



Nos 35 & 36 – 24 & 31 August 2009

## The complexity behind the date



Each week the nitty-gritty details are discussed at the LHC Machine Committee (LMC) meeting, where the four experiments and every technical group from the accelerator sector are represented. "Nearly

every week the schedule changes and, although the end-date nearly always stays the same, inside it looks completely different," explains Steve Myers, Director for Accelerators, who chairs the LMC meeting.

Due to the huge amount of inter-dependency between different areas of work in the LHC, even a small change can necessitate a complete overhaul of the schedule. For example, something as simple as cleaning a water cooling tower - required regularly by Swiss law to prevent Legionella - has a

**For the waiting world, and indeed for most of us here at CERN, 'the LHC schedule' simply means the date that the LHC will restart - and we only take notice when that end-date changes. But in fact the schedule is a constantly evolving intricate document coordinating all the repairs, consolidation and commissioning in every part of the machine. So, what actually goes on behind the scenes in timing and planning all the work on one of the most complex scientific instruments ever built?**

huge impact on the planning: "When you clean the water tanks it means we don't have water-cooling for the compressors, that means we can't run the cryogenics, so the temperature starts to go up," explains Myers. "If a sector gets above 100 K, then the expansion effects of heating can cause problems, and we could have to replace parts."

(Continued on page 2)

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### A word from the DG

### 20 years ago: first collisions (at LEP)

It's been 20 years since the first electron positron collision at LEP, and I have to confess to a little self-indulgence in my message this week. Back then I was a member of the OPAL collaboration, the first to see collisions at LEP just before midnight on 13 August 1989 and almost exactly one month after the first circulating beam. It was a historic moment, and the atmosphere in the OPAL control room, 100 metres underground, was one of anticipation and excitement. We reported back to the LEP control room, champagne duly arrived, and over the next few hours, all the experiments were recording data. The pilot run was as smooth as it could be, and within weeks we were announcing new physics.

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## A word from the DG

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### 20 years ago: first collisions (at LEP)

**It's interesting to contrast the start-up of LEP with that of the LHC. With the benefit of hindsight, LEP seems to have got going without a hitch, and indeed it was a smooth start. We circulated beam on 14 July, much to the joy of one of our host states, and it was just a month before the magic words 'Colliding stable beams' could be read on the monitors around the lab.**

**The reality, of course, is somewhat more complex. LEP was a much simpler machine than the LHC, especially at the beginning before the superconducting accelerating cavities were introduced. And there was a great deal of work behind that image of serenity. Back then, of course, the world was less interested in accelerator start-ups than it is today.**

**Beam diagnostics have also come a long way since 1989, and what was taking the LEP operations team days to do was being accomplished in just hours last September at the LHC. To get circulating beams in both directions on day one was a fantastic achievement for the machine operators, and to capture them and achieve stable circulating beams in just a few days was unprecedented.**

**Of course, what happened next is well known, and we're still recovering from it. We are emerging stronger, and the LHC is a better machine than it was a year ago. Switching on a new accelerator is always a difficult task, and sometimes lessons are learned the hard way. That's certainly true for the LHC, but one thing that last year's short run has told us is that when we get the LHC running this November, we can expect it to run beautifully.**

**Rolf Heuer**

**Watch the video at**

[http://cdsweb.cern.ch/  
record/1201453](http://cdsweb.cern.ch/record/1201453)

## The complexity behind the date

(Continued from page 1)

A bigger task, such as warming a sector, causes even more of a headache in planning, and must at times seem like trying to solve the world's most complex Rubik's Cube. For instance, despite having one of the world's largest liquid helium storage facilities, CERN's tanks hold only just over half of the total helium in the LHC – the rest must remain in the machine itself. "To warm up a sector, you have to shift all the helium to another sector. And if that one already has helium, then you need to shift that too. You end up playing musical chairs with helium!"

