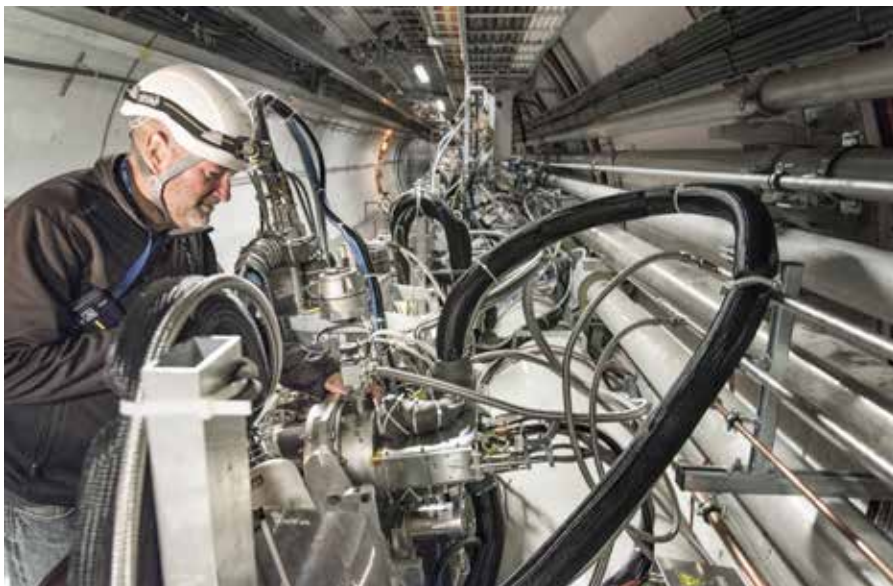


DE-SQUEEZE THE BEAMS: THE TOTEM AND ATLAS/ALFA EXPERIMENTS

A special week-long proton-proton run with larger beam sizes at the interaction point is intended to probe the p-p elastic scattering regime at small angles.



Nicola Turini, deputy spokesperson for TOTEM, in front of one of the experiment's 'Roman Pot' detectors in the LHC tunnel.
(Photo: Maximilien Brice/CERN)

Usually, the motto of the LHC is "maximum luminosity". But for a few days per year, the LHC ignores its motto to run at very low luminosity for the forward experiments. This week, the LHC will provide the TOTEM and ATLAS/ALFA experiments with data for a broad physics programme.

The TOTEM experiment at Point 5 and the ATLAS/ALFA experiment at Point 1 study the elastic scattering of protons, which are not observable in normal operation runs. In the elastic scattering process, the two protons survive their encounter intact and only change directions by exchanging momentum.

To allow this special run, the operators play with the so-called beta-star parameter. The higher the beta star, the more de-squeezed the

beams are, and the more parallel the beams are when they arrive at the interaction point. For this special run, the beta-star had to be raised to 2.5 km (whereas in normal runs it is as small as 0.4 m).

Running with such a high beta-star parameter is an achievement: during Run 1, at 8 TeV, a value of 1 km was reached. But with a higher energy, the two incoming protons deviate by smaller angles, for equal transferred momentum. Since the TOTEM and ATLAS/ALFA Roman Pot detectors cannot be moved closer to the beams, the beta-star parameter must be raised to even higher values to provide acceptance for the smaller angles. "The effort that is required for the machine to deliver beams with such a high value of the beta-star parameter is extremely challenging," says Simone Giani, spokesperson

(Continued on page 2)



A WORD FROM THE DIRECTOR-GENERAL

THERE'S MORE TO PARTICLE PHYSICS AT CERN THAN COLLIDERS

CERN's scientific programme must be compelling, unique, diverse, and integrated into the global landscape of particle physics. One of the Laboratory's primary goals is to provide a diverse range of excellent physics opportunities and to put its unique facilities to optimum use, maximising the scientific return.

(Continued on page 2)

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THERE'S MORE TO PARTICLE PHYSICS AT CERN THAN COLLIDERS

In this spirit, we have recently established a Physics Beyond Colliders study group with a mandate to explore the unique opportunities offered by the CERN accelerator complex to address some of today's outstanding questions in particle physics through projects complementary to high-energy colliders and other initiatives in the world. The study group will provide input to the next update of the European Strategy for Particle Physics.

The process kicked off with a two-day workshop at CERN on 6 and 7 September, organised by the study group conveners: Joerg Jaeckel (Heidelberg), Mike Lamont (CERN) and Claude Vallée (CPPM Marseille and DESY). Its purpose was to present experimental and theoretical ideas, and to hear proposals for compelling experiments that can be done at the extremely versatile CERN accelerator complex. From the linacs to the SPS, CERN accelerators are able to deliver high intensity beams across a broad range of energies, particle types and time structure.

Over 300 people attended the workshop, some three quarters coming from outside CERN. The call for proposals resulted in around 30 submissions for talks, with about two third of those being discussed at the workshop. It was interesting to see a spirit of collaborative competition, the hallmark of our field, building up as the workshop progressed. The proposals addressed questions of fundamental physics using approaches complementary to those for which colliders are best adapted. They covered, among others, searches for dark-sector particles, measurements of the proton electric dipole moment, studies of ultra-rare decays, searches for axions, and many more.

The next step for the study group is to organise the work to develop and consolidate the ideas that were heard at the workshop and others that can be put forward in the coming months. Working groups will examine the physics case and technical feasibility in the global context: indeed, carrying out research here that

could be done elsewhere does not allow for the best use of the discipline's resources globally.

I'm looking forward to following the interactions and activities that these working groups will foster over the coming years, and to reading the report that will be delivered in 2018 to inform the next European Strategy update. There's a bright future, I'm sure, for physics beyond - and alongside - colliders at CERN.

