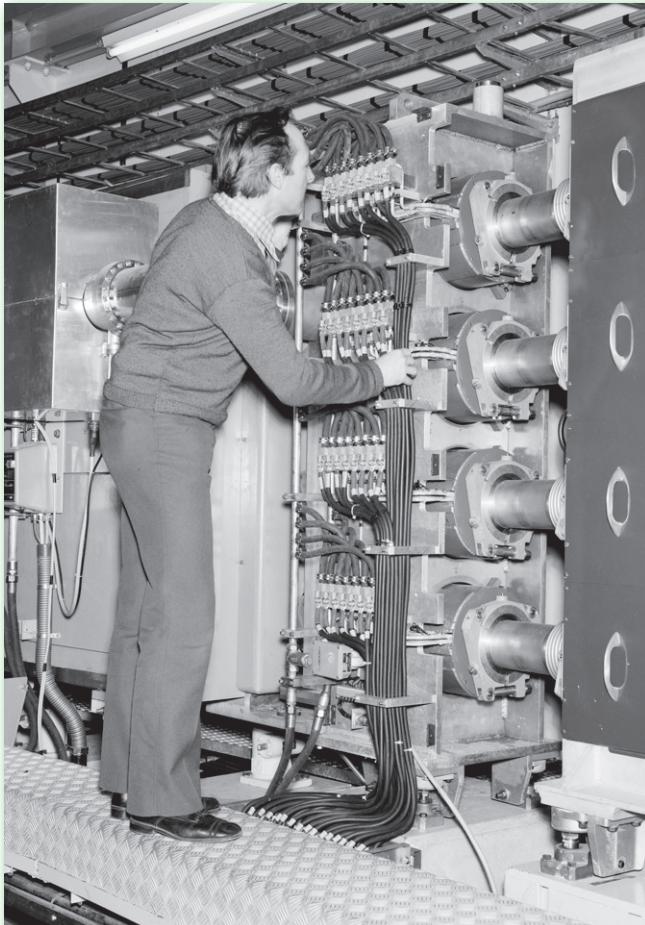




# CERN Bulletin

Nos 18 & 19 – 2 & 9 May 2012

## The PS Booster hits 40



*The PS Booster in the 1970s.*

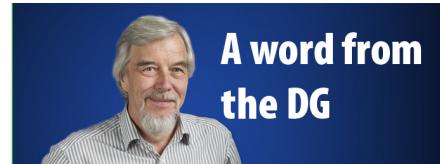
**I**magine the scene: a group of accelerator physicists staring expectantly at a monitor, when suddenly a shout of joy goes up as a signal flickers across the screen. Does that sound familiar? Well, turn the clock back 40 years (longer hair, wider trouser legs) and you have the situation at the PS Booster on 26 May 1972. On that day, beam was injected into the Booster for the

**Many accelerators' "round" birthdays are being celebrated at CERN these days – the PS turned 50 in 2009, the ISR was 40 in 2011, and this year it's the turn of the PS Booster to mark its 40th anniversary. Originally designed to accelerate  $10^{13}$  protons to 800 MeV, it has far exceeded its initial design performance over the years.**

first time. "It was a real buzz," says Heribert Koziol, then Chairman of the Running-in Committee. "We were very happy – and also a little relieved – when the beam finally went all the way round."

The machine, at that time run by the Synchrotron Injection Division under

*(Continued on page 2)*



### Safety first

**S**afety is a priority for CERN. That is a message I conveyed in my New Year's address and that I reiterated at one of the first Enlarged Directorate meetings of 2012 when I outlined five key safety objectives for the year, designed and implemented according to accepted international standards.

*(Continued on page 2)*

### In this issue

#### News

- The PS Booster hits 40 1
- A word from the DG: Safety first 1
- LHC Report: Ramp-up complete 3
- In good hands 3
- Speaking about the Internet... 4
- Horizon 2020 in sight 5
- Much ado about Nothing - exploring the vacuum with the LHC 6
- CERN gets closer to the "quartier international" 7
- India joins the ISOLDE collaboration 8
- The Fire Brigade acquires a new ambulance with all the bells and whistles! 9
- Safe cycling! 10
- Don't let your mail leak 11
- Gotcha! Macs lose their innocence 11
- Ombud's corner: Empathy 12
- News from the Library: about a dozen prestigious CERN physicists contribute to a special issue of EPJ H 13
- The year 2012 is already rich in highlights for the Pension Fund Governing Board (PFGB) 13

#### Official news

- Take note 14
- Laguage training 15
- Technical training 15
- Academic training 15
- Seminars 16

#### Published by:

The European Organization for Nuclear Research - CERN  
1211 Geneva 23, Switzerland - Tel. + 41 22 767 35 86

Printed by: CERN Printshop

© 2010 CERN - ISSN: Printed version: 2077-950X

Electronic version: 2077-9518





## A word from the DG

(Continued from page 1)

### Safety first

**As we move from spring to summer, it's time to take stock of how we are doing. Objective number one for 2012, which overarches everything else, is to limit the number of incidents in the workplace. That means systematically investigating and acting on every incident that involves work stoppage, along with all the most frequent workplace accidents: falls, trips and slips. The performance indicator we set ourselves is the percentage of investigations and follow-ups completed. Year on year, these figures are rising but we can never be complacent, and must strive to reach and sustain 100% follow-up.**

**The second objective is to improve hazard control, with a focus in 2012 on chemical hazards. The third concerns the safety of equipment, with a focus this year on machine tools. The remaining two objectives concern the environment: limiting our impact on the environment and ensuring best practice in matters of radiation protection and safety.**

**Starting this week, the Bulletin will be carrying a series of articles explaining how you can help us achieve our health, safety and environmental objectives, looking first at hazard control. Safety in the workplace is the responsibility of every single one of us, so I strongly encourage you all to read this information carefully and help us to ensure that CERN's continuing excellence rests on a solid culture of safety.**

**Rolf Heuer**

## The PS Booster hits 40

(Continued from page 1)



*The PS Booster in 2012. The boxes around the 4 PS rings (not visible) contain magnets: the green ones contain dipoles and the orange ones, quadrupoles.*

Giorgio Brianti and his deputy Helmut Reich, had the mission to increase the intensity that could be accelerated in the PS by a factor of 10. The Booster is still one of a kind today: four superimposed synchrotron rings, into which the beam from the Linac is successively injected. The four beams are then accelerated and eventually recombined after extraction before entering the PS.

