CERN Bulletin

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HIGGS BOSON: THE WINNER TAKES IT ALL?

Since its discovery in 2012, the Higgs boson has been in the spotlight for both experimentalists and theorists. In addition to its confirmed role in the mass mechanism, recent papers have discussed its possible role in the inflation of the universe and in the matter-antimatter imbalance. Can a single particle be responsible for everything?

"Since 2012 we have known that the Higgs boson exists, but its inner properties are yet to be completely uncovered," says Gian Giudice, a member of the CERN Theory Unit. "Precise measurements of its decay modes are still ongoing and the LHC Run 2 will be essential to understand the nature of this particle at a deeper level."

What we know is that this boson is not "yet another particle" among the hundreds that we deal with every day in physics labs. In agreement with the Standard Model theory, the recent experimental data confirms that the particle discovered by the CERN experiments is the key particle of the Brout-Englert-Higgs mechanism, which explains

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PROMOTING RESPECT AT HOME AND ABROAD

This week, I'd like to focus on respect, whether at home, at work or on the international scene. Last week, I had the opportunity to visit the SESAME laboratory in Jordan along with the new European Commissioner for Research, Carlos Moedas. Since taking up his post, Mr Moedas has attached great importance to the role science can play in diplomacy, and the visit was on his initiative.

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In this issue

NEWS

It has come to our attention that issues of the *Bulletin* are not being consistently delivered to readers living in France. As there are no issues with the distribution from CERN, we encourage our readers to contact their local post office to discuss the problem.

A word from the DG

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PROMOTING RESPECT AT HOME AND ABROAD

Through the EU-funded CESSAMag project, CERN is coordinating the provision of magnets and power supplies for the SESAME main ring. The first are currently being tested at CERN by a team involving accelerator scientists from the SESAME members, and all are due to be delivered to SESAME in time for commissioning in the second half of 2016.

SESAME, and CERN's contribution to the project, are well documented in the pages of the *Bulletin*, but what really impresses when you visit the lab is the diversity of people working there and the degree of mutual respect they show to each other. SESAME will join the global community of light sources in 2016, the first such laboratory in the region, and a growing community of over 300 researchers is eager to get the experimental programme underway. These are people from Bahrain, Cyprus, Egypt, Iran, Israel, Jordan, Pakistan, the Palestinian Authority and Turkey, reaching across troubled borders to set an important precedent for peace.

Closer to home, it is timely to remind you that CERN is a fully subscribed member of the campaign to promote respect in the workplace. You may have noticed a series of yellow posters appearing around the lab. These bear slogans provided by you, in response to the CERN Ombud's recent article asking you to say what respect means to you. It should come as a surprise to no-one that a workspace where diversity in all its forms is respected is a happy and productive workplace. A workplace in which there is mutual respect is a healthy, committed and motivated workplace. Conversely, a workplace where respect is lacking is one that is prone to conflict. It is important for all of us to respect our colleagues, but it is equally important for us not to turn a blind eye to disrespect: we should react to it, in a respectful way, or course, but we should not let it pass unchecked.

On 5 May, we will be launching the 2015 respect campaign – Accelerating respect at CERN – with a discussion forum led by Alan Richter, a respected expert on the positive impact of respectful workplaces. This is intended to be a forum, so I encourage you to read the abstract and come along prepared for a lively discussion. Throughout the year, other events of this kind will follow and details of this campaign can be found at *http://ombuds.web.cern.ch/respect*. Let's all take the lead from our fellow scientists at SESAME, and make sure that CERN is a respectful workplace, and one that celebrates diversity in all its forms.

Rolf Heuer

HIGGS BOSON: THE WINNER TAKES IT ALL?

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the origin of the mass of subatomic particles. Is this unique feature enough to make it "the" particle that shaped our entire universe? "The discovery of the Higgs boson has indeed opened new avenues to both cosmology and particle physics," says Gian Giudice. "Many studies have been published about its possible role in shaping the early history of our universe, but the theoretical situation is far from clear."

According to some theoretical models, the Higgs boson could be the 'inflaton', the particle responsible for the rapid expansion that the universe went through in its first moments. "The identity of the inflaton is still a mystery and it was an intriguing clue to find that the Higgs boson and the inflaton share some basic features," explains Giudice. "However, the Standard Model interactions are not sufficient to generate inflation unless we introduce an anomalously strong coupling between the Higgs boson and gravity. Such strong coupling makes calculations unreliable, and the question of whether we can identify the Higgs boson with the inflaton is still much debated among theoreticians. In my opinion, the Higgs boson needs the assistance of other new particles to generate inflation."

The situation is similarly fuzzy when we look at the matter-antimatter imbalance. "In some theoretical models, this imbalance is created during the primordial phase transition that led to the formation of the special state of Higgs field that we observe in the universe today," explains Giudice. "In such models, the Higgs boson has a leading role in generating the asymmetry between matter and antimatter, but new particles and new interactions beyond the Standard Model are certainly needed to make the idea work," confirms Giudice.