Fabiola Gianotti

(Continued from page 1)

DE-SQUEEZE THE BEAMS: THE TOTEM AND ATLAS/ALFA EXPERIMENTS



Part of the ATLAS/ALFA experiment apparatus at Point 1 in the LHC tunnel. (Photo: Ronaldus Suykerbuyk)

of the TOTEM Collaboration. "We are very thankful to the LHC team for having pushed the machine to such extreme settings," adds Karlheinz Hiller, ALFA project leader.

The TOTEM physics programme foreseen for this special high beta-star run features many interesting measurements. In addition to the precise determination of the total proton-proton interaction probability (closely related

to the "cross-section") at 13 TeV, TOTEM will focus on a detailed study of the region of low transferred momentum of the elastic scattering, that is, when the two protons barely interact and the scattering angles are very small.

An in-depth study of this region is important for many different reasons. First of all, the interaction probability seems to diverge for very small transferred momenta, but as this should

not be physically possible, a detailed study of that region will shed light on what is happening when the two protons almost don't interact.

Secondly, in the same region, the contribution of the electromagnetic interaction ("Coulomb" scattering) interferes with the nuclear part of the elastic interaction. Studying this interference zone can shed light on the internal structure of the protons, and on which part of the protons (either the peripheral or the inner part) is actually responsible for the elastic scattering process.

Moreover, it is also possible to get information on the probability that two protons pass through each other without interfering, transparently. "This might appear awkward if you think of a proton as a billiard ball," notes Simone Giani. "But the protons should be thought as multi-body quantum systems."

In other words, to use a metaphor, one can imagine the two scattering protons as two large "galaxies" (made internally of tiny moving particles) launched at high speed against each other: there is a finite probability that the two "galaxies" will pass through each other without the inner particles interacting significantly.

Finally, the TOTEM collaboration plans to conduct physics studies looking for evidence of special states formed by three gluons, which are theoretically predicted but for which the experimental evidence is still weak.

The physics goal of the ATLAS/ALFA experiment is also to perform a precision measurement of the proton–proton total cross section, but then to use this to determine the absolute LHC luminosity at Point 1 for the 2.5 km run.

For ATLAS/ALFA, the interesting part of the spectrum is at low values of transferred momentum, where Coulomb scattering is dominant: since the Coulomb scattering cross-section is theoretically known, its measurement

gives an independent estimate of the absolute luminosity of the LHC. The luminosity measurements are otherwise normally done via Van der Meer scans, during the standard high-luminosity runs.

“With good statistics – such as 10 million good elastic events – we hope to be able to measure the absolute luminosity with a 3% precision,” says Patrick Fassnacht, deputy project leader of the ATLAS/ALFA project.

elastic cross-section at 8 TeV. More information on the TOTEM website.

The latest result published by the ATLAS/ALFA Collaboration is the measurement of the total cross section from proton-proton elastic scattering at 7 and 8 TeV with the beta-star parameter at 90 m, whereas the data with beta-star at 1 km are still under analysis. More information on the ATLAS/ALFA website.

Stefania Pandolfi

The latest results published by the TOTEM Collaboration include a first observation of deviations from a pure exponential form of the

NEWS FROM COUNCIL - SEPTEMBER 2016

I would like to inform you of the main news from the Council this week. First of all, the Council congratulated CERN and the Collaborations on the superb performance of the accelerator complex and experiments. It has been a great year so far, with important physics results across the whole spectrum of the CERN research programme.

Looking forward, one of the main accomplishments from this week's meetings is that the Council has approved the opening of a credit facility with the European Investment Bank (EIB) to cover the cash shortage during the peak years of the High-Luminosity LHC (HL-LHC) construction. This is very good news since it will allow us to carry out the work necessary for the HL-LHC without compromising the rest of the Laboratory's scientific programme.

Turning to the scientific and geographical enlargement, the Council approved the

admission of India as an Associate Member State, and I very much hope that the agreement can be signed in the near future so that India can be welcomed into the CERN family soon. The Council also heard a report by the fact-finding mission to Lithuania, and I was authorised to move ahead with the next steps.

The week ended with a visit to the East Hall to meet this year's *Beamline for Schools* competition winners. Following a full day of safety training on Thursday, the winning teams from Poland and the United Kingdom had the opportunity to discuss their projects

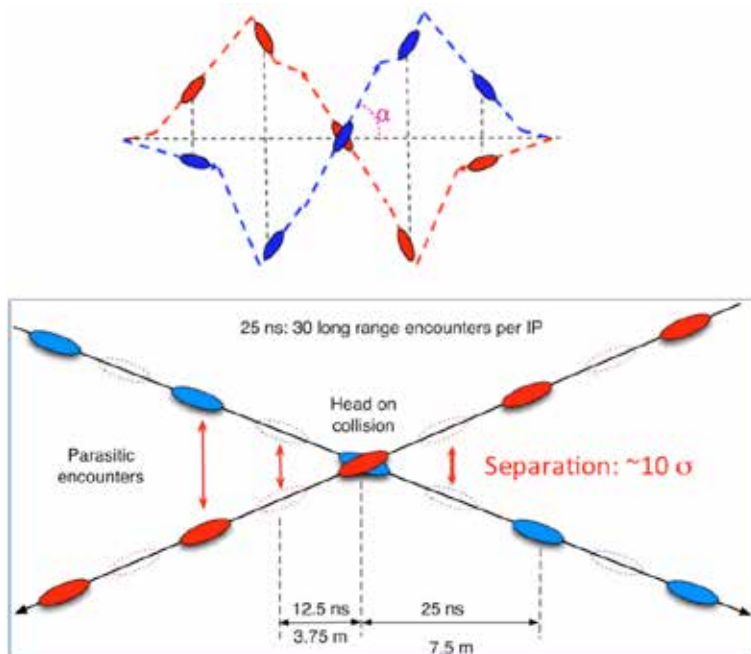
with Council delegates during their first day at the beam line.