Prior to construction of the Booster, protons were accelerated up to 50 MeV in the Linac and injected directly into the PS to be accelerated up to 26 GeV. Adding the Booster allowed an acceleration of up to 800 MeV before injection into the PS. At this higher energy, the PS accepted an order of magnitude more protons, thus enhancing its potential for experiments and for the machines it was supplying with protons.

"By 1974, we had reached the full design intensity of  $10^{13}$  protons per pulse," explains Karlheinz Schindl, part of the original team and who later went on to become the group leader responsible for the Booster and its preparation for the needs of the LHC.

The Booster has since gone from strength to strength as a result of successive upgrades, and by the 1980s it was operating at four

times the original design intensity. It has also developed an incredible versatility, able to adapt the structure and quality of its proton beams to supply both its sole direct user, ISOLDE, and to pass the different beams to the PS for further exploitation by all other proton facilities at CERN, including the LHC. It has also learnt to accelerate all kinds of ions.

"The magnets are pretty much the only original components left," explains Klaus Hanke, today responsible for Booster operation and upgrade. "And we are currently preparing for the next massive upgrade. Having taken the machine from 800 MeV to 1.0 GeV and then to 1.4 GeV in the past, we are now looking at increasing to 2 GeV. We plan for the Booster to run for the whole lifetime of the LHC."

To mark the 40th anniversary, the PS Booster team is planning a colloquium in the autumn and an accompanying Courier article. In the meantime, we can all blow out a mental candle for the Booster and wish it every success until its next major anniversary.

*Joannah Caborn Wengler*

# LHC Report: Ramp-up complete

**M**onday, 16 April was spent performing luminosity calibration. Under carefully controlled conditions and a special beam configuration, the experiments' luminosity measurements were calibrated against a measurement of the accelerator's absolute luminosity obtained with Van der Meer scans. These scans give the beam sizes at the interaction point which, together with an accurate measurement of the beam and bunch currents (and other more subtle

**The intensity ramp-up outlined in the last Bulletin continued more or less as planned, with some steady running with 1092 bunches followed by the final step-up to 1380 – the maximum number of bunches for the year.**

considerations), allow a precise measurement of the absolute luminosity.

With the Van der Meer scans out of the way, the final step-up in the number of bunches to 1380 was made. This has resulted in an average peak luminosity of around  $5.6 \times 10^{33}$  cm $^{-2}$  s $^{-1}$  in the general-purpose detectors (ATLAS and CMS have yet to publish their

calibrated values). The performance of the machine at this early stage of the year is encouraging: during the ramp-up over half an inverse femtobarn was delivered in a week and the total for the 2012 run is now touching one inverse femtobarn.

The LHC comes out of the technical stop this Friday evening and, after requalification and a fast ramp back to 1380 bunches, the plan is for some steady physics running.

*Mike Lamont for the LHC Team*

## In good hands

**T**he challenge is still there: the funding deficit is currently estimated at about 2 billion CHF. But don't stop reading. Today the Fund has a clear strategy and tangible plans to fix the problem. In its current structure, the Pension Fund management and administration is an independent unit in the Organization chart. Its Chief Executive Officer, Théodore Economou, was appointed by the Council three years ago and reappointed to the post at the last Council meeting in March.

The CERN Pension Fund has over 6,700 members, including members from ESO, as the Fund was already in place when the two institutions were on the same site. In order to achieve full funding over a 30-year projection period, in June 2011 the Council decided on a whole package of measures, which included a special contribution from CERN Member States of 60 MCHF per annum and from ESO Member States of 1.3 MCHF per annum. Although the cash contribution is clearly vital to help the Fund change route towards breaking even, it is not the only key factor in the overall recovery plan. "The Fund is executing a clear strategy whose overriding goal is to reduce risks," confirms Théodore Economou. "We are the stewards of the Fund's assets. Over the last three years we have implemented a capital preservation approach. We seek to have the highest possible efficiency, which includes

**2007 and 2008 were critical years for the CERN Pension Fund. The dramatic market downturn increased the deficit to scary levels. A newly appointed management and a redefined governance launched an updated investment strategy and totally new performance standards. In December 2011, the Fund was shortlisted as a finalist for a prestigious award. We invite you to (re)discover the CERN Pension Fund.**

opting for investments that present the lowest possible level of risk consistent with the Fund's objectives."

The Fund's investments are diversified: among other things, 15% is invested in real estate and the Fund is seeking to increase this part; 10% is in cash, mostly with the Swiss treasury; 30% is in safe bonds. The current goals include reducing investment in equities to less than 30%. "Last year, for the first time, all assets were gathered under a single roof, that is a bank that acts as a master custodian of the Fund but does not manage it," explains Théodore. "This operation was carried out in the framework of a large upgrade of the Fund's operational infrastructure to implement industry best practices."

In the new operation scheme, the CERN Pension Fund has developed a completely new governance structure and control systems. The Chief Executive Officer reports to the Pension Fund Governing Board, which is a body of the Council. In addition, a committee which includes external experts supervises the Fund's investment policy and another committee covers actuarial and technical issues. "We produce regular

reports to the Board and the committees and for the three annual audits. We count on reports by independent bodies that evaluate the performance of the Fund and its risk level," says Théodore.

On the slides Théodore has prepared for his talks to CERN departments I can count up to seven different official reports that he is requested to make over the year, plus the audits, the independent evaluators... this sums up to a lot of supervision, checks and controls. Before coming to work for the CERN Pension Fund Théodore Economou was running two other funds, one of which was larger than CERN's and won specialised awards. In December 2011, the CERN Pension Fund was named as a finalist in the aiCIO Industry Innovation Awards, a very prestigious prize for the category. The Fund didn't win but stay tuned: the investment return target for the past three-year period has been exceeded. Hopefully, this is just the beginning of a successful new course.

As of this issue, the Bulletin is starting a new collaboration with the CERN Pension Fund, which will have a dedicated "corner" in our publication. The Chairman of the Pension Fund Governing Board will report regularly about the activities of the Fund.

This month, the aiCIO Publication features Gregoire Haenni, CIO of the CERN Pension Fund (<http://www.ai-cioldigital.com/ai-cio/20120304#pg32>).

*Antonella Del Rosso*

# Speaking about the Internet...

The Internet Society's Global INET 2012 was a three-day international forum that celebrated the Internet Society's 20th anniversary. The Society was created to provide a framework for

the governance of the Internet, promote its development and keep it accessible to the largest possible number of users. "In 1992 CERN became a founding member of the Internet Society and it has remained a member ever since. CERN is also member of the Advisory Council," says François Fluckiger from the IT Department who has represented CERN at the Advisory Council since its inception.