The overall situation remains unclear: while several theoretical studies are trying to explore deeply the different possible facets of the Higgs field, others are focusing on alternative scenarios. "A simpler explanation of the matter-antimatter asymmetry is offered by neutrinos if, as generally believed, neutrinos also have components in which spin and velocity point in the same direction," says Giudice. He goes on to explain: "Originally in the universe all neutrino components were in thermal equilibrium. As the universe cooled, the neutrino components with more feeble interaction went out of equilibrium and eventually decayed, leaving behind a small excess of matter over antimatter."

The new high-energy data from Run 2 will be like a more powerful magnifying glass for physicists to look closer at this and many other fundamental processes that nature has so far kept out of our reach.

Antonella Del Rosso

LHC REPORT: REACHING HIGH INTENSITY

After both beams having been ramped to their full energy of 6.5 TeV, the last two weeks saw the beam commissioning process advancing on many fronts. An important milestone was achieved when operators succeeded in circulating a nominal-intensity bunch. During the operation, some sudden beam losses resulted in beam dumps at top energy, a problem that needed to be understood and resolved.

In 2015 the LHC will be circulating around 2800 bunches in each beam and each bunch will contain just over 1 x 10^{11} protons. Until a few days ago commissioning was taking place with single bunches of 5 x 10^{9} protons. The first nominal bunch with an intensity of 1 x 10^{11} protons was injected on Tuesday, 21 April. In order to circulate such a high-intensity bunch safely, the whole protection system must be working correctly: collimators, which protect the aperture, are set at preliminary values known as coarse settings; all kicker magnets for injecting and extracting the beams are commissioned with beam and timed in properly; the aperture in critical regions is measured with beam and so on. The RF system is tuned carefully to allow loss-free capture of the injected nominal bunch. This was all done successfully and the road is now clear for determining the reference orbits for nominal intensity bunches. For the time being, operators cannot inject more than a couple of these nominal bunches, as further tests on the machine protection system are required first. High-intensity beams have sufficient energy to damage machine components if the machine protection systems are not working perfectly, hence the caution.

The other focus over the last two weeks was some unexpected beam losses for the anti-clockwise beam (beam 2) at a location in the arc between Point 1 and Point 8. The losses were similar to those caused by the UFOs (Unidentified Falling Objects) observed during LHC Run 1. At high energies (6.5 TeV), the losses were significant enough to quench the superconducting dipole located just downstream of the greatest losses. Reducing the level at which the beam-loss monitors trigger a beam dump by a factor of 2 avoided the dipole quenches in the case of these UFO-like events. However, at 6.5 TeV, beam 2 could not be circulated for much longer than 1 hour before being dumped. The LHC team decided to warm up the beam screen of the magnets in sector 8-1 to around 80 K and, once the whole system was back to normal operating conditions, it was possible to keep the beam circulating at full energy for more than 6 hours. However, subsequently an aperture restriction of some sort was measured at full energy and at injection energy, exactly at the location where the beam losses had originally appeared. Investigations are ongoing, with the aim of trying to understand this 'moving target'. One of the next steps will be to go for multiple nominal intensity bunches and explore the behaviour of the restriction.

Jan Uythoven
for the LHC team

GIRLS, GET CONNECTED!

On 23 April this year, the fifth annual "International Girls in ICT Day" took place: events all over the world gave young women the chance to see ICT from a new perspective, encouraging them to imagine a career in the field. This year, CERN took part!

Joao Antunes Pequenao (CERN Media Lab) explains his interactive simulation of the Higgs field. © ITU/P.Woods.

The International Girls in ICT Day, launched and supported by the Geneva-based International Telecommunication Union (ITU), has already involved more than 111,000 young women in 140 countries, including France and Switzerland, of course. On 23 April, 120 young women aged between 13 and 16 from five schools in the Geneva region* were welcomed to the ITU headquarters, where they took part in a series of workshops on subjects ranging from mobile app development to satellite launching.

As a key source of knowledge on the use and development of new technologies and as a strong believer in the promotion of women in science-based careers, CERN was delighted to take part in this event. "The CERN Management has been committed to improving professional equality between women and men at the Laboratory for many years; we're constantly trying to achieve this in the course of our everyday work," underlines Kristin Kaltenhauser of the Diversity Office, who was responsible for coordinating CERN's involvement in the event. "So taking part in an event designed to encourage young women to embrace a career in ICT was a natural step for us."

As a joint initiative of CERN's Diversity Office, the CERN Media Lab, the Communication group and the IT department, several members of the Laboratory – notably female ICT specialists in the HR and IT departments – were at the ITU on the day to explain the role that new technologies play at CERN and to respond to questions from the pupils. "The Media Lab led a programming workshop – 'Programming Ideas' – and several CERN experts took part in a 'speed mentoring' activity, where the girls were able to talk about careers one on one with women who specialise in the field of new technology," Kaltenhauser explains.

"The girls and young women arrived for the speed mentoring session energised by the morning's workshops and it was a real pleasure seeing their interested faces," says Denise Heagerty of the IT department, who took part in the speed mentoring and helped to coordinate the event. "They were especially interested by the variety of ICT roles and the importance of team work and human relationships. There were also lots of questions about CERN and the LHC!"