On behalf of the Directorate, I would like to thank the Council for its continuous support and all of the people who have contributed, directly or indirectly, to making this week so fruitful.

Fabiola Gianotti

LHC REPORT: PLAYING WITH ANGLES

Ready (after a machine development period), steady (running), go (for a special run)!



The crossing angles are an essential feature of the machine set-up. They have to be big enough to reduce the long-range beam-beam effect.

The LHC has recently enjoyed a period of steady running and managed to set a new record for “Maximum Stable Luminosity Delivered in 7 days” of 3.29 fb^{-1} between 29 August and 4 September. The number of bunches per beam remains pegged at 2220 because of the limitations imposed by the SPS beam dump. The bunch population is also somewhat reduced due to outgassing near one of the injection kickers at point 8. Both limitations will be addressed during the year-end technical stop, opening the way for increased performance in 2017.

On 10 and 11 September, a two day machine development (MD) period took place. The MD programme included a look at the possibility of reducing the crossing angle at the high-luminosity interaction points. The crossing angles are an essential feature of the machine set-up, intended to avoid undesired collisions of bunches either side of the interaction point when the beams are travelling in a single beam pipe. Despite crossing at an angle, the bunches still interact with each other via long-range electromagnetic interactions. The crossing angles therefore have to be big enough to ensure sufficient separation,

reducing this long-range beam-beam effect to an acceptable level.

However, a distinct drawback of the increase in the crossing angle is a decrease in luminosity, with the reduction factor depending on the crossing angle, bunch length and beam size. Under the present LHC parameters, the high luminosity experiments see around 60% of what they would if we could operate without a crossing angle.

Two measures are being explored to claw back some of this reduction. One is a reduction of the crossing angle at the start of a fill. We can consider this because of the smaller than nominal beams being delivered by the injectors (smaller beams means better separation at the long range encounters). The aim is to restart physics in the last few months of the year with the crossing angle reduced from 370 to 280 microradians. This should increase the peak luminosity by around 15%. The second approach, targeted by the MD, is a stepwise reduction of the crossing angle during a fill as the bunch population decreases. This will not be implemented this year but could be used after appropriate tests in 2017.

A five-day technical stop followed the MD period. One of the major interventions performed during the stop was the replacement of the bushings on the transformer damaged by the “weasel” earlier this year.

Finally, this week a four-day special physics run for the forward experiments will start. It will be aimed at measuring small angle elastic proton–proton scattering. You can read more about this special physics run in the cover article.

Mike Lamont for the LHC team

LHCb EARLY CAREER SCIENTIST AWARDS

On 15 September 2016, the LHCb collaboration awarded the first set of prizes for outstanding contributions of early career scientists.

Twenty-five nominations were submitted and considered by the committee, and 5 prizes were awarded to teams or individuals for works that had a significant impact within the last year.

The awardees are:

• Roel Aaij, Sean Benson, Conor Fitzpatrick, Rosen Matev and Sascha Stahl for

having implemented and commissioned the revolutionary changes to the LHC Run-2 high-level-trigger, including the first widespread deployment of real-time analysis techniques in High Energy Physics;

• Kevin Dungs and Tim Head for having launched the Starterkit initiative, a new style of software tutorials based on modern programming methods. “Starterkit is a

group of physicists who want to improve the working lives of young researchers working on the LHCb experiment” (<https://lhcb.github.io/starterkit/>);

- Manuel Schiller for speed improvements in the tracking of LHCb, enabling the full event reconstruction in the HLT. Manuel used advanced numerical methods to provide mathematical tools that speed up the tracking by large factors;
- Claire Prouvé for the development of the automated RICH mirror alignment within



From left to right: Guy Wilkinson (LHCb spokesperson), Sascha Stahl, Kevin Dungs, Tim Head, Roel Aaij, Conor Fitzpatrick, Claire Prouvé, Patrick Koppenburg (chair of committee) and Sean Benson.

the Online framework. Claire's work has ultimately led to RICH mirror alignment taking 20mins to complete, compared to many days which it took before;

- Paolo Durante for the development of the PCIe40 board, the corner-stone of the LHCb upgrade. Paolo's contributions were crucial to demonstrate the overall superiority of the PCIe40 based-architecture, which made the LHCb upgrade technically possible, with a solution that is significantly less expensive than the original plan.

*Patrick Koppenburg
for the LHCb Collaboration*

THE FOURTH EDITION OF THE ASP TOOK PLACE IN KIGALI

The fourth biennial African School of Fundamental Physics and Applications (ASP) took place on 1-19 August in Africa's cleanest city, Kigali in Rwanda.



The students of the fourth African School of Fundamental Physics and Applications pose for the traditional conference group picture. Many lecturers flew in from CERN to give lectures and mentor students. (Photo: Gilbert Tekoute)

Seventy-five students from around the African continent, chosen from 439 applicants, were hosted in the University of Rwanda's College of Sciences and Technology for about 3 weeks.

The school received financial support from CERN and 19 other institutions in total, including the International Centre for Theoretical Physics (ICTP), Brookhaven National Laboratory, the South African National Research Foundation and Department of Technology, the Rwandan

Ministry of Education, INFN, and other major particle physics laboratories, as well as governmental institutions in Africa, Europe and the United States.