At that time CERN was the largest Internet hub in Europe, managing more than 80% of the international bandwidth available in Europe. In 1988 CERN also convened the historic meeting that led to the creation of

**Although a lot of people know that the Web was invented at CERN, not many people know that CERN has also played a central role in developing the Internet in Europe. In the early 1990s the European Internet network looked like a star, with CERN at its centre. The Organization was also one of the founding members of the Internet Society, which celebrated its first 20 years in a conference held in Geneva from 22 to 24 April. CERN was a special guest.**

the RIPE (Réseaux IP Européens), which still allocates IP addresses in Europe. "Today CERN is still one of the largest Internet hubs Europe-wide," says François Fluckiger. "The role of CERN in the Internet Society also includes contributing to the organisation of the INET Conferences, which provide regional focus and allow the local Internet communities to get exposed to world-class technology and policy experts."

In its role of world-scale forum, this year's Global INET conference focused attention on the evolution of the Internet and the opportunities and challenges that could have a profound impact on its future.



"The conference allowed participants to touch base on the impressive growth of the Internet over the last 20 years, and addressed important topics such as freedom of information and speech, Internet governance, and harnessing the Internet for economic transformation," says Walda Roseman, ISOC Chief Operating Officer.

CERN was a special guest at the conference, with the participation of the Director-General who, together with Vint Cerf, the inventor of the Internet technology and first ISOC President, participated in the sessions on Digital Content, Intellectual Property and Innovation. The roundtable discussion was a good opportunity for CERN to present its philosophy in terms of the dissemination but also the protection of intellectual property. "CERN explained its policy on open access and licensing," says François Fluckiger. "The Director-General also stressed the importance of maintaining an openness philosophy. This was certainly the approach that opened the way to the invention of the Web. It is of vital importance for scientific information to remain accessible to all countries and to every citizen."

The Internet developed thanks to the contribution of universities and laboratories that not only invented the technology but also used it as a worldwide operational network at the researchers' service. Many of the visionary minds that 20 years ago accepted the challenge of defining today's worldwide information network gathered at the Global INET 2012 conference and discussed how they imagine the future. "It was a unique opportunity for the participants to network and put new ideas on the table," confirms Walda. "Among other things, the participants were able to discuss the possibility of setting up an interplanetary Internet. This also demonstrates that the role of scientists and academia is still vital to the development of the network." The organisers have set up a website where people can share their ideas and wishes on how the Internet should evolve. They welcome contributions from CERNists, so don't hesitate to visit: <http://wishingtree.internetsociety.org/>.

Antonella Del Rosso

# Horizon 2020 in sight

"It's a very interesting time in the development of Horizon 2020, which is focusing the attention of all research communities in Europe," explains Svetlomir Stavrev, head of the EU projects office.

"After a long public consultation and drafting process, the Horizon 2020 proposal documents are now being reviewed by the European Parliament and Council." CERN already participated in the consultation, making good use of the opportunity to contribute to the shaping of what is effectively the European Union's scientific research agenda until the end of the decade. The process for the adoption of the new 80 billion euro framework programme is expected to be completed by the middle of next year.

CERN has benefited significantly from the previous and current Framework

**Every tenth member of the CERN personnel participates in an EU-funded project – a strong indication of CERN's successful relations with the European Commission (EC), coordinated by the CERN EU projects office. The EC director in charge of preparing "Horizon 2020", the new EU funding programme for research and innovation (2014-2020), will be giving a presentation at CERN on 8 May. He will reveal more about what the new programme has in store.**

Programmes (FPs). "Since the start of FP7 (2007-2013) CERN has been involved in almost 70 EU projects with associated EC funding of about 80 million euros, which is basically double compared to the previous programme FP6," says Svetlomir. "It's not all about this additional funding, though. The added value is even more important."

This, he says, comes in three forms. Firstly, participating in EU projects means CERN can strengthen existing collaborations and build new ones with industry, research organisations and universities across Europe and even beyond. It also helps the Organization

to do some complementary research that is not in its core mission, such as the development of medical applications. Last, but definitely not least, is the support made available for training researchers and engineers in different scientific fields. "The EU Marie Curie Actions have traditionally been very successful for CERN. Since the start of FP7 in 2007, more than 350 Fellow-years have been funded under the Marie Curie programme," explains Svetlomir.

The proposal for Horizon 2020 has a significantly larger proposed overall budget than FP7 and contains all the areas (see box) where CERN has been successful in submitting EU projects so far. In addition, the European Commission is working on ways of simplifying administrative procedures for scientists applying for and implementing EU projects. To find out more, come to the presentation by Jack Metthey, EC Director for the Framework Programme, in the Council Chamber on 8 May.

*Joannah Caborn Wengler*



## CERN's experience with EU projects includes:

- Research infrastructures: accelerator and detector R&D;
- e-infrastructures: Grid computing and information technology;
- Marie Curie Actions: training for scientists and engineers;
- European Research Council: funding for world-class research investigators;
- Health: hadron therapy and medical physics;
- Open Access: providing unrestricted online access to scientific publications;
- Science education: developing novel and attractive teaching methods and tools.

# Much ado about Nothing - exploring the vacuum with the LHC

## Setting the stage

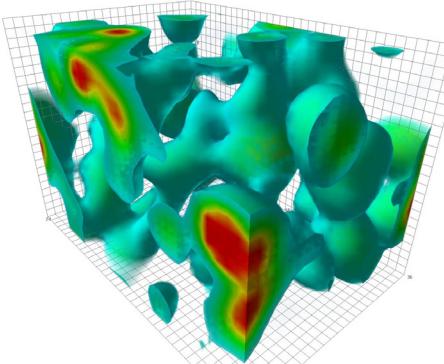
The 54 km of LHC beam pipes are pumped down to one of the best vacuums humankind can produce. Air pressure is higher on the moon than inside the LHC. This engineering feat is worthy of articles in itself, but the kind of vacuum we ask you to imagine here is something altogether different. It is quite simply the emptiest the laws of Nature allow.

The vacuum is defined as the physical state with the lowest possible energy. Lowest possible... but not zero. This is because both particles and fields exist in the vacuum and both can be thought of in terms of energy. While some components are constant, others fluctuate wildly due to the indistinctness inherent in quantum theories. Together these different contributions combine to make the vacuum a surprisingly busy place.