Information on the many training paths available in ICT fields, especially those offered at local schools and universities, was also available throughout the day. Of course, not all the participants will go on to have careers

Valentina Mancinelli, from the IT Department (in the foreground, with black t-shirt), answers questions during the speed mentoring activity. © ITU/E.Okondo.

as programmers, but they will all have had the opportunity to meet some of the brilliant women who have built a successful career in the field.

*The Collège du Léman, *the International School of Geneva, the* Collège de Sécheron, *the* Institut Florimont *and the British School of Geneva.*

CERN will also be participating in the "Expanding Your Horizons" Geneva event in November, which aims to encourage girls aged 11 to 14 to enter scientific fields. More information can be found at **http://www.expandingyourhorizons.org/conferences/geneva/**

Anaïs Schaeffer

LHCF: READY TO GO

Reinstalled in the tunnel at the end of 2014, the two detectors of the LHCf experiment are now ready for operation. The first data should be taken in May.

LHCf's Arm1 detector.

The Large Hadron Collider forward (LHCf) experiment measures neutral particles emitted at nearly zero degrees from the proton beam direction. Because these "very forward" particles carry a large fraction of the collision energy, they are important for understanding the development of atmospheric air-shower phenomena produced by high-energy cosmic rays. To measure these particles, two detectors, Arm1 and Arm2, sit along the LHC beamline, at 140 metres either side of the ATLAS collision point.

In July 2010, after a 9-month operation, the LHCf collaboration removed the two detectors from the tunnel to avoid severe radiation damage. The Arm2 detector was reinstalled in the tunnel for data-taking with proton–lead collisions in 2013, while Arm1 was being upgraded to be a radiation-hard detector using gadolinium orthosilicate (Gd_2SiO_5) scintillators. After completion of the upgrades, the performance of the detectors was tested at the Super Proton Synchrotron fixed beam line in Prévessin in October 2014. Both Arm1 and Arm2 were then reinstalled in the LHC tunnel, on 17 and 24 November 2014 respectively.

At the beginning of 2015, LHCf restarted activity to relaunch its data-acquisition system. The experiment is now ready for the dedicated operation period, starting in May. At 13 TeV, the new energy of the LHC, the proton-proton collisions correspond to interactions in the atmosphere of cosmic rays with an energy of 0.9×10^{17} eV. This is the energy at which the origins of the cosmic rays are believed to switch from galactic to extragalactic, and a sudden change of the primary mass is expected. Based on these new highest-energy LHC data, cosmic-ray physicists expect to confirm this standard scenario.

The full version of this article is available in the January 2015 edition of the CERN Courier *(Volume 55).*

CERN Bulletin

INTERNATIONAL GENEVA: DISCOVER THE WORLD OF METEOROLOGY AND CLIMATOLOGY

On 7 May, the Secretary-General of the World Meteorological Organization (WMO) will give a seminar presenting WMO's work to colleagues at CERN. Don't miss this opportunity to learn about the UN's authoritative voice on the state and behaviour of the Earth's atmosphere, its weather and its climate.

This is the second in the "International Geneva comes to CERN" series of seminars, which presents other Geneva-based international organisations to CERN's internal audience. At his seminar, Michel Jarraud, the WMO Secretary-General, will discuss the many fields for which the WMO provides world leadership and expertise. They include weather, climate, hydrology and water resources, as well as related environmental issues. "Both CERN and WMO deal with scientific issues, and this makes the two organisations naturally very close to each other, including in their efforts to advocate for the importance of science and scientific education for the development of society," says Maurizio Bona, who is in charge of CERN's relations with international organisations and is organising the series of seminars.

The two organisations signed a Cooperation Agreement in 2010. Since then, several exchanges have taken place between them. In particular, CERN's IT experts have been involved in consultations regarding the possible use of CERN's expertise by WMO in its fields of activity. The agreement provides CERN and WMO with a framework for cooperation through which joint initiatives are discussed and implemented.

As in the first seminar, given by Michael Møller, Acting Director-General of the United Nations Office at Geneva (UNOG), on this occasion the audience will be not only able, but warmly encouraged, to ask questions and interact with the speaker. "At the UNOG seminar, the formal presentation only took 20 minutes but we had more than 50 minutes of direct and open exchange of views between the participants and the speaker," says Bona.

Put 7 May in your diary: the seminar will be held in the Main Auditorium and will start at 11 a.m. The event will be webcast and a recording will be made available shortly afterwards: **http://cern.ch/go/7N9C**

Antonella Del Rosso

EU COMMISSIONER CARLOS MOEDAS VISITS SESAME

The European Commissioner for research, science and innovation, Carlos Moedas, visited the SESAME laboratory in Jordan on Monday 13 April. When it begins operation in 2016, SESAME, a synchrotron light source, will be the Middle East's first major international science centre, carrying out experiments ranging from the physical sciences to environmental science and archaeology.

CERN Director-General Rolf Heuer (left) and European Commissioner Carlos Moedas with the model SESAME magnet. © European Union, 2015.