Forty lecturers from various different fields in physics flew in from CERN and many other parts of the world to give lectures and mentor students. "What makes this programme unique is that we tailor each programme to whichever area of physics is interesting to the host country," says Ketevi Assamagan, a

physicist at Brookhaven National Laboratory in New York and a member of the international organising committee of the school. "The ultimate goal is to host the school in as many countries on the continent as possible, with the help of the host country governments."

The biennial summer school, originally launched in South Africa in 2010, has also been hosted by Ghana in 2012 and by Senegal in 2014. The programme has grown in leaps and bounds, with each school seeing an increase in the number of applications from interested students. "The summer school was born out of a need to see African scholars represented in some of the world's major research labs," explains Assamagan. "Imparting STEM skills is key to making sure that our young people graduating from universities and research institutions will be going on to create jobs instead of relying on governments or private-sector salaried employment."

In 2018 the African School of Fundamental Physics and Applications will be hosted in Namibia and promises to have an even bigger number of applications and interest from learners across Africa.

CERN Bulletin

About ASP

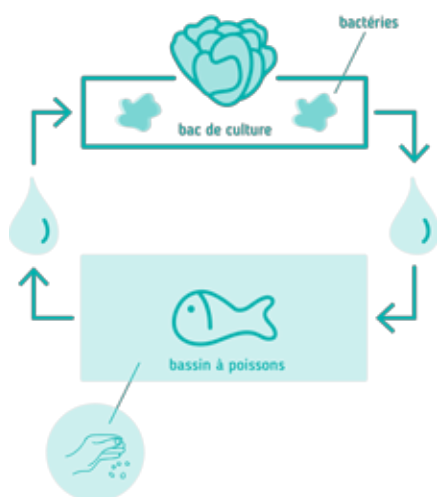
The African School of Fundamental Physics and Applications is a non-profit organisation that is passionate about increasing capacity

development in fundamental physics and related applications in Africa. It was founded in 2010 with the aim of fostering

collaboration through education. For more information visit the ASP website: www.africanschoolofphysics.org.

HOW THE LHC IS INSPIRING A SMART URBAN FARM STARTUP

Innovative ideas blossom at the KT Entrepreneurship meet-ups.



Industrial control systems can be used in smart urban farms, for example for aquaponics. (Image: Exodes Urbains)

The CERN Knowledge Transfer (KT) entrepreneurship meet-ups (or EM-Us) are the ideal place to discuss entrepreneurship and innovation at CERN.

The latest inspiring story comes from a former CERN robotics engineer, Axel Voitier,

who worked in the Engineering department. Having worked nearly a decade on managing data coming from the industrial control systems on the LHC, now he will be focusing on the data to help manage "smart urban farms". Indeed, Axel is currently setting up a company dedicated to this new type of farming, an internet-of-things approach where control systems are used to manage urban farms automatically.

"Data is the new petrol," says Axel, "but I am interested in having a direct impact on the final users. This is why the security aspect is vital, because even though it relies on an abundance of data, the project must be user-centric – not data-centric – to be successful."

The progression from robotics engineer to entrepreneur builds on the knowledge Axel acquired while working at CERN, both for the technological and business aspects.

He had been toying with the idea of starting his own company for a while. Then he heard of the new Entrepreneurship meet-ups that the KT group was setting up. The first one was held in 2015, and Axel grabbed the opportunity to find out more about entrepreneurship and

how CERN could help him see his dream come true. "I felt my professional project was supported by CERN," he underlines. "It was the information from the meet-ups that convinced me to make the jump. In fact, I met the urban farm collective at one of the EM-Us," he says.

In preparation for his startup, he is currently part of an urban farm collective called Exodes Urbains, which already has an aquaponics set-up behind the Geneva central station in Switzerland, a few kilometres from CERN. Aquaponics is an agricultural system where the waste produced by farmed fish provides the nutrients required for the culture of plants. The control system aspect of it is built on free and open source software, in line with CERN's tradition of openness.

What advice does Axel have for aspiring entrepreneurs? "Do your homework," he advises. "Technological knowledge is not enough, and you should bounce your ideas off experienced entrepreneurs." He adds that the Entrepreneurship meet-ups were central to both his motivation, and his understanding of his own project. And once the homework is done? Axel summarises his own adventure: "Don't be afraid of the mountain."

Anaïs Rassat, KT group

The Entrepreneurship Meet-Ups (EM-Us) are organized by the CERN Knowledge Transfer group. They are held every other week at CERN, and they are open to all those who are interested in learning more about entrepreneurship and innovation, with or without a particular project in mind.

Each meeting has an overarching topic, sometimes introduced by external guest speakers. Past speakers have included experts from incubation centres, business schools as well as entrepreneurs. The meetings are focused on exchanging around the given day's theme.

For more information and to sign up to the mailing list, read more here: <http://cern.ch/kt/meet-up>.

E-MAIL IS BROKEN AND THERE IS NOTHING WE CAN DO

Have you ever received an e-mail from a friend or someone you know and been surprised or appalled by its contents? Or, worse, have you have received a response to an e-mail that wasn't written by you? Maybe with similarly surprising or appalling contents? If yes, welcome to the insecurity of the mail protocol, where nothing is as it seems...

No, this time we are not talking about "phishing" or malicious attachments but the very basics of the e-mail protocol. "SMTP" aka the "Simple Mail Transfer Protocol" is exactly what it says: very simple! In many respects, e-mails are identical to physical hand-written letters: you cannot deduce from the sender's address nor from the message text whether it has really been sent by that person. Impersonation has never been as easy as with the SMTP protocol. Due to its simple design, I can pretend to be Mickey Mouse, Harry Potter or anyone else, and send you text messages resembling or contradicting Mickey's opinion and thinking, deeply offend Hermione, bluntly lie to you, or try to lure you into disclosing secrets to me like your password ("Phishing", you may recall). But the risk is not only that you are spammed with unwanted messages, the bigger risk is that I can diminish your reputation by sending offensive, weird or embarrassing e-mails in your name...

