the rumours of the end of the world that have been circulating on the Internet for the last few weeks, he answers with a humorous reference to the medium-length film After the Flood, which he produced in 2008: "What happens after the flood? There's still a future, even if it is uncertain."

You can find Gao Xingjian's biography and bibliography on the Nobel Prize website.

Anaïs Schaeffer

Seven texts by Gao Xingjian translated for CERN

"Made of shadows and light" is an anthology of seven short texts, written by Gao Xingjian in Chinese between 1990 and 2012, and extracted from a work entitled *"Youshen Yu Xuansi"* (Earthbound Spirit and Meditative Thought).

The texts have been translated for the first time, exclusively for CERN, into French, English, Spanish and Italian in the framework of POPScience for the 2015 European Researchers' Night. The e-book format, which is the first digital publication for the Nobel Prize winner, is distributed worldwide by POPScience Poetry. Download the e-book on: **http://cern.ch/go/N6bL** (e-book reading software required).

A video showing a selection of Xingjian's works was specifically created in celebration of his public conference organized by POPScience Poetry at the University of Geneva. The video will be part of the artist's permanent exhibition "The awakening of consciousness" at the Royal Museums of Fine Arts of Belgium, until 26 February 2020.

"PHD COMICS" AUTHOR JORGE CHAM ON THE POWER OF PROCRASTINATION

From Tuesday, 22 to Friday, 25 September, Jorge Cham visited CERN. *The PHD Movie 2* was screened in the Main Auditorium and the cartoonist also took part in one of the Researchers' Night events.

Jorge Cham in the CERN Control Centre.

On the first day, the author of the comic strip *Piled Higher and Deeper* (*PhD Comics*) visited the CERN Control Centre, the Synchrocyclotron, the CMS Service Cavern and the ATLAS control room.

On Thursday, he had a busy afternoon, starting with signing copies of his books and then giving a talk entitled "The Power of Procrastination" in a packed Main Auditorium. He made the audience laugh by narrating his experience as a graduate student in robotics at Stanford University, recounting how he started drawing *PhD Comics* and how it rapidly became popular in universities all over the world. He then analysed the frustrations and anxieties commonly experienced by any graduate student, causing the audience to laugh and nod in agreement. After the talk and another book-signing session, he introduced a screening of *The PHD Movie 2*.

The next day, he was on stage again in one of the Researchers' Night events at the Balexert shopping centre: a panel discussion entitled *"The PHD Movie vs. The Big Bang Theory"*. Together with David Saltzberg (CMS physicist and scientific consultant for the American sitcom), Cham discussed the funny side of science and life as a researcher as portrayed in the film and the show.

Stefania Pandolfi

NEW ARRIVALS

On Wednesday, 23 September 2015, recently-recruited staff members and fellows participated in a session in the framework of the Induction Programme.

HR Department

CERN WELCOMES THE SPANISH VICE-PRESIDENT

On 29 September, CERN had the pleasure of welcoming the Vice-President of the Government of Spain, Soraya Sáenz de Santamaría, for a visit of the Laboratory.

From left to right: Lluis Miralles (Head of the General Infrastructure Services department), Soraya Sáenz de Santamaría (Vice-President of the Government of Spain) and José Miguel Jiménez (Head of the Technology department).

The Vice-President was accompanied by Carmen Vela, Spanish Secretary of State for Research, Development and Innovation, Bernardo de Sicart Escoda, Ambassador of Spain to Switzerland, and Ana Menéndez Pérez, Permanent Representative of Spain to the United Nations and International Organizations in Geneva.

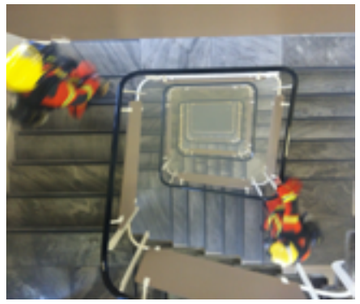
Their tour started at LHC Point 1, where CERN Director-General Rolf Heuer welcomed them and gave them an introduction to CERN's activities. José Miguel Jiménez, Head of the Technology department, and Lluis Miralles, Head of the General Infrastructure Services department, accompanied them on their visit to the ATLAS control room, the Synchrocyclotron and the CERN Computer Centre (CC). At the CC, Frédéric Hemmer, Head of the Information Technology department, presented the LHC Computing Grid Project.