Commissioner Moedas was accompanied by a European Commission delegation led by Robert-Jan Smits, Director-General of DG Research and Innovation, as well as Rolf Heuer, CERN Director-General, Jean-Pierre Koutchouk, coordinator of the CERN-EC Support for SESAME Magnets (CESSAMag) project and Princess Sumaya bint El Hassan of Jordan, a leading advocate of science in the region. They toured the SESAME facility together with SESAME Director, Khaled Toukan and SESAME's President of Council, Chris Llewellyn-Smith, a former CERN Director-General.

Commissioner Moedas' trip to Jordan follows his visit earlier this year to CERN, where he toured the workshop currently developing SESAME's main storage ring magnets. CERN scientists have been working together with SESAME to develop these magnets and their powering scheme, under the CESSAMaG project.

The visit concluded with the symbolic presentation by Rolf Heuer and Carlos Moedas of a model SESAME magnet to Khaled Toukan and Chris Llewellyn-Smith. The model will remain at SESAME until the real thing, currently under test at CERN, can replace it, at which point the model will return to CERN as a reminder of the Organization's contribution to this project.

For more information about CERN, SESAME and the CESSAMag project, read Horizon magazine's recent interview with Jean-Pierre Koutchouk: "Middle East particle accelerator shows positive power of science".

CERN Bulletin

Computer Security

HACKING CERN - A WIN-WIN FOR ALL

The first round of the CERN WhiteHat Challenge has finished. At the end of March, CERN was "attacked" by a dozen students from the St. Pölten University of Applied Sciences, Austria.

These attacks were part of their Master's degree in computer science and computer security, where they study penetration testing and vulnerability scanning, i.e. finding weaknesses in computing systems: techniques, tools, approaches and ethics. Usually, such studies are done against mock-ups like "Google Gruyere", the "Damn Vulnerable Web Application" or OWASP's "WebGoat" and "Hackademic". However, while those mock-ups are in principle useful, they rarely resemble the operational reality of the Internet.

CERN has offered computer security professors an alternative: the opportunity to use CERN's web-ecosystem and all other systems open to the Internet as their playground. Their students can learn how to perform penetration tests and vulnerability scans against real, operational targets.

This is a win-win-win situation for all. Students win as they learn to develop strategies in a real-life environment - this brings with it both advantages and disadvantages, as real-life is not as easy as mock-ups and there is a chance that students will find nothing. In such a case, they "just" learn that the security level of the system they've tested is higher than their skills and expertise. For professors, this is also a win, as they don't need to set up mock-ups and can concentrate instead on educating their students.

And CERN wins, too. CERN is under permanent attack anyhow - but the "evil" side never tells us what they've found. The students will have to. Formally, there is a Memorandum of Understanding (MoU) signed between the participating university, the supervising professor and CERN. Part of this MoU is a "Code of Ethics" providing the ground rules for performing tests against CERN. "Ethics" are also part of the classes taught before the penetration tests are performed.

About ten students from the University of Rotterdam also carried out penetration testing exercises earlier this month. HEIG VD in Yverdon-les-Bains is also preparing its students, and four more universities worldwide are currently in the process of signing the MoU. In parallel, 57 CERN staff and users have successfully passed the two half-day WhiteHat training courses, signed the same "Code of Ethics" and are now ready to poke around CERN's computing services. In-depth training sessions have also started. For more information, visit the CERN WhiteHat Challenge website or sign up to the WhiteHat candidate e-group.

If your service or system fails to withstand such a hack, it may be time to understand why it was not robust and resilient enough to survive. Any malicious person may take advantage of the vulnerability, but either didn't bother or just didn't spot it. Take advantage of the situation and talk to us about how to better secure and protect your service: **Computer.Security@cern.ch.**

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

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

Stefan Lueders, Computer Security Team

Ombud's Corner

DO YOU SPEAK CERNESE?

CERNese is the language spoken here: based on English and French, it's a mixture of accents, pronunciations and body languages that go well together. CERNese is also an attitude: we make an effort to understand others and to ensure that other people understand what we say. Do you speak this language?

Joe works in an office with four colleagues who all share a national language, their direct supervisor also happens to be of the same nationality, and most of the communication in the team therefore also takes place in this language - one that Joe does not speak. Moreover, they often go for coffee together and although they sometimes remember their CERNese and invite him to go with them, they inevitably end up switching to the national language that he does not share. He feels very uncomfortable because he is not included in the conversations. Sometimes he suspects that they are talking about his work. What is worse is that sometimes he realises that they have shared vital work-related information that he has missed.

It is quite natural for colleagues who share a national language to make it their working language at CERN. However, this cannot be tolerated when it puts other colleagues into a difficult situation, either subjectively because they feel left out or objectively because they miss out on important information. Nobody should miss a meeting or project deadline because the necessary information did not reach them.

Joe understands that it's normal and natural for his colleagues to speak their national language; he feels that his presence in the team is a nuisance, as it obliges the others to change their habits. He keeps asking them to involve him and share information with him in English, the language they all have in common; he has even tried to learn a few phrases in their language in order to show his willingness to fit in but, despite all his efforts, he finds himself excluded and his work begins to suffer. He tries to discuss this with his supervisor, who brushes him off, saying that he needs to adapt to the reality of a multi-national environment.