And there is not much we can do on the mail service or security protection side*. E-mail address spoofing is permitted by the protocol. Technically, we cannot block

or filter legitimate, but misused, sender addresses – that would deeply affect the free communication of legitimate users with/to/ from CERN. For the same reason, we cannot just block certain mail server addresses. And we shouldn't, if we value the academic freedom of CERN (see our *Bulletin* article on "WWW Censorship? Not at CERN"). In order to combat malicious e-mails, we will soon deploy an advanced filtering engine, which will dynamically analyse all e-mails for malicious content and reject any problematic messages. But this will not cover e-mails that arrive with somehow legitimate and valid content – even if this content is wrong, offensive, contradictory, etc.

This implies that we all have to live with this kind of SPAM. And that we have to live with the fact of someone writing in our name... And hope for the recipients that they contact you to inform you of the nonsense they've received so that you can rectify the problem. Conversely, if you really want to be sure that the mail you just received is legitimate and comes from the person who it claims to be coming from, use common sense. Are you

expecting such a mail from him/her? Do the content and context make sense? Could you call him/her to cross-check? Or, for the more technophile among you, digitally sign your mails so that the recipient can verify their real origin - you: see for Microsoft Outlook, for the Mac OS mail client and for Thunderbird. Dedicated instructions for using S/MIME at CERN can be found here: <http://cern.ch/go/6tlk>.

**The mail industry is trying to solve this issue with new restrictions like the SPF, DKIM and DMARC initiatives. However, as mailing lists can be incompatible with these new security features, none of them have been widely deployed, so far at least...*

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://security.web.cern.ch/security/reports/en/monthly_reports.shtml

Stefan Lueders, Computer Security Team

Ombud's Corner

THE GIFT OF FEEDBACK (PART 2)

"When feedback is specific and timely, and also accompanied by a genuinely positive intention, it may be considered to be a gift". This was the concluding message of the article in the last *Bulletin*. But how can negative feedback be perceived as an appreciated and useful gift?

As discussed in the previous article, delivering meaningful and effective feedback is an art, and as such, it may also be considered a duty for supervisors, in particular, to invest in honing their skills in order to achieve this aim without triggering demotivation or frustration in their supervisees. But the feedback loop is a two-way process, and requires an open mind on the receiving end in order to be truly useful. If delivered in a constructive and respectful way, feedback can provide us with important clues as to our own possible weaknesses and point us towards ways in which to develop and grow professionally. However, for it to be truly effective, it is up to each of us to hold

back our initial defensive reactions and focus on those aspects of the message that indicate the way forward.

When Anna provides John with specific appreciation of his strengths as a technical expert as well as the areas that he needs to develop if he wishes to move towards leadership, he is faced with a clear and informed picture of both his current limitations and his future potential. If he is able to put aside his feelings of disappointment, and recognise the wisdom in her words, he will find himself much better equipped to choose the best path

that he should pursue, together with an understanding of the steps he needs to take to get there.

So if feedback is a gift, what sometimes prevents our supervisors from offering it – could it be that we ourselves are at least partially responsible for their reluctance? How often are we guilty of instantly rejecting feedback or reacting emotionally without even being willing to consider it? Do we take the initiative to ask for feedback and respond by actually acknowledging our own shortcomings with a view to improving on them? Are we indeed always the best judges of our own performance or future potential?

Thanks to Anna's constructive attitude, John actually listens to her view of the situation and thanks her... "feeling much more valued"

for his role as technical trouble-shooter and specialist"... and, far from defending himself or instantly rejecting her feedback, he is able to acknowledge his current lack of leadership ability, all the more because she accompanies this with a recognition of the strengths that he does however bring to the team.

There can be no doubt that our own attitudes to receiving feedback have an impact on the actual quality of the message we receive, and the importance of keeping an open mind and

listening cannot be stressed enough. If we make a genuine effort to understand what lies behind a certain judgement or perception, we will be in a much better position to either defend ourselves or take on board the message in a constructive spirit.

Of course, it is never easy to accept criticism, particularly if it is vague and blame-oriented, but when someone takes the time and care to deliver feedback in a sensitive manner with clear indications of ways to improve,

then surely the onus shifts to us on the receiving end to recognise it for the gift that it is and accept the insight it brings with due consideration and thanks.

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

Sudeshna Datta-Cockeril

JOHAN BLOUW (1968 - 2016)

We deeply mourn the untimely departure of our dear friend and colleague Johan Blouw, who unexpectedly passed away on Monday, September 5, 2016, leaving behind a wife and three children.



After a PhD thesis with the HERMES experiment and a postdoc position with BaBar, Johan joined LHCb in 2003, where his excellent background in computing was of great help in the efforts to launch the then nascent field of Grid-computing. In addition, as a member of the LHCb Silicon Tracker project, he contributed to the R&D efforts and the construction of the LHCb silicon strip detectors.

After the completion of the detector, Johan moved on to work on the alignment of the tracking system, and recently became a central player in the growing LHCb ion physics programme, analysing Run 1 proton-lead data and contributing in making the Run 2 ion-ion and fixed-target plans a reality.

In July this year, he left the group at the Max Planck Institute for Nuclear Physics to join a software company in Heidelberg. All who had the pleasure to know him will miss a person with good humour and always ready to help, who brought enthusiasm, dedication and kindness to each team he was on.