The initial restart schedule was decided upon during the Chamonix meeting in February this year. "In fact we've done much more work than we planned in Chamonix," says Myers. Originally the schedule focused mainly on the repairs in Sector 3-4 - repairing, reinstalling and interconnecting the magnets - but since then a lot of extra consolidation work has been done all around the ring: most importantly, the new pressure release valves, and a whole new system for 'symmetric quench' protection. "All of these will make the machine much safer to operate," Myers adds.

"At Chamonix we agreed on a success-orientated schedule, but we knew from last year that in all likelihood there would be unexpected things that could delay us," says Myers. "Even with all the additional work

that we added, and we added a lot, we were still on schedule up to the beginning of May," he continues. "We managed to do that by putting a huge amount of more people on the critical operations and by redoing the schedule every week."

While most of the extra work has not postponed the schedule, two problems have meant it has been necessary to warm sectors, causing unavoidable delay. "At the end of May we found a problem with the copper stabilized busbars, and there was no way round that, and we had to warm Sector 4-5". At present, all the eight sectors have undergone resistance measurements to check for any imperfection. These crucial measurements will also determine the energy that it is safe to run at (see press release at <http://press.web.cern.ch/press/PressReleases/Releases2009/PR13.09E.html>). More recently, two leaks were found in the insulating vacuum that required partial warming up of two other sectors.

Even with the repairs completed, planning the restart schedule will continue to be a very complex task, especially when you consider that a powering test in just one of the LHC's eight sectors actually prevents work on half of the entire ring. "Obviously we want to restart as early as possible," says Myers. "However, we can't afford to take any shortcuts with a machine like this, or the price will be very high."

# 'OK, I've finished my job now'

**A**p pointed project leader in 1980, by the new director-general, Herwig Schopper, Picasso was well known in particular for his work on the g-2

experiments at CERN. These had involved a storage ring 40 m in circumference, but LEP was something on an entirely different scale and this was precisely what made Picasso take on the challenge. "Everything that is new is attractive," he says, an outlook that has guided his career from cosmic-ray studies with balloons, through bubble chambers and g-2.

His first task was to set up a management board with the best people available: Gérard Bachy on installation; Roy Billinge for the PS; Franco Bonaudi on experimental halls; Giorgio Brianti as head of accelerators; Bas de Raad for the SPS; Andrew Hutton on machine parameters; Henri Laporte for civil engineering; Günther Plass as deputy leader; Hans Peter Reinhard on vacuum; Lorenzo Resegotti for the magnets; and Wolfgang Schnell for the RF. Schopper joined in regularly, mainly only to observe. "I was like the conductor of an orchestra",

**On 13 August 1989, the OPAL experiment saw the first Z particle at the Large Electron-Positron collider. By 20 September, the machine was ready for serious physics. It was a period of enormous satisfaction for the teams that had worked together to bring the project to fruition and for the project leader Emilio Picasso.**

Picasso recalls. "It was a good team, we all knew each other well and respected each other".

Part of the tunnel was ready for installation by 1987, when Jacques Chirac, then French prime minister, visited CERN with Swiss president Pierre Aubert. Asked to arrange an event for the visitors, Picasso proposed that they position the first magnet. Not surprisingly, Chirac asked when the machine would be ready. At the time, there was no definite date, so Picasso decided there and then, answering "14 July 1989 - the 200th anniversary of the storming of the Bastille." While Chirac responded "very good", Picasso's colleagues were less impressed: "Is Emilio crazy? How will we be ready?" By July 1988, however, the first sector was completely installed and a test with beam by the LEP operations team led by Steve Myers proved that the machine was indeed well designed. A year later, Picasso's prediction

was confirmed, when the first beam went round the ring at 11 pm on 14 July 1989. A month later there was great jubilation as the first collisions occurred. "For a long 10 minutes, Steve Myers and I didn't know whether the beams were colliding or not", Picasso recalls, "and then Aldo Michelini, the OPAL spokesman, called: 'We have the first Z0! It was a beautiful moment. Steve had done an excellent job – and I thought, OK, I've finished my job now.'