Speaking CERNese is a way of demonstrating respect for each other. Adapting our language to ensure that other colleagues understand what we say, making sure that everybody has access to the same information, being sensitive about people's feelings and including everybody appropriately: these are all ways of fostering mutual respect.

Speaking CERNese is also an essential way of ensuring that everyone adapts to the reality of a multi-national environment: it is critical to the success of our workplace and it is a sure path towards ensuring motivation and productivity.

If you find yourself in a situation like Joe's, do not hesitate to contact the Ombud as early as possible: the sooner we act on it, through mediation or other supportive actions, the quicker we will be able to restore the situation to a healthy and effective working environment based on mutual respect and understanding.

Sudeshna Datta-Cockerill

TILL MORITZ KARBACH (1979 - 2015)

We deeply regret to announce the death of Till Moritz Karbach on 9 April 2015. Till Moritz Karbach, who was born on 8 November 1979, worked in the PH department and had been at CERN since 10 August 2009.

The Director-General has sent a message of condolence to his family on behalf of the CERN personnel.

Social Affairs
Human Resources Department

Till Moritz Karbach, a 35-year-old physicist on the LHCb experiment, suffered a fatal fall on 9 April while rock climbing near the city of Pegnitz in southern Germany. Despite the immediate attention of his companions and the rapid arrival of medical help, he passed away at the scene of the accident.

Moritz joined the LHCb collaboration in the summer of 2009, having written his PhD thesis on data collected at the BaBar experiment at SLAC, California. At this time he was a postdoc in the Dortmund group, where he had also been a student. Two years later he relocated to Geneva, and in July 2012 began a CERN research fellowship.

Moritz's contributions to LHCb were wide-ranging. He was a very active analyst, with particular interest in the measurement of the CP-violating phase γ, a topic that he had originally studied during his time on BaBar. He was a key player in several γ–related measurements, and the leading authority within the experiment on how the results of these measurements should be combined in order to achieve optimal precision for γ itself. Since the start of 2014 he had served as co-convener of the working group responsible for these analyses, a period during which LHCb began to achieve results significantly more precise than those obtained by previous experiments for the measurement of this fundamental parameter. His expertise and insight benefited many other areas of LHCb physics and in recent months he provided invaluable input to a paper reporting the measurement of the CKM matrix-element V_{ub} with b-baryon decays, the first such analysis to be performed at a hadron collider.

It is unusual for an analyst to be equally adept as a detector physicist, but Moritz was such a scientist. He was deputy Project Leader of the Outer Tracker of the experiment, and had on-site responsibility for this sub-detector for much of Run 1. His speedy interventions and patient encouragement of less-experienced shift crew were vital in ensuring that the experiment collected high quality data. More recently he had begun to look forward, and had started to contribute strongly to research and development activities on the Scintillating Fibre Tracker, a detector foreseen for the LHCb upgrade.

Moritz believed strongly that it is the duty of physicists to explain their work to the outside world. He was heavily involved in the Masterclass programme, which aims to explain the process of particle-physics measurements to high-school pupils. He was also an enthusiastic and diligent supervisor of CERN summer students, and was keen to explore new methods of mentoring in order to ensure that the students derived the maximum benefit from their time at the Laboratory.
Away from his work, Moritz had a passion for rock climbing and the mountains. While a student he climbed frequently at Yosemite, and continued these activities in the Alps having moved to Geneva. In January this year he enjoyed a holiday in the Rocklands of South Africa.

His loss is deeply felt by his parents, brother and sister-in-law and other close family members. His many friends and LHCb colleagues mourn his passing.

His colleagues and friends

DAVID FIANDER (1931 - 2015)

It was with shock and sorrow that we heard that Dave Fiander had passed away on 29 March.

Dave was born in London in 1931 and educated in a number of schools in Wales, finishing up in Swansea. He studied Engineering at Imperial College London – a university which has always enjoyed a premier reputation in the subject. After graduation he worked for several years for the United Kingdom Atomic Energy Authority, where he worked on the production of enriched uranium fuel rods for nuclear power stations. In 1963, he was offered a job at CERN and joined a group in the PS Division headed by Fred Asner and responsible for injection and ejection systems.

This was an exciting time for CERN. Europe's first large synchrotron, the PS, had been completed and had begun to accelerate bunches of protons to a world record energy of 28 GeV. Once accelerated, the 25 bunches of particles circulated at intervals of 110 ns around the 100-metre-radius circle that was the PS accelerator. These bunches had to be extracted to strike a fixed target from whence a few secondary particles were separated and analysed in momentum to feed a bubble chamber at the far end of the South Hall, which was then CERN's first large experimental area. Other experiments in the South Hall used scintillation counters, which needed several hundred milliseconds of beam extracted, spilling over a septum through resonant extraction. But bubble chambers required a very short pulse commensurate with the sensitive time of the chamber. The few secondary particles observed in the chamber resulted from a highly selective beam line but started with one or more of the 20 intense circulating bunches in the PS.