His colleagues and friends

SIEGMUND BRANDT (1936 – 2016)

With deep sorrow, I must announce that our colleague Siegmund Brandt passed away on Sunday last week after a long struggle with illness.



(Photo by Dr. Sven Faller/University of Siegen)

Brandt first worked at CERN in 1961 on pion-proton interactions using bubble chambers and earned his PhD in bubble chamber work from the University of Bonn in 1963.

Later, he joined DESY working on PLUTO and TASSO at PETRA where he contributed to the three-jet analysis that led to the discovery of gluons in 1979. After that, in the mid-eighties, he returned to CERN, where he worked on ALEPH. His group contributed to the forward detectors of ALEPH with the Small Angle Tracker (SATR) and the Small Angle Monitor for Background (SAMBA). Brandt did some analysis work on Bhabha scattering and on jet production.

After his retirement, he concentrated on writing books on physics. His last book, *The Harvest of the Century* was well received. Brandt was also elected to the Polish Academy of Arts and Sciences. His friends and colleagues will dearly miss him.

*Claus Grupen
(for the Siegen ALEPH group)*

A tribute to Siegmund Brandt will be published in an upcoming issue of the CERN Courier.

WERNER KIENZLE (1936 – 2016)

Werner was born in Wiernsheim, a small town in Baden-Württemberg close to Stuttgart. His childhood was profoundly marked by the war and the death of his father on the German eastern front.



Despite life after the war being difficult for his family, he was very successful in his academic studies and earned a fellowship at the University of Göttingen, where he did his PhD in solid-state physics.

Werner joined CERN in 1964 as a post-doc fellow and he remained at the Organization for his entire career in experimental particle physics. Concerned and eager for peace in the tense context of the cold war, he was deeply involved in collaboration with Russian colleagues and participated in experiments in Serpukhov from 1968 to 1972. Back at CERN, his work concentrated on the search for experimental evidence of the presence of quarks in hadrons. He was among the main initiators of the NA3 experiment at the SPS that measured the structure functions of the pions: the results indicated a cross-section about twice as high as anticipated, and this enhancement, corresponding to QCD high-order corrections, was named the “K” factor

by the collaboration as recognition of Werner’s contribution.

Werner was appointed SPS coordinator at the beginning of the eighties and participated in the discovery of the W and Z bosons with the p-pbar collider. In parallel, Werner got involved in new outreach programs: in particular, he was the promoter of the *Microcosm* in 1988 and the editor of the “Hadrons for Health” reference booklet in 1996. While reaching his retirement age, Werner participated in the development of the total cross-section measurement setups that initiated the TOTEM experiment at the LHC.

Werner was a fantastic and enthusiastic storyteller, an adventurer and an innovator. His wife, Maria, and his sons, Francesco and Marco, can be proud of everything he did for CERN.

His colleagues and friends

Official news

SAFETY ALERT - FAILURE OF BRASS NON-RETURN VALVES IN GAS POINT INSTALLATIONS

There have been three recent failures in brass non-return valves in separate high pressure gas point installations across CERN. Whilst each was in a different gas service, the visual nature of the failure has been similar.



In all three cases, these components were connected to stainless steel flexible connections and stainless steel pipework.

From the metallurgical investigation of the failed component, it appears that **the failure is linked to uncontrolled tightening**, leading to a localised weakening resulting in premature failure when subjected to pressure.

Lead levels in the examined components appear to be a contributing factor to the

reduction in ductility but are not identified as the root cause. It has also not been possible to attribute failure to a particular batch of material.

The Occupational Health & Safety and Environmental Protection Unit prescribes the following actions to be taken, aligned with the CERN Safety Rules:

- Verification of all brass non-return valves (prioritising on those used within stainless steel systems):
 - Visual examination of general installation condition and visual aspect, including markings;
 - If there is any evidence of damage or deterioration, or a lack of traceability, then the non-return valve is to be appropriately disposed of and replaced with a new component;
 - Where there is reasonable doubt on the condition or integrity of the component due to, for example, the age of the installation, then the non-return valve is to be appropriately disposed of and replaced with a new component;
 - Replacement non-return valves in stainless steel systems are to be stainless steel, to minimise leak-tightness issues due to a mismatch in materials properties.
- Verification of the state of high pressure flexible elements on gas point installations:
 - Visual examination of general condition;

- Assurance of the fixture of the anti-whip cables, since these are safety elements in case of failure;
- Visual examination of the condition of the sealing joints...

... with replacement as necessary if there is evidence of damage or deterioration.

- When working on gas point installations, provision and use of personal protective equipment against splashing/spills, as well as the use of hearing protection in case of sudden pressure releases resulting in high proximity noise levels.
- All tightening activities on gas point installations are to use only correct and controlled torque values, using appropriate torque wrenches or equivalent. The use of ‘flogging’ (e.g. using pipe extensions or hammering on spanners) is to be totally excluded.
- New gas point installations are to be designed, manufactured, procured, installed, accepted and commissioned and used in accordance with the CERN Safety Rules including Specific Safety Instruction SSI-M-2-4 *Metallic Pressurised Piping*. The use of brass fittings (e.g. non-return valves) in stainless steel systems is to be avoided.

HSE Unit

Learning

"HABILITATION ÉLECTRIQUE - ELECTRICIAN LOW VOLTAGE - INITIAL" COURSE IN OCTOBER

The next session of the course "Habilitation électrique - Electrician Low Voltage - Initial" will be given, in French, from 03 to 05 October 2016.

This course is designed for anyone required to safely perform operations on electrical installations and equipment at low voltage to comply with the requirements of the NF C 18

510 standard. Grade of authorisation: B1-B1V-B2-B2V-BR-BC.