## Did you know?

Experiments at LEP

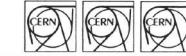
The LEP accelerator had four interaction points. The detectors were named: ALEPH, DELPHI, L3 and OPAL. The first collaboration to register the collisions was OPAL, followed by ALEPH and L3. The DELPHI collaboration saw the first collisions one day later because of a mis-adjusted magnet in the accelerator that prevented the particles from colliding at that interaction point.



## bulletin

WEEK MONDAY 21 AUGUST

n° 34/89



SEMAINE DU LUNDI 21 AOUT

### Announcement from the Director-General

I am pleased to announce to you that the LEP machine is operating at 45.5 GeV and that Z<sup>0</sup> particles have been observed.

This is a great achievement of which we can all be justly proud, especially the many of you who have made it all possible.

Carlo Rubbia  
Director-General  
14 August 1989

### Communication du Directeur général

Je suis heureux de vous annoncer que la machine LEP fonctionne à 45,5 GeV et que des particules Z<sup>0</sup> y ont été observées.

C'est un grand succès dont nous pouvons tous être justement fiers, plus particulièrement les nombreuses personnes parmi vous qui l'ont rendu possible.

Carlo Rubbia  
Directeur général  
le 14 août 1989

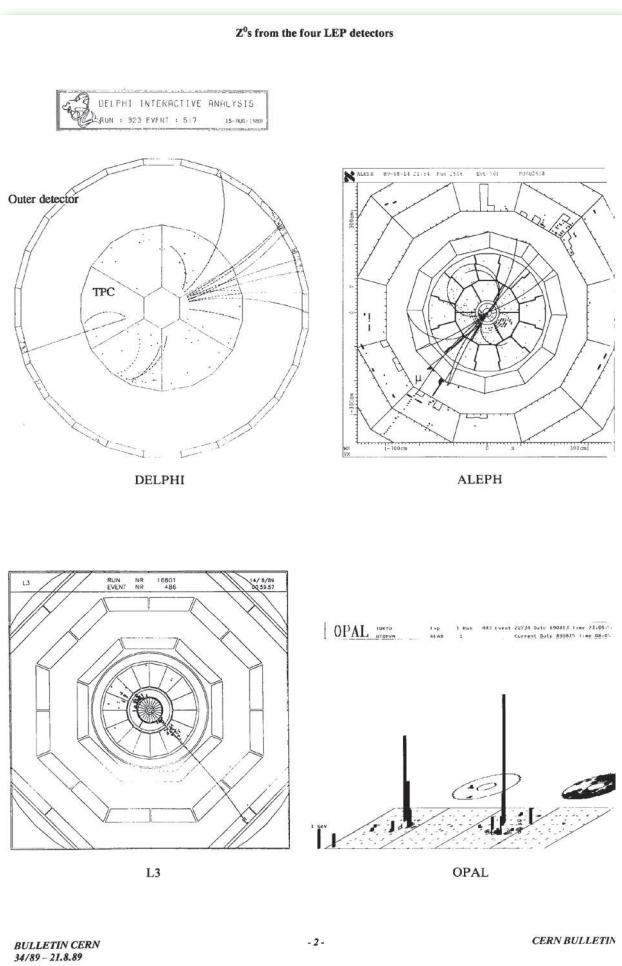
### Z<sup>0</sup> marks the spot

late on the night of Sunday 13 August, just one month after first beam circulated and a mere 16 minutes after the start of the pilot run, LEP's first Z<sup>0</sup> was recorded. By midnight a total of three had been observed, and on Monday there followed 13 more – a remarkable total of 16 between the four detectors ALEPH, DELPHI, OPAL and L3 in the first 24 hours of operation.