Their last visit was to the LHC superconducting magnet assembly hall, where they met with CERN scientists from Spain.

Anaïs Schaeffer

MAIN BUILDING FIRE DRILL SAFELY CONCLUDED

Last week, a simulated fire in the stairwell of the Main Building put CERN's emergency response procedures to the test.



Firefighters descend the stairwell in the Main Building as the simulated fire rises.

At 2 p.m. on 22 September, alarms sounded around CERN's Main Building as an evacuation exercise got underway. A simulated fire in the stairwell, complete with very realistic smoke, led to the evacuation of one of the busiest places at CERN. The Main Building complex includes the Carlson Wagonlit travel agency, the post office, UBS, Uniqa, the Users Office, the Staff Association and the Novae restaurant as well as the Main Auditorium, the Council Chamber and the Charpak meeting room.

It was impressive to see how quickly the smoke propagated in the staircase as well as into the corridors, and equally impressive to see how smoothly, quickly and efficiently the evacuation proceeded. The exercise was the subject of meticulous planning, and was organised by the Departmental and Territorial Safety Officers (DSOs and TSOs) from DG and GS in collaboration with the Fire Brigade, Site Security, the Fire Detection Services and the HSE Unit.

"This exercise took a great deal of preparation," said Gunnar Lindell, DSO for the DG Unit. "We identified and trained 22 emergency guides, as well as Novae staff. This proved essential in the rapidity of the evacuation and brought home the importance of this role. Due to the complexity of the buildings, we involved 26 observers from different departments who have given us very useful feedback."

This was the first exercise of this scale to be conducted at CERN, and lessons learned will be deployed laboratory-wide. Among the evacuees was the Director General, who had the chance to see the operation first hand. "It was great to see how seriously everyone took the exercise," he said, "and I'd like to thank all who took part."

CERN Bulletin

RESEARCHERS' NIGHT: SCIENCE AT THE SHOPS

On 25 September, as part of European Researchers' Night, CERN and POPScience joined forces to welcome the public at the Balexert shopping centre in Geneva. The *Bulletin* presents its gallery of photographs from the exciting and educational event.

Science through comic strips, games, cinema and television: POPScience approaches scientific questions through popular culture, with great success! Around 500 children attended the sessions for schools at Balexert's multiplex cinema, and 600 spectators flocked to the public screenings.

Using the big screen, scientists, directors and authors were on hand to disentangle truth from untruths and science from science fiction. The guests, some of whom appeared in person and others via video link, included Jorge Cham, author of *PhD Comics* and the spin-off film; David Saltzberg, physicist at CMS and scientific consultant for the television series The Big Bang Theory; Kip Thorne, scientific consultant for the film Interstellar; Lawrence Krauss, author of *The Physics of Star Trek*; and Italian astronaut Roberto Vittori, who gave a commentary on the film Gravity.

In the main area of the shopping centre, CERN scientists performed experiments for the public. In the multimedia shop FNAC, authors signed books, customers enjoyed virtual tours of the CMS experiment via television screens, physicists answered numerous questions, and children built Lego detectors.

See the pictures:

Corinne Pralavorio

PHOTOWALK 2015: CERN AS SEEN BY A PHOTOGRAPHER

On Friday, 25 September, CERN opened its doors to nineteen photographers from all over the world for the *CERN Photowalk 2015: behind the scenes at the Laboratory*.

The photo competition was organised as part of an international photo competition, the Global Physics Photowalk, in which seven other physics laboratories also participated.

Professional and amateur photographers alike had the chance to visit and capture for posterity a number of unique CERN sites: Linac4, the main workshop and the ISOLDE facility. They were also able to get a feel for life at CERN by exploring the Meyrin campus.

A jury will select the best three photos taken at CERN before the end of October. These photos will be exhibited in 2016 and will represent CERN in the international competition, in which each of the other labs will also enter three snapshots. In November, an international jury and a public vote will pick the winning photos, which will be exhibited in 2016 in Asia, Europe and North America and will be featured in the *CERN Courier* and *Symmetry* journals.