## The cast of particles

The laws of quantum mechanics allow particles to pop in and out of existence for undetectably small fractions of time. The more massive these "virtual" particles, the shorter the amount of time they can exist. This quantum fuzziness animates the vacuum with a constant buzz of particles and anti-particles.

In addition, quantum chromodynamics, the underlying theory of the strong interaction, brings something altogether more tangible to the vacuum: an effect that allows quark-antiquark pairs to exist in what is known as a chiral condensate. This condensate is one of the phenomena that contributes mass to particles and, by doing so, it also adds energy to the vacuum.



*The constantly changing contributions to the vacuum from quantum chromodynamics, the theory of the strong interaction.*

**Empty space is anything but. Remove everything you can from an area of space and it will still bustle with activity. A veritable abundance of particles and all-pervasive fields fill space with energy. Empty space even weighs something. Indeed, studying 'nothing' can tell us almost everything about the universe we live in.**

The chiral condensate is studied in lead ion collisions at the LHC where the high temperature and density allows the ALICE experiment to explore the conditions when the effect switched on in the early universe.

## Leading role - the Higgs

In addition to the fluctuating activity of quantum fields, the vacuum is also filled with something far more substantial – the Higgs field. Omnipresent and permanent, even in the vacuum, this is the field that could be responsible for the different masses of all fundamental particles. The existence of the Higgs field would be definitively proven with the discovery of its accompanying particle – the Higgs Boson – and after promising signs from ATLAS and CMS last December, results from 2012 data are eagerly awaited.

## Waiting in the wings - Supersymmetry

Whatever the findings this year for the Higgs, it will certainly not be the last surprise the vacuum has in store. One unsolved mystery arises from the incessant activity of virtual particles, because although they may not be directly detectable, they do interact with the Higgs field. Being virtual, quantum mechanics allows all kinds of interactions to take place. In fact, the sum of all possible interactions of heavy virtual particles with the Higgs field should contribute an infinite energy to the vacuum.

Theories such as Supersymmetry (SUSY) attempt to resolve this problem. In SUSY, particles interact on a multi-dimensional stage called superspace. This has consequences at higher energies where the theory excludes infinite contributions from virtual particles to the vacuum.

Evidence for this may be uncovered at the LHC. Experiments are looking out for signs of a whole family of new particles that are predicted by SUSY. The lack of any such signs in LHC data to date only means that a certain subset of models has been ruled out, not that the theory has been disproved.

## A full house - Dark energy

The power of nothing is not restricted to the minute world of particles, it can also be seen

on cosmic scales. The energy in the vacuum, although tiny on laboratory scales, becomes considerable on astronomical ones, where great voids of space are filled with mere pin pricks of matter. Indeed, it is the energy of the vacuum – collectively known as dark energy – that causes the expansion of the universe to get faster and faster. Last year's Nobel prize in physics was awarded to the astronomers who made the first large scale measurements of this acceleration by studying the light emitted from supernova explosions.

These measurements led to one of the greatest mysteries in physics today. The rate of acceleration of the universe does not correspond to what we can calculate about the vacuum. And it's no small discrepancy! The supernovae observations suggest that the vacuum energy is over 20 orders of magnitude smaller than what is expected from known particles and fields. The missing piece of the puzzle will be inextricably linked to our understanding of the universe on both small and very large scales.

Such is the large cast of particles and fields that comprise the vacuum. And the LHC may yet uncover more. So, just as in the Shakespeare play, 'nothing' is a source of much agitation also at CERN. Whereas Shakespeare made his play a comedy, here at CERN it is more a question of drama at its most thrilling. As LHC data taking starts again, expect a year of highs and lows, intrigues and suspense, as audacious theories are slain and new particles take centre stage.

Emma Sanders

**Did you know?**

Higgs bosons are not automatically present everywhere in the Higgs field, they are only produced when energy is injected. Concentrating the right amount of energy in proton-proton collisions at the LHC excites the Higgs field, which resonates at a precise energy corresponding to the mass of the boson. Higgs bosons momentarily form from the energy of this disturbance before decaying into other particles. The LHC experiments look for these decay products. Some theories predict the existence of multiple Higgs bosons.

# CERN gets closer to the “quartier international”

CERN has the concept laid down in its Convention: the Organization was founded to do fundamental science but its main goals include fostering education, peaceful collaboration and knowledge transfer to society. Hence, the large overlap with many other international organisations appears crystal clear. However, if you are in the Geneva region and you follow the “International Organisations” signposting, you do not end up at CERN... “Despite being in the same region and having several goals in common, until recently there was no structured framework for the relationships between CERN and the other international organisations, although one-off collaboration always existed,” says Maurizio Bona, advisor to the DG on relations with international organisations. “About two years ago CERN started proposing to some partner organisations a new structured approach based on the establishment of official bilateral agreements.” The proposal was very positively accepted, and the first cooperation agreement was established with the International Telecommunication Union (ITU) in 2010.

Other bilateral agreements followed the model set by the first one. “CERN has signed similar agreements with other Geneva-based international organisations, namely WIPO, WMO, WHO, UNITAR and UNOG,” says

**Born under the auspices of UNESCO, raised in one of the world’s most international cities, European by nature and global in attitude, CERN is well placed to catalyse the energies arising from the different international organisations in Geneva and beyond. A positive boost was given to the relations between them just a couple of years ago and it is now yielding fruits.**

Maurizio. “Outside Geneva, the agreement with UNESCO that has been in place for almost 60 years is being revised to respond to the current needs of both organisations, and the one signed in 2008 with ITER is fully operational. Finally, CERN is also present in the Club Diplomatique de Genève, which is a key element of international Geneva.”

Although the framework is the same, each agreement has its own specificities, depending on the different nature of the partner organisation. Cooperation usually includes participation in important events organised by the partner institution, the implementation of joint projects and the exchange of information on best managerial and technical practices. The IT and knowledge transfer domains are particularly interesting to our partners, while CERN benefits from the support these organisations can give its actions to promote basic science and bring it to the international agenda. “By way of example, UNOG is interested in some CERN-developed software such as INVENIO, INDICO, EDH and our procurement system. Practically all our partner organisations are extremely interested in our know-how on data handling, data protection,

computation, etc.,” explains Maurizio Bona. “We should not forget that on its premises CERN hosts the UNOSAT project, which uses CERN’s IT infrastructures and allows UNITAR to provide the UN system with imagery analysis and satellite solutions for humanitarian aid and development planning. Moreover, cooperation with UNESCO allows CERN to contribute to the scientific and technological growth of some developing countries via the CERN-UNESCO Teacher Training and Digital Libraries Schools.”