### Le règne du Z<sup>0</sup>

Tard dans la nuit du dimanche 13 août, un mois exactement après les premières révolutions des faisceaux dans l'anneau et 16 minutes seulement après le début de la période d'essai, le premier Z<sup>0</sup> du LEP a été enregistré. A minuit leur nombre s'élevait à trois et lundi 13 autres ont suivi, soit un total remarquable de 16 Z<sup>0</sup> pour l'ensemble des quatre détecteurs ALEPH, DELPHI, OPAL et L3 au cours des 24 premières heures d'exploitation.

The Bulletin issue with the announcement of first collisions at LEP. The original issue is available from the CERN Library.



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CERN BULLETIN

# TOTEM and LHCf: refinements for the restart

## TOTEM

The past 10 months at TOTEM have been amongst the busiest since the project's inception. The delay in the LHC startup has certainly had a silver lining for the TOTEM collaboration - not only has it given them a much-needed opportunity to test and install many crucial new detector parts, but also the lower energy range that the LHC will initially operate at in 2009 is perfect for TOTEM physics. "In fact, the LHC almost seems to be following the schedule of TOTEM!" jokes Karsten Eggert, TOTEM spokesperson.

TOTEM is made up of three different detectors spread out over 440 m. The two charged particle trackers, known as T1 and T2, are situated in the CMS cavern on either side of the interaction point. Since last September the remaining three quarters of the T2 detector has now been completely tested and installed. The team is now commissioning all the services to the detector, such as cooling, gas and power supplies. In-situ cosmic ray tests are not very useful for TOTEM, so instead much more emphasis is put on thoroughly testing each individual detector with the test beam facilities from the SPS and with cosmics before installation. The T1 detector is currently being tested and will be installed later in the year, although

**Following the previous two issues, the Bulletin continues its series to find out what the six LHC experiments have been up to since last September, and how they are preparing for the restart. We covered CMS, ATLAS, LHCb and ALICE in previous issues. In this issue we will round up the past 10 months of activity at TOTEM and LHCf.**

as the T1 detector is actually situated inside the CMS endcap the installation has to be carefully planned and coordinated by both collaborations.

The third part of TOTEM, the Roman Pots, has also progressed greatly since last September. The pots are positioned at two distances from the interaction point, 147 m and 220 m. "Now all the Roman Pot Detectors at 220 m have been installed, and we will probably even install a few at 147 m," explained Ernst Radermacher, TOTEM technical coordinator. All the housings for the Roman Pot detectors were completed back in 2007, but for the first beam only 2 of the 24 housings actually had the silicon detectors in place. "The silicon detectors are positioned very close to the beam, just 4 cm at maximum when the pots are in retracted position. Because of the radiation risk in the early stages of operation we didn't want to install many of the silicon detectors, but after the short LHC run in 2008 we're much more confident that the detectors won't be damaged, so we are installing most of the silicon detectors," adds Radermacher.

The silicon detectors actually sit inside the beam pipe, and can move in and out to within one mm of the beam. Commissioning the Roman Pots therefore involves very careful alignment, and calibration of the motorized system that moves the detectors into position.