See the pictures:

Julie Haffner

Computer Security

POSTING AND MIS-POSTING

This is what can happen at CERN if you don't lock your computer screen…

"Hi, I am looking for a partner either male or female to attend salsa lessons. I have a great body and enjoy rubbing it against other people on the dance floor. I would consider dinner after with the right person. If you think you can keep up with me and enjoy getting sweaty send me a reply. Stay sexy…"

This is the original text of a recent posting on the CERN Market webpage. Some people might find this appealing, some people think this is funny. Personally, I couldn't care less. But professionally, we had to follow up as this text can be perceived as inappropriate and, thus, in violation of the Terms of Usage of the CERN Market as well as the CERN Computing Rules and its annex on private usage of the CERN computing facilities. We remind you that the CERN Market is a public website that can be used by people within but also outside CERN. All posts are visible worldwide. While this post might be borderline, we have had posts in the past which could have impacted negatively on the reputation of the Organization if spotted by, for example, journalists looking for a story.

If you regularly advertise on the CERN Market, if you host one or more webpages at CERN or about CERN, if you regularly post information about your work at CERN or your opinion on issues happening at CERN on Twitter, Facebook, etc., please use common sense. Publish in a positive and constructive way, respecting CERN's Code of Conduct and the values contained therein. For more details, please consult the CERN Social Media Guidelines. And, finally, please also note that the CERN Market is meant for private sales and services only. Professional offers (dentists, removal services, etc.) are not permitted and will be promptly deleted.

P.S. This example was even worse than it first appeared. The post finally turned out to be a "joke" published under the name of one of our CERN colleagues by members of their team. They neglected the basic rule of locking their computer screen with a password when leaving the office. (Did you spot it? Two more violations of the CERN Computing Rules. Sigh.) Their colleagues took advantage of that, ignoring any adverse effects on the reputation and the moral well-being of the victim.

For further information, questions or help, check: ***https://security.web.cern.ch*** *or contact us at* ***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

Take note

VACCINATION AGAINST SEASONAL FLU

The Medical Service once again recommends you to get your annual flu vaccination for the year.

Vaccination is the most effective way of avoiding the illness and any serious consequences and protecting those around you. The flu can have especially serious consequences for people with chronic conditions (diabetes, cardio-vascular disease, etc.), pregnant women, infants, and people over 65 years of age.

Remember, anyone working on the CERN site who wishes to be vaccinated against seasonal flu should go to the Infirmary (Building 57, ground floor) with their vaccine.

The Medical Service will issue a prescription on the day of the vaccination for the purposes of reimbursement by UNIQA.

NB: The Medical Service cannot provide this vaccination service for family members or retired members of the personnel.

For more information:

- The "Seasonal flu" flyer by the Medical Service (go to: **http://cern.ch/go/FGP9**)
- Recommendations of the Swiss Federal Office of Public Health (go to: **http://cern.ch/go/jdH7**)

CERN Medical Service

2016 ESIPAP - JUAS | Registrations

The registrations for the 2016 sessions of the Joint Universities Accelerator School (JUAS) and of the European School of Instrumentation in Particle and Astroparticle Physics (ESIPAP) are now open.

Applications are welcome from second-year Master and PhD and for physicists wishing to further their knowledge in this particular field.

The deadline for submission of the full application form is **30 October 2015**.

IT'S TIME TO GO "BACK TO THE FUTURE"!

Grab your hoverboard, charge up your flux capacitor and join the CERN CinéClub to watch the "Back to the Future part 2" film [1989] that takes the characters into the future to 21 October 2015.

"Back to the Future Part II" film screening
Wednesday, 21 October 2015 at 6 p.m.
Council Chamber (503-1-001)
(in English, with French subtitles)

Watch how the film-makers imagined we'd live in 2015, from flying cars to hydrated pizzas and much more, in this iconic film from the 1980s. This special screening is a collaboration of the CERN CinéClub and CERN social media.

"Where we're going, we don't need roads"

CLOSURE OF THE CAR POOL IN BUILDING 130 UNTIL 6 NOVEMBER

The Car Pool, Building 130, will be closed from Friday, 9 October until Friday, 6 November for renovation.

All activities, such as SIXT rental cars and maintenance of the CERN car fleet, will be temporarily transferred to the Car Pool at Building 124.

Mobile phone: 161113 (+41 75 411 1113).

Thank you in advance for your understanding.