While CERN can bring some of its technological crowning points to the table, the partners bring their large international potential, which can translate into new opportunities for CERN. “Setting up an official cooperation framework is instrumental in ensuring long-lasting relationships that do not depend on the evolution of organisations’ internal structures. Having reached a “critical mass” of partner organisations, CERN’s strategy is now geared to consolidating and implementing the agreements concluded so far. However, the same model may be used to set up structured bilateral relationships with other international organisations according to the future needs of CERN,” concludes Maurizio Bona.

Even if CERN will never physically move to Geneva’s “quartier international”, the new tram is not the only thing that has made it possible to shorten the distances.

Antonella Del Rosso

# India joins the ISOLDE collaboration

The new Memorandum of Understanding (MoU) was signed in Kolkata at the Saha Institute of Nuclear Physics (SINP). India thus becomes the 15th member of the ISOLDE collaboration, after having signed similar collaboration documents with the CMS and ALICE experiments. "This agreement will allow Indian physics institutes to take part in nuclear physics-related experiments at CERN," explains Milan Kumar Sanyal, Director of SINP. "ISOLDE is particularly interesting to us because we have a strong activity in the biophysics field. In addition, the funding

On 18 April India signed a Memorandum of Understanding with the ISOLDE collaboration, thus strengthening its links with CERN. Three experiments led by Indian scientists at ISOLDE have been recommended by the Research Board and will be performed in the coming months, and more projects are being designed for the future HIE-ISOLDE scientific programme.

agency of our institute has a very ambitious programme to build a new radioactive ion beams facility. Being a member of the ISOLDE collaboration will help us a lot."

During the ISOLDE workshop that saw the signature of the new MoU, Indian scientists already presented a few different proposals for possible experiments at ISOLDE to be set up and carried out in the near future. Additional proposals will be presented for HIE-ISOLDE, the major upgrade of CERN's nuclear physics facility that will take place in the coming years.

One of the experiments that was presented at the workshop and that will be installed at ISOLDE this year is led by SINP physicist Ushashi Datta-Pramanik. "Our experiment is an international collaboration that also involves several European institutes," she explains. "It will study the very exotic decay modes of neutron-deficient Barium isotopes and investigate the very rare alpha decay. This will give us new insights into the structure of unstable atomic nuclei."

India is the first non-European member of the ISOLDE collaboration, and the signa-

ture of the MoU is a major step towards a wider enlargement of the collaboration outside Europe. "India is a very strong actor in nuclear physics and has many scientists involved in this field," says Yorick Blumenfeld, spokesperson of the ISOLDE collaboration. "Its participation will bring new ideas to our scientific programme and also new equipment. HIE-ISOLDE is particularly attractive to the Indian scientific community because it will allow us to produce higher-energy beams that are particularly suitable for studies of nuclear reactions, a field the Indian physicists have a lot of expertise in."

"The ISOLDE MoU opens up a new dimension of collaboration between CERN and India," says Rüdiger Voss, adviser for India in CERN's International Relations Office. "Our co-operation with India is a long-standing success story: India has made substantial contributions to the construction of the LHC, and today Indian scientists participate in ALICE and CMS, and in different areas of accelerator R&D and construction. The enlargement of this collaboration to include ISOLDE is an important step forward on the way to a closer institutional relationship between CERN and India."

The signing of the MoU was featured in The Hindu newspaper (<http://www.thehindu.com/todays-paper/tp-national/tp-other-states/article3330312.ece>).

Antonella Del Rosso



Shaking hands: Rüdiger Voss (left), adviser for India in CERN's International Relations Office, and SINP Director Milan Kumar Sanyal (right). Also photographed: ISOLDE spokesperson Yorick Blumenfeld, (centre left) and Sunanda Banerjee, head of high-energy at SINP (centre right).



ISOLDE workshop participants.

# The Fire Brigade acquires a new ambulance with all the bells and whistles!

One of the Fire Brigade's two ambulances has just been replaced by a state-of-the-art vehicle tailor-made to meet CERN's unique requirements. At 4.6 metres long it's much more spacious than its predecessors, providing plenty of room for patient, doctor and paramedic.

The ambulance's design and manufacture are the result of a successful collaboration between the Fire Brigade and the technicians from Profile Vehicles, the Finnish company that won the contract following a call for tenders launched in June 2011. "It took us six months to finalise the specification for our new ambulance," explains Patrick Berlinghi, who is responsible for the Fire Brigade's logistics. "We wanted it to be spacious enough for us to be able to work comfortably and to have the latest safety and patient care equipment. We also requested some special features, such as compartments to store emergency fire-fighting equipment."

On 19 April the Fire Brigade unveiled its latest acquisition: a brand-new ambulance specially designed for CERN.



Anaïs Schaeffer

# Safe cycling!

With summer on its way, you might feel like getting your bike out of winter storage. Well, the HSE Unit has come up with some original ideas to remind you of some of the most basic safety rules.

This year, the prevention campaign will be focussing on three themes: "Cyclists and their equipment", "The bicycle on the road", and "Other road users". This is an opportunity to think about the condition of your bike as well as how you ride it.

From 14 to 16 May, representatives of the Swiss Office of Accident Prevention and the Touring Club Suisse will join members of the HSE Unit at the entrances to CERN's restaurants to give you advice on safe cycling (see box).

The HSE Unit will be running a cycling safety campaign at the entrances to CERN's restaurants on 14, 15 and 16 May. Pop along to see if they can persuade you to get back in the saddle!

They will also be organising three activity stands where you can test your knowledge of road safety, see how your riding is affected by alcohol and understand the importance of helmets in the event of violent impact. There are also prizes to be won!

And if you're really keen, why not sign up for the "Bike to Work" initiative which will take place in June? For everyone else, don't forget that cycling is a great way to fill your daily exercise quota, just the ticket for the "Move! & Eat better" campaign which the CERN Medical Service will be launching in June. So get on your bikes and ride!

Antonella Del Rosso

Come and try out the activities at the cycling safety stand from 10 a.m. to 3 p.m. on:

- 14 May at the entrance to Restaurant 2,
- 15 May at the entrance to Restaurant 1, and 16 May at the entrance to Restaurant 3.