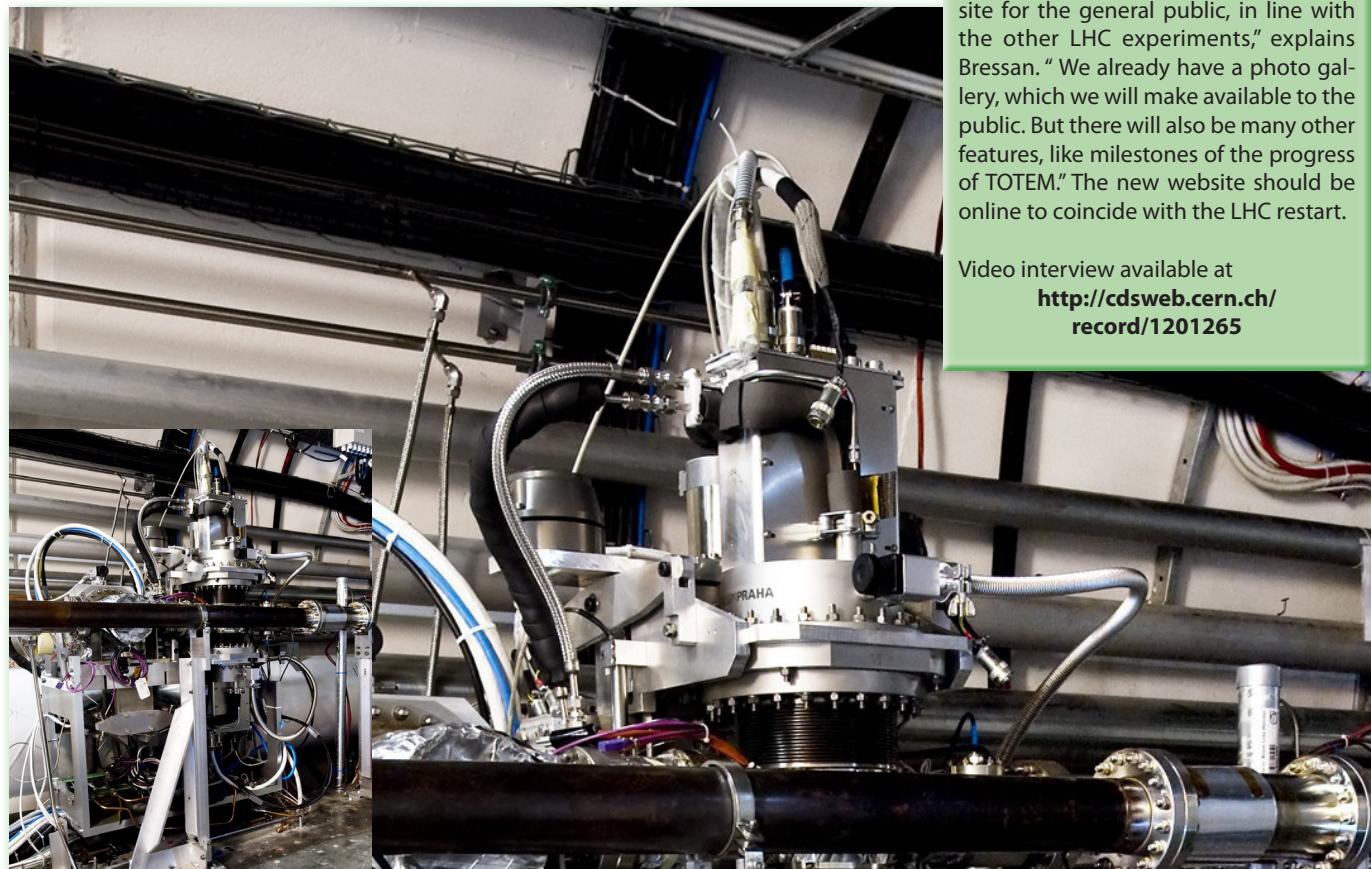
The recently announced news that the LHC's restart energy will be 3.5 TeV is also good for the experiment to obtain measurements over a range of different energies. "Furthermore, the basic TOTEM physics program can be explored at the relatively low luminosities during the LHC start," says Karsten Eggert. "We plan to have everything installed and ready for the restart. Then TOTEM will be able to do useful physics for the entire first year of LHC operation," he concludes.

## Outreach

As well as preparing for the first physics results, the TOTEM Outreach Coordinators also want to make more resources available for the general public. "It all started with the Open Days last year. We produced a variety of new resources, like posters, and had detector units on display," explains Beatrice Bressan, one of TOTEM's two outreach coordinators together with Virginia Greco. Since then the collaboration has been making a real effort in outreach activities.