GS-IS Group

Training

LAUNCH OF TECHNICAL TRAININGS FOR PROGRAMMERS

This autumn, two new technical training courses have been launched for scientists and engineers at CERN who undertake programming tasks, particularly in C and C++. Both courses are taught by Andrzej Nowak; an expert in next-generation and cutting edge computing technology research.

The training courses are organised in cooperation with CERN openlab and are sponsored by the CERN IT department – there is only a nominal registration fee of 50 CHF. This is an opportunity not to be missed!

- **Computer architecture and hardware-software interaction (2 days, Oct 26-27)**

The architecture course offers a comprehensiveoverview of current topics in computer architecture and their consequences for the programmer, from the basic Von Neumann schema to its modern-day expansions. Understanding hardware-software interaction allows the programmer to make better use of all features of available computer hardware and compilers. Specific architectural features are discussed (such as execution ports, branching algorithms, etc), as well as instruction sets, compilers, memory operation and architecture, fundamentals of floating point and acceleration. Demo labs are included.

Participants can register via the training catalogue on: **http://cern.ch/go/TK9k**.

- **Programming and environments for parallelism (4 days, Nov 3-6)**

The parallelism course dives into a wide range of parallel programming techniques, whether data- or task-parallel. We start with an overview of patterns abd look at trade-offs, pitfalls and available parallel programming environments – with a particular focus on OpenMP4, Threading Building Blocks and Cilk. The last day is an advanced class devoted to fine-tuning and balancing parallel programs using modern frameworks, runtimes and APIs. Demo labs are included.

Participants can register via the training catalogue on: **http://cern.ch/go/TK9k**.

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*For more information, please contact **Technical.Training@cern.ch**.*

Seminars

FRIDAY OCTOBER 09, 2015

11:00 Detector Seminar LHCb trigger and reconstruction optimization for Run II: real-time alignment and calibration, and the TURBO stream. **Salle Anderson**

SATURDAY OCTOBER 10, 2015

09:00 Globe Colloque transfrontalier TPE - TM **Main Auditorium**

MONDAY OCTOBER 12, 2015

09:00 JAI Accelerator Courses Michaelmas Term 2015 **Videoconference Room**

TUESDAY OCTOBER 13, 2015

11:00 LHC Seminar: ATLAS results

WEDNESDAY OCTOBER 14, 2015

14:30 ISOLDE Seminar The anomalous heat effect on D/H loaded Palladium: Exploration at an atomic level, preliminary perturbed angular correlations studies

TUESDAY OCTOBER 20, 2015

10:00 CERN Computing Seminar Adopting CERN SixTrack Fortran Legacy Modeling Code to Perform Ensemble Simulations on GPU IT **Amphithéâtre**

11:00 LHC Seminar CMS results Filtration Plant

11:00 CERN Computing Seminar Adopting CERN SixTrack Fortran Legacy Modeling Code to Perform Ensemble Simulations on GPU IT **Amphithéâtre**

Supplemental

NEWS

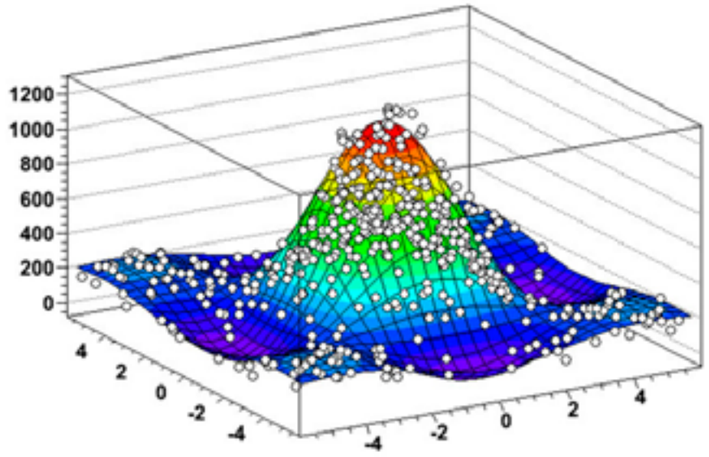
FROM THE CERN WEB: ANTIHYDROGEN, ROOT, PROTONS AND MORE

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...