To ensure you get priority at 10.00 a.m., 11.00 a.m. or 2.00 p.m., sign up in advance by sending an e-mail to [safety.training@cern.ch](mailto:safety.training@cern.ch).

## Campagne sécurité à vélo

Safely yours

14 mai au Restaurant 2 | Meyrin  
15 mai au Restaurant 1 | Meyrin  
16 mai au Restaurant 3 | Prévessin  
10 h - 15 h non-stop

Diverses animations :  
venez vous tester!

Passez en priorité à 10 h, 11 h et 14 h en vous inscrivant à  
[safety.training@cern.ch](mailto:safety.training@cern.ch)



HSE  
Occupational Health & Safety  
and Environmental Protection Unit



## Bicycle Safety Campaign

Safely yours

14 May at Restaurant 2 | Meyrin  
15 May at Restaurant 1 | Meyrin  
16 May at Restaurant 3 | Prévessin  
10 am - 3 pm non-stop

Various activities:  
come and test yourself!

Priority access at 10 am, 11 am and 2 pm by registering at  
[safety.training@cern.ch](mailto:safety.training@cern.ch)





## Don't let your mail leak

You might feel like you have nothing to hide, but we are not only talking about personal e-mail:

data privacy also pertains to financial mail (acquisitions, tenders), mail related to HR (contracts, assessments), medical information, etc. As this is considered "private" even if it is work-related, the data cannot normally be accessed by your supervisor, the AFS/DFS/mail service administrators or even the Computer Security Team. Tight procedures have been established for the rare cases where such access is necessary, and these require the prior approval of the CERN Computer Security Officer or the IT Department Head, the Legal Service and the DG (see [https://security.web.cern.ch/security/rules/en/data\\_access\\_by\\_thirds.shtml](https://security.web.cern.ch/security/rules/en/data_access_by_thirds.shtml) for more details).

Data privacy is not only the responsibility of the Organization, however; you should also treat it with respect. There are members of the personnel who use external e-mail providers like Gmail or Hotmail instead of the central CERN e-mail service; some people send mail messages from their external mail address; and some even

**At CERN, data privacy is of paramount importance, and we are currently developing a comprehensive data protection policy. For example, your CERN mailbox and your "private" folders on AFS and DFS are considered yours...**

forward mails sent to their CERN address to that external provider. This could have serious consequences: an external e-mail provider cannot guarantee the level of data privacy provided by CERN, which is inspired by the European Data Protection Directive (95/46/EC, <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:31995L0046:en:HTML>). External providers may be outside Europe and subject to national legislation which is less protective. In addition, once e-mail is passed through these providers, there are implications for CERN's privileges and immunities as an intergovernmental organisation.

For these reasons, the Computer Security Team and the IT department strongly encourage you to use only your CERN mail account for professional exchanges and not an external mail provider. Similarly, you should avoid having a permanent automated forward of all your CERN mail to an external provider.

The CERN mailbox gives you several features out of the box. By default all mailboxes have a quota of 2 GB, which can easily be increased (find out how at: <https://account.cern.ch/account/>), and you can send and receive messages with an attachment of up to 30 MB. Moreover, the CERN mail system is integrated with the CERN phonebook, the e-groups system, an electronic fax service, a calendar that allows you to easily schedule a meeting, and many other services. The CERN e-mail service supports several e-mail clients on different operating systems, including support for major Internet browsers. At the same time, sending messages from external sources (instead of a CERN mailbox) can have implications. A message can be rejected by the CERN antispam system or by an e-group's posting restrictions.

Thank you for maintaining CERN's high level of data privacy and protecting its immunity. For further information, please check our web site (<https://security.web.cern.ch/security/home/en/index.shtml>) or contact us at Computer.Security@cern.ch.

Computer Security Team

## Gotcha! Macs lose their innocence

The "Flashback" Trojan is affecting Apple's own variant of Java and compromises Macs via so-called

drive-by infections, i.e. when you visit an appropriately prepared (infected!) website - and this might not necessarily be a site with questionable contents, but could well be a popular, reputable one. Security Companies (<http://news.drweb.com/show/?i=2341&lng=en&c=14>) worldwide have been monitoring this particular Trojan for a while and have estimated that more than half a million Macs were compromised. Connected to a few central command and control servers, the compromised Macs were then supporting the malicious activity of the bad guys! Fortunately, the security companies have now been able to take over those command and control servers and stop their destructive drive.

**Still believe your Mac is secure because Microsoft PCs fall prey to viruses and worms but Macs don't? Time to wake up! This year has seen the first major compromise of Macs worldwide\*. How is yours doing?**

So, Mac users, face the fact that timely patching and running of anti-virus software is also good for the well-being of your Mac (and your nerves). Keep your operating system up to date and use the "Software Update" mechanism which is accessible under the Apple menu. If you run an older Mac OS version, upgrade to MacOS 10.6 or 10.7 by following the instructions provided by the CERN Mac Support Team (<http://it-dep-archive.web.cern.ch/it-dep-archive/gencomputing/mac-support/OS-support.htm>). You can find out which version of the operating system your Mac is running by clicking on the "About This Mac" item in the Apple menu.

PLEASE NOTE that running "Software Update" does NOT update to newer major versions of the operating system! In order to move to a newer major version (e.g. 10.6 or 10.7) you have to explicitly install that major version.

In addition, you can get free anti-virus software from CERN. Finally, only move up to "administrator" rights where it is strictly necessary, and elsewhere stick to restricted "user" rights.

\*Interestingly, the very first ever virus (called "Elk Cloner") targeted Macs in 1981, five years before the first IBM/DOS virus.

For further information, please check our web site (<https://security.web.cern.ch/security/home/en/index.shtml>) or contact us at Computer.Security@cern.ch.

Computer Security Team



## Ombuds' Corner Le coin de l'Ombuds

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

# Empathy

**M**any conflicts between people could be avoided or resolved if both parties could understand the situation as if they were in the other's shoes. Putting oneself into another's position, either consciously or unconsciously, is called empathy. Empathy should not be confused with sympathy, which involves condolence or pity for the other; empathy is a neutral process, leading to the inner knowledge of another person. Individuals differ in their level of empathic ability. This may be due to environmental factors – like their education or personal experiences – or it may be because they are not receptive to the feedback they obtain and so cannot read and learn from it. So empathy is not only a natural ability, but can also be learnt by decoding the feedback we receive from other people.

Empathy is a great tool in the positive resolution of potential issues. Let me give you an example of the same situation, first handled without, and then with empathy.