Dave's challenge was to invent a pulsed high-voltage magnet that operated inside the accelerator's high vacuum chamber and with an aperture big enough for the beam to pass through at injection and strong enough in deflecting field to kick the 28 GeV beam bunches. A septum magnet would then steer the kicked beam out of the machine and onto a target or into another accelerator. The voltage needed to power this "full aperture kicker magnet", as the device was called, was 60 kV. A length of high-quality coaxial line, charged to this voltage, produced a pulse of tens of kA when a spark gap (later a thyratron switch) was fired. The pulse was fed into the matched impedance of the ferrite cored magnet. The rise time of the pulse had to be less than the 100 ns between bunches, and the pulse had to be rigorously flat, with an equally rapid fall time. Dave's inventive imagination was brilliant and equal to any of the great accelerator engineers that made CERN possible. He led a small team, Denis Grier, Klaus Metzmacher, Peter Pearce and Stuart Simpson, to complete the device, and founded a generation of many fast switching magnets that, like points in a railroad system, directed CERN's beams of particles as they threaded their way from Booster to PS to SPS (sometimes diverted via the Antiproton Accumulator and LEAR, and later to LEP, but finally to the Large Hadron Collider). All this was done with characteristic precision and reliability, for a misdirected bunch train might easily bore a hole in the vacuum system or even one of the LHC's precious superconducting magnets. In spite of all these subsequent projects, Dave was most proud of this first Full Aperture Kicker system and the fact that it is still operational and continues to provide beam pulses today for the CERN accelerator complex.

Dave's team grew in size to become the BT Group in the PS Division and its responsibilities expanded to include the magnetic septa that followed the kickers. He recruited nationals of many countries and from a variety of engineering backgrounds, leading them to achieve results that none of them as individuals could have hoped for. His secret for gaining their respect was a firm, fair and humane style of management, encouraging new ideas that enabled many advanced pulsed systems to be developed under his leadership.

Dave's most productive years (he called them his Golden Years) were spent working for Roy Billinge and Eiffion Jones as they put together the Antiproton Accumulator – this needed many pulsed devices for which he built the power supply – for a magnetic horn, and a frightening device, the lithium lens (originally from Novosibirsk), which combined high voltages and current and sent a pulse through a rod of lithium. The slightest leak from the water cooling system would have set this device on fire, and through it travelled the most intense and concentrated beam of protons CERN was able to produce at the time. In Dave's safe hands this was just another case of "no problem".

Dave's last project before taking early retirement in 1993 was the pulsed high-voltage supply for the ISOLDE radioactive beam target station, a project he worked on with Tony Fowler. Yet even in the month he died, he was very proud of the first Full Aperture Kicker, which is still pulsing away after 40 years and is set to do so as long as the PS machine is driving the CERN complex.

We share our sorrow with his family and we convey our deepest condolences and sympathy to Brenda, Susan, Keith, Ian and their families.

His colleagues and friends

MATTHIEU CATTIN (1982 - 2015)

We deeply regret to announce the death of Matthieu Cattin on 13 April 2015.

Matthieu Cattin, who was born on 22 February 1982, worked in the BE Department and had been at CERN since 1 October 2005.

The Director-General has sent a message of condolence to his family on behalf of the CERN personnel.

Social Affairs
Human Resources Department

JOSÉ MARIANO GAGO (1948 - 2015)

Many people in the particle-physics community will be deeply saddened to learn that José Mariano Gago passed away on 17 April.

José Mariano Gago entered particle physics as a young researcher at CERN in the 1970s and went on to become an ardent supporter of the Organization and all that it stands for. He was instrumental in bringing his country, Portugal, to become a Member State of CERN in 1986. He continued to be deeply involved with CERN, twice as a Portuguese Delegate to CERN Council (1985-1990, 2003-2009) and also as the Portuguese Minister of Science (1995-2011). His speech as Minister at the LHC Inauguration Ceremony is one that many people still remember.

In founding the *Laboratório de Instrumentação e Física Experimental de Partículas* in Portugal, José Mariano also set up the basis for the many important contributions that Portuguese physicists and engineers continue to make to CERN and in particular to the exciting adventure of the LHC.

With his passing, the CERN community has lost a dear friend, and a passionate advocate for the importance of science as a bridge for peace in the modern world.

We send our deepest condolences to his wife, family and friends.

His colleagues and friends

A full obituary will appear in a future issue of CERN Courier.

See also the CERN Courier article where José Mariano Gago talks of his thoughts for CERN's future on the occasion of the 60th anniversary: **http://cern.ch/go/J69l**

HERVÉ MILCENT (1965 - 2015)

We deeply regret to announce the death of Hervé Milcent on 12 April 2015.

Hervé Milcent, who was born on 14 November 1965, worked in the EN Department and had been at CERN since 12 September 1988.

The Director-General has sent a message of condolence to his family on behalf of the CERN personnel.

Social Affairs
Human Resources Department

Official news

TAXATION IN FRANCE | MEMORANDUM CONCERNING THE ANNUAL INTERNAL TAXATION CERTIFICATE AND THE DECLARATION OF INCOME FOR 2014

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 national taxation on salaries and emoluments paid by CERN.