Big data takes ROOT
29 September – by Barbara Warmbein

Particle physicists don't break into a sweat when they face big data. On the contrary: they need it in order to be able to tell a rare process from a common one. Reliable statistics are essential here, and physicists gather statistics by producing as many particle collisions as possible. At the LHC, protons collide some 1 billion times per second, and the CERN data centre stores more than 30 petabytes of data per year from the LHC experiments.

Continue to read on: **http://cern.ch/go/6kLd**



Example of a plot created with the help of the ROOT tool. (Image: ROOT)

The most precise picture of the proton
25 September – CERN Courier

After 15 years of measurements and another eight years of analysis and calculations, the H1 and ZEUS collaborations have published the most precise results to date about the innermost structure and behaviour of the proton.

The diagrams show the neutral-current (top) and charged-current (bottom) deep-inelastic electron–proton scattering processes.

Continue to read on: **http://cern.ch/go/8m9R**

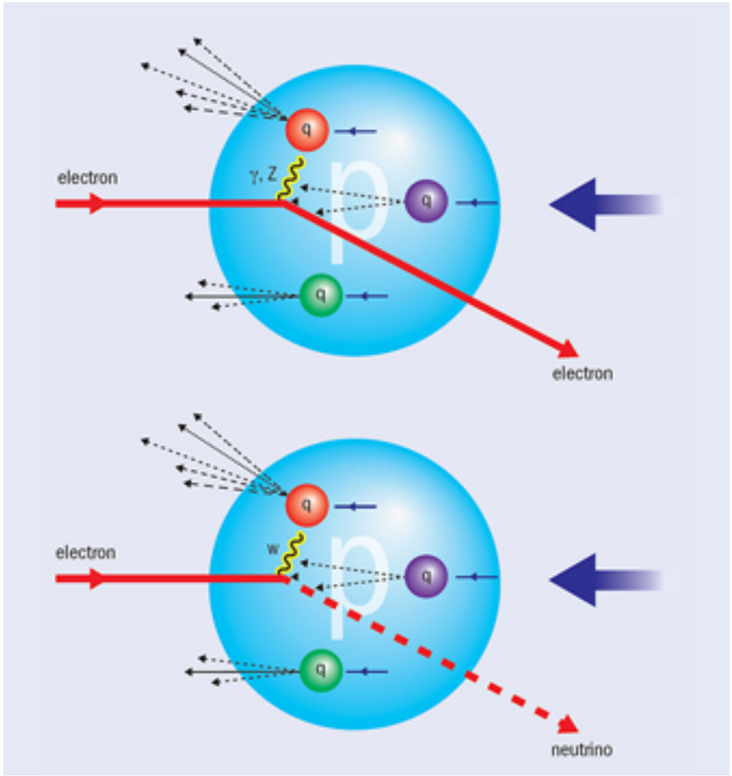
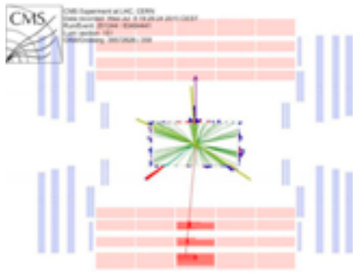


Image: DESY.

Where no-one has gone before
30 September – CMS Collaboration

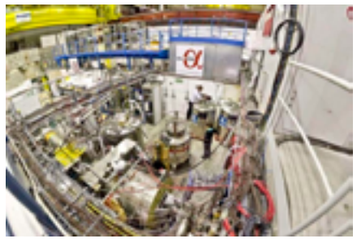


A top quark candidate in the CMS detector. (Image: CMS Collaboration).

Born at the end of the '70s, I was still in school when the heaviest of all quarks was discovered at the Tevatron: the top quark. Back then I had no idea what it was about. But reading an article in the newspaper I felt the excitement surrounding such a discovery. My interest for the smallest and most basic building blocks of the universe had been awakened. When I joined the CMS Collaboration in 2014, I had no doubt that the first measurement I would like to do was that of the production rates of top-quark pairs at the new energy regime of 13 TeV. Shortly after the restart of the LHC in summer this year, we began a journey where no-one has gone before.

Continue to read on: **http://cern.ch/go/QJ97**

Antihydrogen at CERN: 20 years and still going strong
29 September – by Harriet Jarlett



The ALPHA experiment, one of five experiments that are studying antimatter at CERN.

Twenty years ago a team of scientists at CERN led by Walter Oelert succeeded in producing the first atoms made of antimatter particles.