"We are currently working on a new website for the general public, in line with the other LHC experiments," explains Bressan. "We already have a photo gallery, which we will make available to the public. But there will also be many other features, like milestones of the progress of TOTEM." The new website should be online to coincide with the LHC restart.

Video interview available at  
[http://cdsweb.cern.ch/  
record/1201265](http://cdsweb.cern.ch/record/1201265)



# TOTEM and LHCf: refinements for the restart

## LHCf

LHCf is made up of two independent detectors, located in the tunnel at 140 m to either side of the ATLAS collision point. Both detectors were completed and ready to take data last year. In fact while the LHC had circulating beams during the short run last September, LHCf successfully detected interactions between the protons and residual molecules in the beam pipe vacuum (known as beam-gas background events), thus proving the detectors are fully functioning.

Since then little work has been needed on the detectors themselves. During the shutdown period LHCf has been mainly working to optimize the data acquisition system (DAQ). In preparation for the restart, they have also been running simulations at different beam energies.

## Outreach

The collaboration has recently had a new brochure published: <http://cdsweb.cern.ch/record/1183425/files/CERN-Brochure-2009-006-Eng.pdf>. The brochure is also available in Italian and Japanese, as Italian and Japanese researchers make up the majority of the collaboration.



Detectors of the LHCf experiment.

## The latest from the LHC

The LHC will run with an energy of **3.5 TeV per beam** when it starts up in November this year. The 80 K resistance measurements on the copper stabilizer of the superconducting busbars were completed in the remaining sectors, **Sectors 8-1 and 2-3**. No abnormally high resistance measurements were found, indicating that no further repairs are necessary for safe running.

Detailed analysis of the resistance data from the entire ring determined a safe initial energy of 3.5 TeV per beam. Once a significant data sample has been collected and the operations team has gained experience in running the machine, the energy will be taken towards 5 TeV per beam. More information is available in the recent press release <http://press.web.cern.ch/press/PressReleases/Releases2009/PR13.09E.html>.

Following the helium leaks into the insulation vacuum in **Sectors 2-3 and 8-1** (see previous update) the cause of the leak in Sector 2-3 has been confirmed as the flexible hose. This has now been replaced by a solid tube, with an expansion loop to mitigate the effect of contraction due to cooling. In preparation for re-cooling the sector, both the insulation and beam vacuum are currently being tested. The final subsector in 8-1 is also now warm, and work will start to remove the flexible hose once the temperature has stabilized.

The Vacuum group have also leak-tested the final subsector in **Sector 6-7**, completing vacuum validation for the entire ring outside Sectors 2-3 and 8-1. Work is also currently ongoing to install the 'pressure release springs' in the sectors without new pressure release ports (see previous update).

A short-circuit to ground occurred in the dipoles circuit of Sector 6-7 on 20 August. The cooling of the sector had to be stopped. The repairs will be carried out in the coming week.

With the present planning Sector 6-7 was due to be ready 2 weeks before the last Sector 8-1, so there will be minimal or no effect on the overall date for first injections.

# Student Club

For many young people, their time at CERN can be filled not only with exciting opportunities but also

anxious uncertainty. Whether your stay is for just a few months or a few years, it can be quite daunting to arrive at a new place and try to find your way around – and let's face it, CERN is not an easy place to find your way around! Much of their time here is spent on doing analysis or technical work on the experiments or the LHC; but even at the end of the day or on weekends there are few social outlets at CERN geared just towards young people.

Fortunately, some young people have decided to come together and make their time here not just productive, but fun! Doctoral student, Omer Khalid, Marie Curie fellow, Yi Ling Hwong, and CERN fellow, David Garcia Quintas are the founders of the new CERN Student Club – a slight misnomer as anyone can join, but the idea is to engage young people. The club is a place to air creative ideas, from publishing poetry to planning group outings. A unique aspect to this group is that its decision making process is consensus-driven and everyone can suggest or organize something.