Joe\* is a Doctoral Student at CERN. As such he has a CERN supervisor, Mike\*, and is also in close communication with his thesis adviser from a collaborating institute. After a year and a half at CERN, Mike asks Joe to come to his office, as he wants to set few things straight concern-

ing how his work is advancing. As soon as the meeting starts, Mike tells Joe that he is not satisfied with the development of his work and that he does not think that he will be able to accept what he is working on as a basis for his thesis. In addition, Mike says that Joe also has not done what he was supposed to do for CERN. Joe is completely shocked, as he had been talking recently to his adviser who seemed satisfied with his work. He then tries to argue that his CERN responsibilities took him more time than expected, so he did not have a chance to progress as much as he wanted on his thesis. But Joe avoids mentioning that his adviser is supporting him, as Mike is the Leader of the entire project in which his own University is participating. The meeting ends with Joe completely threatened and Mike sure of his facts. Joe's future is then in bad shape. This is what would have happened in a no-empathy meeting.

Let us consider the same meeting, but now involving empathy. Right away Mike notices that Joe is not comfortable with the subject of the meeting, as he looks afraid to sit down and sits only on the edge of the chair without saying anything. Looking at Joe and sitting near him, Mike starts by explaining that he would like to discuss two things: how his thesis is progressing and his CERN responsibilities. Then Mike says that, from his point of view, there seems to be a problem with how Joe is dividing his time between the two projects, as he would have normally expected faster progress of both.

He then asks Joe how he sees the situation, giving him a chance to express his views, as he has noticed that Joe is not at all at ease. Joe can then explain, without fear, why his CERN responsibilities took him more time than he expected, leaving less time for his thesis. "However," says Joe, "I discussed my thesis with my adviser; he understands the situation and is ready to help me with writing it, if I need it." Mike naturally respects this, and works with Joe to see if there is any way to alleviate some of his CERN responsibilities, so his adviser can be satisfied with his student's stay at CERN.

## Conclusion

Paying attention to empathy at the beginning of a discussion or meeting will allow everyone to pick up on several elements that could help in conducting the exchange, instead of jumping to conclusions. Remember that if you have any fears or doubts on how to conduct a difficult discussion, the Ombuds is here to help you find the correct way... with empathy!

## Contact the Ombuds early!

<http://cern.ch/ombuds>

Vincent Vuillemin

\* Names and story are purely fictitious.



## News from the Library

The journal recently published a special issue about CERN accelerators entitled "CERN's accelerators, experiments and international integration 1959-2009", with the former CERN Director-General, Herwig Schopper, as guest editor. The origin of this issue is a symposium that took place at CERN on 3-4 December 2009: "50 years of Nobel Memories in High-Energy Physics", for the 50th anniversary of the CERN Proton Synchrotron. Some of the

**European Physical Journal H** is a journal published by Springer that focuses on the historical development of ideas in contemporary physics. Since 2009 it has partially replaced the journal "Annales de Physique" published by EDP sciences.

contributions to this symposium became articles that are a real treasure for physicists and historians. Many of these are actually personal recollections from the main actors of the CERN accelerators. In addition, regular papers have been invited to make this issue more complete.

Thanks to the CERN Library, you can read this issue and all the other articles of this journal online.

The full table of contents is available at:

[http://www.springerlink.com/  
content/2102-6459/36/4/?MUD=MP](http://www.springerlink.com/content/2102-6459/36/4/?MUD=MP)

If you have any comments or questions, please contact us at [library.desk@cern.ch](mailto:library.desk@cern.ch).

CERN Library



## The year 2012 is already rich in highlights for the Pension Fund Governing Board (PFGB)

At the start of the year, the PFGB examined the question of the contribution rate for new members

joining the Fund after 1st January 2012. The PFGB confirmed that, on the basis of the independent expert's calculations, the proposed total contribution rate of 31.6% for new members is sufficient to finance their pension promise. The proposed new contribution rate was subsequently approved by the Council at its March 2012 meeting.

The PFGB has also approved the assumptions to be used in the preparation of the Financial Statements of the Fund for the year 2011. The assumptions for longevity will reflect the latest Swiss publicly available longevity tables. The investment return assumption will continue to reflect the objective set by the Council, which stands at 5% per annum, expressed as 3% per annum over a long-term inflation assumption of 2%. The Financial Statements will be submitted to the Council this June.

In the area of investments, the PFGB closely monitors the progress of the implementation of the Fund's capital preservation approach. The restructuring of the investment portfolio was approximately 20% complete as of the end of 2011.

**In this new column, the Chairman of the Pension Fund Governing Board (PFGB) will regularly present the latest main decisions, initiatives and accomplishments of the Governing Board to the members and beneficiaries of the Fund.**

Another 30% of the portfolio is scheduled to be restructured during 2012. The Fund's capital preservation approach, which is set out in the Fund's Statement of Investment Principles and Investment Policy, aims at reducing the Fund's sensitivity to market downturns while improving the efficiency of the investments. While the efficiency of the investment portfolio has already improved, the performance will remain sensitive to market downturns as long as the large majority of the assets have not been restructured. As of 31 March 2012, the Fund has returned an estimated 3.96% year to date.

In February, the PFGB made an unanimous recommendation to the Council to reappoint the Chief Executive Officer, Théodore Economou, for a second three-year term. The Council subsequently made that appointment in March.

At its February meeting the PFGB also completed the update of the Financial Regulations of the Fund, which were then submitted as a White Paper to Finance Committee and Council in March. A finalised Green Paper version will be prepared for the June meetings of the Finance Committee

and Council. These regulations will set forth the rules governing the financial administration of the Fund, including procurement.

In February 2012, the PFGB appointed Pierre Sauvagnat, a French citizen and director at Banque Cantonale de Genève, as an expert member of the Investment Committee. Sauvagnat's professional experience, which spans several decades in major banking institutions, along with his deep knowledge of investment products and his experience in asset/liability management, were viewed as a most useful addition to the committee.

Finally, on behalf of the Governing Board, I wish to express my gratitude to Dorothée Duret, former Vice-Chair, who resigned in March 2012, for her outstanding contribution to the Governing Board. In her more than five years of service on the Board, Dorothée was a key member of the PFGB with her brilliant and rapid grasp of the multifaceted tasks and challenges before it. I wish to acknowledge her deep commitment to her work, and her personal support to me in her capacity as Vice-Chair.