The nine atoms of antihydrogen – the antimatter counterpart of the simplest atom, hydrogen – were made at CERN's Low Energy Antiproton Ring (LEAR) facility. This world premiere happened exactly 30 years after the discovery of the antiproton and opened a new chapter in the study of antimatter.

Continue to read on: **http://cern.ch/go/q9JJ**

The birds and the beams: Biodiversity at CERN
22 September – by Cian O'Luanaigh

A member of the CERN flock grazes on the roof of the Intersecting Storage Rings.

It's 7am at CERN and sheep are grazing on the roof of the world's first hadron collider.

Though the Intersecting Storage Rings have lain dormant since 1984, this morning the air resonates with the sound of bells and bleating as shepherd Enrico D'Ippolito inoculates his herd. Kin, the 3-year-old border collie, jumps against makeshift metal gates, whining and snapping to keep the ewes moving. "They're very sweet-natured," grins D'Ippolito. "And they keep me busy!"

Continue to read on: **http://cern.ch/go/Lm7g**

"HELLO!" FROM CROSBY AND NASH

On Tuesday, 29 September, American musicians David Crosby and Graham Nash visited CERN. They also recorded a video message, commenting on their visit and sending their greetings and thanks to CERN's people.

Watch the video:

David Crosby, Graham Nash, and Stephen Stills have played together for over 30 years in the Crosby, Stills and Nash folk rock band. Originally, together with Neil Young, they were all members of the Crosby, Stills, Nash and Young band, having played at the iconic Woodstock Festival and produced many legendary songs such as Teach Your Children, Judy Blue Eyes, Our House and Marrakech Express.

CERN Bulletin

HIGHLIGHTS FROM E-EPS: WOMEN IN PHYSICS: CHALLENGING THE ESTABLISHED STEREOTYPES?

An equitable gender balance in physics would be beneficial for the quality of research and education, which are key elements in the economic, social and cultural development of our society. The under-representation of women in physics is very widely debated and is central for a society that cares about the well-being of its members.

Many analyses of the reasons for the asymmetric presence of the genders among the population of physics students and at the various levels in academia exist. It has been observed that, in general, the phenomenon is present at different quantitative levels in the different European countries, being less pronounced in Italy, Greece and Spain. This confirms that the reasons for the gender imbalance are multiple and include a different way of perceiving physics as a discipline in different countries. It is very likely that, in some countries, in people's minds, physics studies have less of a technical connotation and the physicist is seen more as "a philosopher" of nature. From this perspective, physics fits better with the common stereotype: women are supposed to make less money than men, so they may indulge in cultural activities.

Luckily, several actions to guarantee a balanced gender representation in physics have been proposed and also taken up in all European countries (and elsewhere) in order to address the issue. Generally speaking, the situation is continuously improving thanks to different initiatives even though there is still a lot of room for improvement, in particular concerning the men-women asymmetry in high-responsibility positions.

The Equal Opportunity Committee of the EPS was established in 2013 with the mission of looking at the barriers that contribute to the under-representation of women in physics and of promoting actions to facilitate gender-balanced participation in the field.

In 2013, the EPS launched the Emmy Noether distinction to recognise noteworthy female physicists. The distinction is awarded to excellent female physicists for their personal achievements in physics research, education and outreach. At the same time, the laureates are role models for the younger generation of physicists.

A new initiative of the EPS-EOC has been launched, consisting of preparing and publishing in e-EPS short portraits of young female researchers in the very early stage of their careers in academia or in industry. The first portrait was published in this issue of e-EPS (**http://cern.ch/go/DBf8**) and the initiative will continue aiming to present a portrait every two months.

The idea is that a young female considering a career in physics (student, post-doc or young researcher) might find positive answers through learning about the experiences of someone only a few years older regarding their choice to pursue a career in physics.

Motivation and confidence in oneself ("Yes, I can") are necessary qualities for reaching leading positions.

This article is from e-EPS News.

L.Di Ciaccio, Chair of the Equal Opportunity Committee of EPS

TAKE NOTE

ROOF RENOVATION OF BUILDINGS 128 AND 129

The roof renovation of buildings 128 and 129 is scheduled to take place from 17 August to 15 October 2015.