There are places available. If you are interested in following this course, please fill in your EDH training request via our classroom course catalogue CTA: cern.ch/go/VTR6.

Safety Training, HSE Unit

UPCOMING TRAINING SESSIONS (UP TO END OCTOBER) - PLACES AVAILABLE

Please find on bulletin.cern.ch a list of training sessions scheduled to take place up to the end of October with places available.

Safety and Language courses are not included, you will find an up-to-date list in the Training Catalogue: cern.ch/go/GrC6.

If you need a course which is not featured in the catalogue, please contact one of the following: your supervisor, your Departmental Training Officer or the relevant learning specialist.

Take note

NETWORK MIGRATION FOR PRINTERS

Further to the recent General Purpose (office) Network reorganisation (as announced in the *Bulletin*), please note that the majority of print devices will be automatically migrated to the new network IP address range on Tuesday 27 September.

This change should be transparent for these devices and therefore end-users, provided you have installed the printers from the Print Service website.

A small number of devices will require manual intervention from the Printer Support team in order to migrate correctly. These devices will not change their IP address until the manual intervention, which will be carried out **before Monday 3rd October**.

However, if you have mistakenly connected directly to the printer's IP address, then your printing will be affected – please uninstall the printer (for help, see: KB3785), and re-install it from the Print Service website (or follow instructions for visitor machines). Please do this as soon as possible in order to avoid printing issues, the "old" IP addresses should continue to work until Monday 3rd October – **but please do not wait until your printing is blocked!**

If you encounter problems with printing, please:

- Uninstall the printer from your computer (for help, see: KB3785), then re-install it using the Print Service website.
- Switch off the print device for about 30 seconds, then restart it and try printing again.

If this does not solve the problem, please contact the Service Desk (Tel: 77777, Email: service-desk@cern.ch, open hours: 07h30 – 18h30 work days).

Thank you in advance for your understanding.

CERN Printer Support Team

DON'T MISS THE 2016 CERN ROAD RACE

The 2016 edition of the annual CERN Road Race will be held on Wednesday 28 September at 18:15.

The 5.5 km race takes place over 3 laps of a 1.8 km circuit in the West Area of the Meyrin site and is open to everyone working at CERN and their families.

There are runners of all speeds, with times ranging from under 17 to over 34 minutes, and the race is run on a handicap basis, by staggering the starting times so that (in theory) all runners finish together.

Children (< 15 years) have their own race over 1 lap of 1.8 km. As usual, there will be a "best family" challenge (judged on best parent + best child).

Trophies are awarded in the usual men's, women's and veterans' categories, and there is a challenge for the best age/performance. Every adult will receive a souvenir prize, financed by a registration fee of 10 CHF. Children enter free (each child will receive a medal).

More information and the online entry form can be found here: <http://cern.ch/go/8mkx>.

Klaus Hanke for the CERN Running Club

DIVERSITY PROGRAMME | TASNEEM ZAHRA HUSAIN PRESENTS HER BOOK "ONLY THE LONGEST THREADS" | 4 OCTOBER

"Only the Longest Threads", by Tasneem Zahra Husain.

**Tuesday 4 October 2016 - 15:30
Room Georges Charpak
(Room F / 60-6-015)**

Coffee will be served after the event

Tasneem Zehra Husain is a string theorist and the first Pakistani woman to obtain a PhD in this field.

Husain's first novel, "*Only the Longest Threads*" reimagines the stories of great breakthroughs and discoveries in physics from Newton's classical mechanics to the Higgs Boson from the viewpoint of fictional characters. These tales promise to be great reads for both lay audiences and to those who have a more advanced understanding of physics.

Registration is now open. Please register using the following link: <https://indico.cern.ch/event/562079/>.

Diversity Programme

"FRANCE@CERN" 2016 | 3-4 OCTOBER

Come and meet 37 French companies at the 2016's edition of "France@CERN", that will take place on October 3 and 4.

Thanks to Business France, the national agency for the international development of the French economy, 37 French firms will have the opportunity to showcase their know-how at CERN. These companies are looking forward to meeting you during the B2B sessions which are going to be held on Monday, October 3 and on Tuesday, October 4 in the buildings 500, 61 or at your convenience in your own office.

The fair's official opening ceremony is going to take place on Monday in the late afternoon in the Council's room in the presence of Ms. Fabiola Gianotti, Director-General of CERN and Ms. Elisabeth Laurin, Ambassador, Permanent Representative of France to the United Nations in Geneva and to international organizations in Switzerland.

Check out the participant list and select on the matching platform the companies you want to meet:
www.la-france-au-cern-2016.com.

EUROPEAN RESEARCHERS' NIGHT: ACTIVITIES AT CERN FOR ALL AUDIENCES | 30 SEPTEMBER

On Friday 30 September, CERN will be among the scientific organisations and institutes of over 300 towns and cities in Europe taking part in the European Researchers' Night.

Activities for young and old, scientists and non-scientists alike, will be available in several languages **from 6 p.m. to 11 p.m., mainly in the Globe of Science and Innovation**. Visits to other venues will depart from this point.

The programme will include:

- screenings of science documentaries and prize-winning short films,
- guided tours of the ATLAS Visitor Centre,
- visits to the Universe of Particles exhibition.

Two food trucks will be available to please your taste buds and quench your thirst.

If you're unable to travel to CERN, take a virtual tour of the experiments from your armchair!