Dan-Olof Riska,  
Chairman, Pension Fund Governing Board



## Official news

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

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

You are reminded that the Organization levies an internal tax on the financial and family benefits it pays to the members of the personnel (see Chapter V, Section 2 of the Staff Rules and Regulations) and that the members of the personnel are exempt from external taxation on salaries and emoluments paid by CERN.

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

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

If you are currently a member of the CERN personnel you received an e-mail containing a link to your annual certificate, which you can print out if necessary.

If you are no longer a member of the CERN personnel or are unable to access your annual certificate as indicated above,

you will find information explaining how to obtain one at the following link: [https://cern.ch/admin-eguide/Impots/proc\\_impot\\_attestation\\_interne.asp](https://cern.ch/admin-eguide/Impots/proc_impot_attestation_interne.asp).

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

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

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

**IF YOU HAVE ANY SPECIFIC QUESTIONS,  
PLEASE CONTACT YOUR TAX OFFICE  
DIRECTLY**

This information does not concern CERN pensioners, as they are no longer members of the CERN personnel and are therefore subject to the standard national legal provisions relating to taxation.

*HR Department  
Contact: 7390*



## Take note

### SECURE WEB DEVELOPERS NEEDED!

You're about to launch a new website? Cool!! With today's web programming languages like PHP, Java, Python or Perl, complex websites can be created, easily fulfilling all your use cases. But hold on. Did you ever think about how easily this can be abused? Attackers today are already using automatic tools which can quickly and easily find and exploit vulnerable web applications.

Web applications often suffer from security vulnerabilities, i.e. design flaws or programming bugs that remained undetected during the whole software development cycle. In production these vulnerabilities become security holes, providing an opportunity for exploitation, and can pose immense security risks (and there is no reason to believe that CERN is immune to this). The costs associated with eliminating these bugs could be loosely described by

the "1:10:100 rule", i.e. the relative costs for fixing are 1:10:100 for fixing them in the programming:testing:production phases. Thus, the earlier that vulnerabilities are detected, the cheaper it is to fix them. This also prevents a bug from being exploited.

So, are you keen to become a secure web developer? You are invited to join one of the following training courses:

- \* Secure coding in C/C++
- \* Secure coding in Perl
- \* Secure coding in Python
- \* Securing Java Applications
- \* Securing Java and Web Applications
- \* Securing PHP Web Applications
- \* Developing secure software

These courses are intended for people who spend the majority of their time program-

### TAX DECLARATION: FOR THE ATTENTION OF MEMBERS OF THE PERSONNEL AND PENSIONERS LIVING IN FRANCE

#### Exchange rate for 2011:

For 2011, the average annual exchange rate is 0.81 EUR for CHF 1.

*Human Resources Department*

ming web applications and already have a good understanding of the particular language in use. The CERN Training service offers other courses on secure programming too. Just visit this page for more details.

For further information, please check our web site or contact us at [Computer.Security@cern.ch](mailto:Computer.Security@cern.ch).

*Computer Security Team*



## Take note

### VISIT SAFETY

Experiment areas, offices, workshops: it is possible to have co-workers or friends visit these places.

You already know about the official visits service, the VIP office, and professional visits. But do you know about the safety instruction GSI-OHS1, "Visits on the CERN site"? This is a mandatory General Safety Instruction that was created to assist you in ensuring safety for all your visits, whatever their nature—especially those that are non-official.

Questions? The HSE Unit will be happy to answer them. Write to [safety-general@cern.ch](mailto:safety-general@cern.ch).

*The HSE Unit*



## Language training

### FRENCH COURSES

#### General and Professional French Courses

The next session will take place from 2nd May to 6th July 2012.

These courses are open to all persons working on the CERN site, and to their spouses.

For registration and further information on the courses, please consult our Web pages (<http://hr-training.web.cern.ch/hr-training/>) or contact Kerstin Fuhrmeister.

#### Oral Expression

This course is aimed for students with a good knowledge of French who want to enhance their speaking skills.

Speaking activities will include discussions, meeting simulations, role-plays etc.

Suitable candidates should contact Kerstin Fuhrmeister (70896) in order to arrange an appointment for a test.

The next session will take place from 2nd May to 6th July 2012.

#### Writing professional documents in French

These courses are designed for non-French speakers with a very good standard of spoken French.

Suitable candidates should contact Kerstin Fuhrmeister (70896) in order to arrange an appointment for a test.

The next session will take place from 2nd May to 6th July 2012.

Département HR



## Academic training

2, 3 and 4 May 2012

#### ACADEMIC TRAINING LECTURE Regular Programme

from 11:00 to 12:00 - Bldg. 503 - Council Chamber

#### Predictive Monte Carlo tools for LHC physics

by Fabio Maltoni / Université Catholique de Louvain (BE)

Simulations of events taking place at the LHC play key role in all experimental analyses. Starting from the basics concepts of QCD, we first review how accurate predictions can be obtained via fixed-order calculations at higher orders. Parton showers and event generation are then introduced as a means to achieve fully exclusive predictions. Finally the recent merging and matching techniques between fixed-order and fully exclusive simulations are presented, as well as their implementations via the MLM/CKKW and MC@NLO/POWHEG methods.

*Organiser: Mario Campanelli*



## Technical training

•••••

### CERN DOCUMENT SERVER (CDS), INSPIRE AND LIBRARY SERVICES

A new training course, "CERN Document Server (CDS), Inspire and Library Services", is available since the beginning of the year.

The training course is given by members of CERN's CDS Team (IT-CIS group) and the Library Services (GIS SIS group) and is intended for all members of personnel of CERN.

This course will present CDS and inspirehep.net and the content, scope and scientific information available in or with CDS, as much as the classification and organization of the documents.

It is intended to give you the training needed to know how to use CDS most efficiently and in particular covers:

- the main characteristics and advanced features for the search of documents (scientific, multimedia, etc)
- the collaborative tools : baskets, alerts, comments, evaluation, etc.
- the submission of documents in CDS and examples of workflows

An important part of the training is composed of various exercises, designed to acquire practical ability to work with CDS in cases similar to real life, including the most advanced features.

Don't wait: sign up for the training course directly through the CERN Training Catalogue by clicking on the following link:

Course code: 126CDS01 - CERN Document Server (CDS), Inspire and Library Services

The dates of forthcoming sessions are posted in the CERN Training Catalogue. The course will be offered in French and English. For more information, contact the CDS Team directly by sending an e-mail message to [cds.support@cern.ch](mailto:cds.support@cern.ch).

•••••