During this period, access to the "raw material" workshop will be limited and controlled due to asbestos removal. Collecting your orders directly from the building will be difficult, or even impossible, and urgent requests will be difficult to carry out.

We therefore ask you to create your requests via EDH, so that delivery may be carried out as soon as possible.

Thank you for your understanding.

GS Department

WORK ON THE BUILDING 4 CAR PARK AND CLOSURE OF ENTRANCE A

From 6 July to 31 October 2015, the GS department will be carrying out renovation work on the car park next to Buildings 4 and 5. This work is aimed at improving safety on and around the car park for all users, particularly children attending the nursery school, pedestrians and cyclists.

The work on the car park will be conducted in two stages so that half of the parking spaces will always be available, in order to limit the impact on users as much as possible (the closed-off areas will be clearly indicated). When the work is completed, the car park will have been completely renovated, with new surfacing and road markings, high-quality lighting and more parking spaces (+5%).

During the work, part of the car park will be inaccessible, which is likely to make it more difficult to find a parking space. We therefore invite you to park in the Globe car park during this period.

The renovation work will also affect Entrance A (Route Bell), which will be fitted with a fully automated road gate, similar to the one at Entrance C. For increased convenience and safety, two turnstiles for access by pedestrians and cyclists will also be installed. Entrance A will also be closed from 6 July but should be operational again by the end of September.

We thank you for your understanding and apologise for any inconvenience.

GS Department

TRAFFIC MODIFICATIONS ON ROUTES RUTHERFORD, DEMOCRITE AND FERMI

The GS Department would like to inform you that, until the end of December, the construction of Building 245 will result in the following traffic modifications:

1. Traffic on Route Rutherford will be partially restricted in front of the construction site,
2. Traffic on Route Democrite will be one-way towards Route Rutherford.

Also, please note that due to construction work in front of Building 377, Route Fermi will be closed from Wednesday, 10 June until Friday, 7 August.

Thank you for your understanding.

REGISTER NOW FOR ISOTDAQ 2016

The International School of Trigger and Data Acquisition (ISOTDAQ) 2016 is the seventh in a series of International Schools dedicated to introducing MSc and PhD students to the "arts and crafts" of triggering and acquiring data for physics experiments.

The main aim of the school is to provide an overview of the basic instruments and methodologies used in high energy physics, spanning from small experiments in the lab to the very large LHC experiments, emphasising the main building blocks as well as the different choices and architectures at different levels of complexity. About half of the school time will be dedicated to laboratory exercises where the students are exposed to most of the techniques described in the lectures.

The 7th International School of Trigger and Data Acquisition will be held in the Lopatie Conference Centre on the campus of the Weizmann Institute of Science in Rehovot, Israel. Lectures, hands-on exercises, breakfast, lunch and coffee breaks will be held in the Centre. Accommodation is within walking distance at the Reisfeld Residence of the Hebrew University Faculty of Agriculture and the San Martin Guest House on the Weizmann campus.

Since places are limited, acceptance to the school is by a selection committee.

Apply on: http://cern.ch/go/S7q6
Applications are accepted until
31 October 2015.

Find out more about the school on: ***http://cern.ch/go/Q76L****.*

Markus Joos, on behalf of the organisers

SPRINGER PUBLISHING BOOK BOOTH | 8-9 OCTOBER

Continuing the spirit of the CERN Book Fairs of the past years, Springer Publishing will have a book booth in the foyer of the Main Building, from 8 to 9 October. Some of the latest titles in particle physics and related fields will be on sale.

For the occasion, Professor Ugo Amaldi will present his new book "Particle Accelerators: From Big Bang Physics to Hadron Therapy" on Thursday, 8 October at 5 p.m. in Room F (Charpak room). The presentation will take place in the framework of the Italian Teachers week and will be followed by a signing session.

A special highlight at the Springer booth will be the presentation of the CERN-sponsored Open Access book: "J Rafelski (ed): Melting Hadrons, Boiling Quarks - From Hagedorn Temperature to Ultra-Relativistic Heavy-Ion Collisions at CERN; With a Tribute to Rolf Hagedorn".

CERN Library

TRAINING

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.**

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

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.**

	Language	Next Session	Duration	Available places
Eléments essentiels de la gestion du personnel pour les superviseurs (adapté de « CDP pour superviseurs »)	French	Module 1 - 2, 3 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

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**.

	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