"When I first came to CERN as a technical student there was just a group photo, no social events planned for us or even a special website designed for people of the same category, as is done for the summer students," said Omer. "And when I returned to CERN as a doctoral student I thought to send out an email to a list of students and fellows and see if anyone would be interested in doing something fun and creative." It was this random email that started it all, and when Yi Ling and David responded the ideas started flowing. One of the things they did was create a Facebook page linked to their website: <http://cern.ch/student-club>. There are already around 1,400 members online, with organized monthly drinks at local pubs and information about some of the other CERN clubs' activities, such as the CERN Cine Club's upcoming films.

**They know where the work is, but where's all the fun? CERN's new student club provides a much-needed social outlet for all young people coming to CERN for any length of time.**

In this age of social networking websites, it seems strange to want to publish and print a newsletter, but the idea came about as a way to let others know the club existed, with more up-to-date information online. This newsletter offers a space for literary expression, including anything from editorial articles, physics-related comics, travel stories, pictures of the month and even local restaurant reviews. Other official CERN clubs' activities are also featured. Ling, one of the editors for the newsletter, said, "It can be a bit hard finding people to write for the newsletter. Perhaps they feel they will be judged, but it is just for fun." The HR department at CERN has offered to help the club out by printing 400 copies of each issue of the newsletter. A call for articles was also recently put out amongst the summer students.

"We have also recently organized a trip in July to Chamonix with around 90 participants," said David. "We want to get people

involved and it takes someone to push to make definite plans, but once we have them more people get interested. It provides an opportunity for those that maybe do not have access to a car or do not know what is around in the local area to visit." Omer added, "During the trip people could break up into smaller groups depending on their interest – some went hiking, others saw the glaciers or visited Mt. Blanc. The most rewarding thing about the trip was seeing a girl next to me on the bus call her mum and tell her what a great time she had."

For more information about future activities of the Club, please see their website, <http://cern.ch/student-club>. There is also practical information about what to do when you first arrive at CERN, where to find accommodation, and how to get around Geneva. And if you have any ideas for submissions to the newsletter please email [student-club@cern.ch](mailto:student-club@cern.ch).



*Some of the participants on the trip to Chamonix enjoy the breath-taking scenery.*

# Good-bye Summer Students 2009!

**D**uring the summer months between June and August, your normal lunchtime routine is inevitably disrupted by the small stampede of students that leaves the Main Auditorium just around midday and starts queuing in Restaurant 1. When this happens, you can't help but notice that the CERN Summer Students have arrived!

With its rich lecture series, inspirational visits and actual work experience, the Summer Student programme provides a real chance to get acquainted with a career in particle physics, engineering and computation. The programme includes a morning lecture series that covers a large variety of topics, from particle physics to engineering, information technology and statistics, and during the afternoon, each student works as a member of one of the experimental teams on a specific supervised project. Discussion sessions complement the morning lectures and each student has the unique chance to descend 100 m underground for a visit to one of the experiments located around the LHC ring. At the end of their stay, students submit brief reports on their assigned projects, and a selected few make short presentations in the Main Auditorium,

**In its 47th edition, the CERN Summer Student programme has welcomed almost 200 young students from around the world. As it proves to do each year, the programme has provided a unique experience for all participants.**

describing to their colleagues the work that they have been doing at CERN.

Needless to say, this is a very important experience for those who are chosen to participate. The majority of the students are entering their final year of undergraduate education and the experience provides them with an excellent insight into what they will pursue after obtaining their degree. "It's a fantastic way to actually get involved with ongoing scientific research," explains Will Barter, who studies at Cambridge University, "It is very useful for me and for the other students because we are at the point when we need to work out where we are going with our careers and whether we really do want to pursue science."