For any other income, the Organization would like to remind members of the personnel that they must comply with the national legislation applicable to them (cf. Article S V 2.02 of the Staff Rules).

I - Annual internal taxation certificate for 2014

The annual certificate of internal taxation for 2014, issued by the Finance, Procurement and Knowledge Transfer Department, has been available since 20 February 2015. **It is intended exclusively for the tax authorities.**

1. If you are currently a member of the CERN personnel, you will have received an e-mail containing a link to your annual certificate, which you can print out if necessary.
2. 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 at **http://cern.ch/go/7dWG**

If you are having any difficulties obtaining your annual certificate, send an e-mail explaining the problem to **service-desk@cern.ch**.

II - 2014 income tax declaration form in France

The 2014 income tax declaration form must be completed following the general indications available at **http://cern.ch/go/srP8**.

IF YOU HAVE ANY SPECIFIC QUESTIONS, PLEASE CONTACT YOUR LOCAL SERVICE DES IMPÔTS DES PARTICULIERS (SIP, PRIVATE CITIZENS' 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: 73903

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

Exchange rate for 2014

For 2014, the average annual exchange rate is **EUR 0.82 for CHF 1**.

Human Resources Department

COMPOSITION OF THE JOINT ADVISORY DISCIPLINARY BOARD (JADB) - 2015 EXERCISE

Appointed by the Director-General

Member	John PYM / DG
1st deputy	Gianluigi ARDUINI / BE
2nd deputy	Dante GREGORIO / FP

Appointed by the Staff Association

Member	Sigrid KNOOPS / TE
1st deputy	Olivier BOETCHER / EN
2nd deputy	Nick ZIOGAS / FP

Mr Pym and Ms Knoops have drawn up the following list of staff members from among whom the Chairperson of the Board may be chosen when required:

Simon BAIRD / EN	Stephan PETIT / GS
Ronny BILLEN / BE	Ignacio REGUERO / IT
Sylvain CHAPELAND / PH	Laurent TAVIAN / TE
Doris FORKEL-WIRTH / HSE	Pierre VANDE VYVRE / PH
Alberto PACE / IT	Andreas WAGNER / IT

The composition of CERN official bodies for 2015 is available at **http://cern.ch/go/9j7v**

HR Department
HR/DHO

COMPOSITION OF THE JOINT ADVISORY APPEALS BOARD (JAAB) - 2015 EXERCISE

Appointed by the Director-General

Member	Nicole POLIVKA / GS
1st deputy	Mats MØLLER / IT
2nd deputy	Ramon FOLCH / EN

Appointed by the Staff Association

Member	Flavio COSTA / IT
1st deputy	Almudena SOLERO / DG
2nd deputy	Eric VEYRUNES / BE

Ms Polivka and Mr Costa have drawn up the following list of staff members from among whom the Chairperson of the Board may be chosen when required:

Sandrine BAUDAT / FP	Pierre CHARRUE / BE
François BRIARD / DG	Joel CLOSIER / PH
François BUTIN / EN	Django MANGLUNKI / BE
Etienne CARLIER / TE	Pedro MARTEL / GS
Philippe CHARPENTIER / PH	Malika MEDDAHI / TE

Mediators [see Administrative Circular N° 6 (Rev. 1) entitled "Review procedure"] will also be selected from this list of ten staff members.

The composition of CERN official bodies for 2015 is available at **http://cern.ch/go/9j7v**

HR Department
HR/DHO

ANNUAL REPORT 2014 FROM THE HUMAN RESOURCES DEPARTMENT

The 2014 Annual Report from the Human Resources department concerning the settlement of disputes and discipline under Chapter VI of the Staff Rules and Regulations.

1) Introduction

The 2014 Annual Report, under Chapter VI ("Settlement of Disputes and Discipline") of the Staff Rules and Regulations, serves to report:

- cases of submission of requests for review,
- internal appeals,
- complaints before the Administrative Tribunal of the International Labour Organization (ILOAT); and
- cases in which disciplinary action was taken.

2) Requests for Review and Internal Appeals

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

If permitted by the Staff Rules and Regulations, a decision may be challenged internally within the Organization:

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

3) Complaints before the ILOAT

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

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

Requests for review
From 1 January 2014 to 31 December 2014, there were two requests for a review of administrative decisions taken by the Director-General. The staff members concerned challenged both the rating of their performance as "meritorious" and the related decisions of periodic advancement, i.e. the granting of one periodic step. The administrative decisions were maintained following consultation with the department concerned.

Internal appeals
From 1 January 2014 to 31 December 2014, one internal appeal was submitted against two administrative decisions: the decision not to hold proceedings for the classification of an illness as occupational on account of the staff member's request being time-barred; and the related refusal to open proceedings before the Joint Advisory Rehabilitation and Disability Board (JARDB) due to non-fulfillment of the conditions.

Having consulted the JAAB, the Director-General decided to open proceedings concerning the classification of the illness, but maintained his decision not to launch proceedings before the JARDB.

Discussions held between the HR Department and the person concerned, involving the Staff Association, have succeeded in reaching an amicable settlement.