The tours will be conducted in several languages and will be webcast live from the various CERN venues as follows:

- 6 p.m. - CERN Control Centre, the nerve centre from which all of CERN's accelerators are controlled,
- 7 p.m. - LHCb, the experiment that seeks to understand why we live in a universe that appears to be composed of matter but no antimatter,
- 8 p.m. - CERN Data Centre, where all the data from all the experiments are stored and shared using the world's biggest computing grid for science,
- 9 p.m. - ALICE, the experiment that studies quark-gluon plasma, a state of matter thought to have existed just after the Big Bang,
- 10 p.m. - CMS, the experiment that, like ATLAS, is exploring the great issues of particle physics and co-discovered the Higgs boson in 2012.

The annual European Researchers' Night, which is now in its eleventh year, gives CERN an opportunity to tell the general public about its discoveries and advances and their impact on our daily lives. The invention of the World Wide Web and touchscreens are just two of many such examples. Come and discover others in the Globe of Science and Innovation!

Entrance free - No reservation needed

More information, webcasts and the full programme are available at: www.cern.ch/go/nec

Facebook Globe event page:
<https://www.facebook.com/events/963734110438760/>

Facebook Webcast event page:
<https://www.facebook.com/events/1806953912853529/>

CERN LIBRARY | CARLOS CHIMAL PRESENTS HIS BOOK "EL UNIVERSO EN UN PUÑADO DE ÁTOMOS" | 26 SEPTEMBER

"El Universo en un puñado de átomos", by Carlos Chimal.

**Monday 26 September 2016 - 16:00
Room Georges Charpak (60-6-015)**

What have in common Swiss filmmaker Alain Tanner, Argentinian writer Jorge Luis Borges,

French philosopher Voltaire, Spanish writer Cervantes, English playwright Shakespeare and Particle Physics?

El Universo en un puñado de átomos is a chronicle about the relationship between literature, arts, science and technology around HEP. As a novelist interested in public understanding of science, author started these diary of the journey into the atom in April of 1992 interviewing Leon Lederman at Fermilab, later he visited DESY and finally, since 1998, he came to CERN and did "lab life", sometimes spending several weeks, even months, at CERN. Every year since then he have been interviewing particle hunters as many as he could. So, this book is supported by their testimonies given formally and informally (at the kitchen in the hostel, in the corridors, in the restaurants). It is a book written by an eyewitness who enjoys this "coven" of scientific knowledge.

He tells the story of detectors and accelerators, rarely told in Spanish. It is a tribute to all of those trying to show us a version of a hidden reality.

The very same title has to do with Shakespeare's play *Hamlet*. In Act II he replies to his comrades Rosencrantz and Guildenstern:

Ros. *Why, then your ambition makes it one; 'tis too narrow for your mind.*

Ham. *O God! I could be bounded in a nutshell, and count myself a king of infinite space, were it not that I have bad dreams.*

Therefore, it is a very Shakespearean and Cervantine book, because they just wanted to relate a good story. And this is the purpose of this book: relate an exciting, peculiar story.

The author has a wide audience among young readers in Spanish.

El Universo en un puñado de átomos, Carlos Chimal, México, Tusquets, 2016.

For more information: <https://indico.cern.ch/event/564003/>.

CERN Library

KNOWLEDGE TRANSFER SEMINARS on entrepreneurship

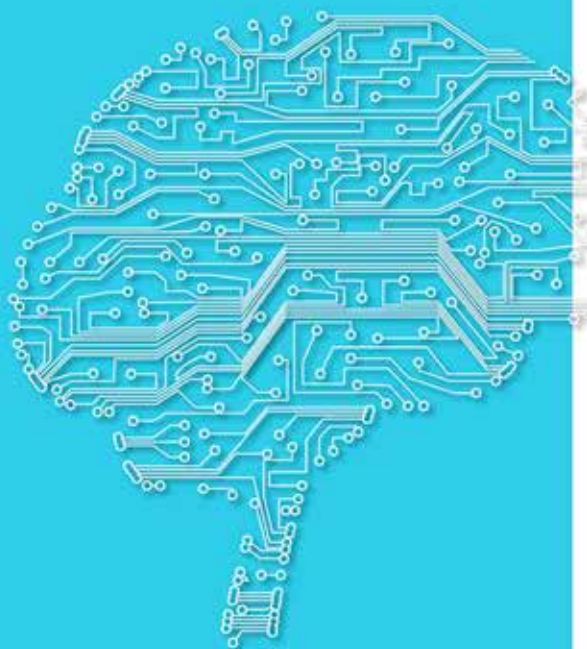
Séminaires transfert de connaissances sur l'entrepreneuriat

From CERN engineer to company founder: my journey

Julio Lucas

Technical Director and co-founder of Elytt Energy
Former CERN engineer

26th September 16h30
CERN Main Auditorium
indico.cern.ch/event/565706/



Knowledge Transfer
Accelerating Innovation

Seminars

MONDAY, 26 SEPTEMBER 2016

16:30 KT seminar From CERN engineer to company founder: my journey **Main Auditorium**

THURSDAY, 29 SEPTEMBER 2016

16:30 CERN Colloquium The Chernobyl and Fukushima Daiichi nuclear accidents and their tragic consequences **Main Auditorium**

MONDAY, 03 OCTOBER 2016

08:30 Monthly induction HR INDUCTION PROGRAMME - 1st Part **Globe of Science and Innovation - 1st Floor**

TUESDAY, 27 SEPTEMBER 2016

11:00 LHC Seminar Search for CP violation in baryon decays at LHCb **Council Chamber**

FRIDAY, 30 SEPTEMBER 2016

18:00 GLOBE - Public Events La Nuit européenne des chercheurs / European Researchers' Night **Globe of Science and Innovation - 1st Floor**

TUESDAY, 04 OCTOBER 2016

11:00 LHC Seminar ALICE seminar **Council Chamber**