Complaints before the ILOAT
From 1 January 2014 to 31 December 2014, four requests were filed before the ILOAT:

- one concerned the Organization's decision to dismiss a staff member after the probation period;
- one concerned the Organization's decisions not to hold a classification of illness procedure and the decision not to hold proceedings before the JARDB. The complainant subsequently requested suspension of his complaint pending the outcome of the internal proceedings; and
- two concerned the CERN Pension Fund's decisions not to recognise the partner of the complainant as 'spouse' within the meaning of the Pension Fund Rules.

4) Disciplinary Action

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

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

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

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

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

From 1 January 2014 to 31 December 2014, there were 13 cases of misconduct:

- a series of cases of, inter alia, conflicts of interest and fraudulent activities in violation of the CERN's Procurement Rules. The cases were investigated and reported by the Internal Audit Services and resulted in disciplinary action against nine staff members. The Director-General decided to agree with the respective recommendations of the JADB and issued sanctions ranging from a reprimand for the milder offences to dismissal in the most serious cases;
- a case of forgery of reference letters resulted in a dismissal without notice and without consultation of the JADB:
- a case of private use of a CERN car resulted in a reprimand;
- a case of transmission of an e-mail containing xenophobic content to several colleagues within CERN resulted in a warning; and
- a case of driving on site contrary to the CERN Road Traffic Rules resulted in a warning.

Moreover, the Internal Audit Service conducted an investigation into a case concerning, inter alia, forgery of official documents and non-declaration to the Organization of external financial benefits received. Following a review of the Internal Audit Service report by the Director-General and the staff member, the staff member's contract was terminated.

HR Department

Take note

POST-CAMPAIGN INFORMATION FROM THE INFIRMARY

The Medical Service's "TAKE YOUR BLOOD PRESSURE TO HEART" campaign, which ran from 24 to 27 March 2015, was a resounding success.

In total, **274 people** visited the nurses at their pop-up clinics (in Building 40, Restaurants 2 and 3 and the Main Building) or at the Infirmary (Building 57).

Each of them had their blood pressure measured and received information and advice about high blood pressure, its contributory factors and ways to control it. They were also offered various leaflets about this public health issue.

We would like to draw attention to the fact that **21%** of the participants were found to have abnormally high blood-pressure and, crucially, **72% of these had been unaware of the problem.**

Another point to note is that a significant proportion **(16%)** of the younger people tested (aged 18 to 30) had abnormal results.

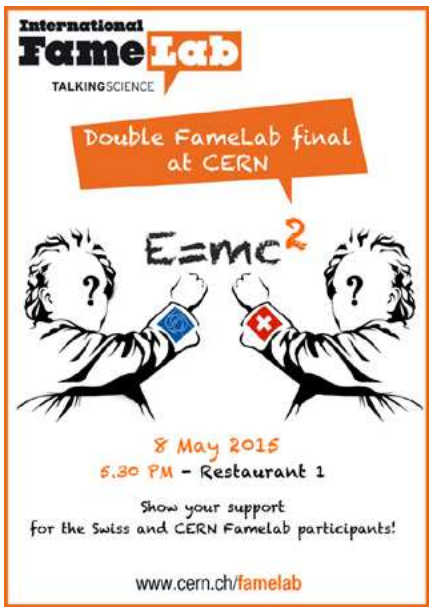
The results of this campaign demonstrate the importance of early screening, but also the high level of interest among the personnel, many of whom dropped in at the nurses' stands.

Don't forget that blood-pressure tests are offered throughout the year at the Infirmary for anyone working on the CERN site in any capacity.

Another high-blood-pressure screening campaign will be held in the autumn.

CERN Medical Service

FAMELAB FINAL | SHOW YOUR SUPPORT! | 8 MAY | RESTAURANT 1



CERN RELAY RACE | 21 MAY | TAKE PART!

Training

SAFETY TRAINING: PLACES AVAILABLE IN MAY AND JUNE 2015

There are places available in the forthcoming Safety courses. For updates and registrations, please refer to the Safety Training Catalogue at http://cern.ch/go/GxG8.

Safety Training, HSE Unit

Seminars

MONDAY MAY 04, 2015

08:30 **Monthly induction: HR INDUCTION PROGRAMME - 1st Part**
Filtration Plant

TUESDAY MAY 05, 2015

11:00 **Seminar: on ALICE results**
Main Auditorium

WEDNESDAY MAY 06, 2015

14:30 **ISOLDE Seminar: Non-observable nature of the nuclear shell structure: meaning, illustrations and consequences**

THURSDAY MAY 07, 2015

11:00 **International Geneva: WMO Secretary-General introduces WMO to the CERN internal audience** Main Auditorium

FRIDAY MAY 08, 2015

11:00 **Detector Seminar: CERN-GIF++: A new Irradiation Facility to Test Large-Area Detectors for the HL-LHC Program** Salle Anderson

TUESDAY MAY 12, 2015

11:00 **EP Seminar: Measurement of the charged-pion polarisability at COMPASS** Main Auditorium

16:00 **ISOLDE Seminar: Super-allowed beta decay to study the electro-weak interaction**