The prospect of learning from and working alongside scientists conducting the world-leading research at CERN attracts students from both Member and many non-Member States. "This year, a total of 174 students have been enrolled from both member States and non-Member States with Summer Student contracts," says Ingrid

Schmid, Coordinator of the programme. "The students attending from non-Member states are participating with the help of John Ellis, the Coordinator for non-Member States. Also there are many more Member State and non-Member State students who have come to follow the lectures but are supported financially by their respective universities or other funding agencies." John Ellis reckons that, in addition to students from the 20 Member States, some 40 non-Member States are represented this year. All will take back with them unforgettable memories of a global partnership in science.

Along with the official programme organized by the HR Department, Summers (as they are commonly called) never fail to set up an after-work programme of social activities, which includes outings and parties. This year they have also formed a Facebook group to aid with organization and spreading news and they have even designed their own souvenir T-shirt. All information about the programme, its past editions and a link to the application form for future editions can be found here:

[https://ert.cern.ch/browse\\_www/wd\\_pds?p\\_web\\_site\\_id=1&p\\_web\\_page\\_id=5836&p\\_no\\_apply=&p\\_show=N](https://ert.cern.ch/browse_www/wd_pds?p_web_site_id=1&p_web_page_id=5836&p_no_apply=&p_show=N)



CERN Summer Students 2009 in the Microcosm garden.

It's true that many people come to CERN and never leave. But those who do escape CERN's gravitational pull often go on to a whole variety of jobs all over the world. To find out more about 'life after CERN', the Bulletin is starting a new series of interviews with CERN alumni. This issue we kick off with a very high-flying former CERN physicist – Christer Fuglesang. He is scheduled to fly on the STS-128 NASA mission onboard the Discovery space shuttle.

# CERN's astroparticle prepares for launch

No, as you might have guessed, this is not a real neutralino, but a soft toy version created by Julie Peasley, the particle zookeeper. It will be taken to the International Space Station (ISS) for a 13-day flight by Christer Fuglesang, a former CERN physicist-turned-astronaut.

Fuglesang started at CERN in 1984 on the UA5 experiment. He later worked on the CPLEAR experiment and ATLAS before being selected for the European Space Agency astronaut corps in 1992. As a memento of his time here, Fuglesang wanted to take something representing CERN up into space on his next mission. But rather than a CERN baseball cap or t-shirt, he will take a specially made neutralino, branded with both the CERN and ESA logos. The neutralino was chosen because it links together astrophysics and particle physics.

Fuglesang's next mission to the ISS, is scheduled for launch in late August. This is Fuglesang's second space flight. Originally from Stockholm, he has the honour of being the first Swedish national in space, with his first flight in 2006. The Bulletin managed to get a few moments out of Fuglesang's busy training schedule to find out more about his life as a particle physicist and an astronaut.

**CERN will be sending a neutralino into orbit. But how do you get a theoretical, as yet undiscovered particle into space? Well the answer is easy – ask an astronaut to take it with him!**

## Why did you want to take something from CERN into space?

I've always felt close to CERN and still love particle physics, although I don't get to work much on it anymore. I also think there is a nice connection between ESA and CERN, two successful European scientific organisations, both of which I have been lucky enough to work for. I loved my years at CERN, it was a very stimulating environment, with scientifically minded people all around you, always ready for interesting discussions.

## Did your experience at CERN improve your chances to be selected at ESA?

Astronauts come from many different areas: military pilots, engineers, medical doctors, and researchers in various fields of natural sciences, including physics. I believe my CERN experience gave me an edge because I worked in large collaborations, it is very international, I worked both hands-on with experiment hardware and computer software.

## What are the best and worst things about being an astronaut?

The best is the variety in things you get to

do: fly airplanes, work under water in the pool, simulations in space craft simulators and you get to do a lot of physical training. Best of all, of course, is the space flight itself, which is a wonderful adventure on top of exiting work. The worst thing is that you have little influence on your situation and what you do. You do what you're told. There is not much creativity in the job.

## Does your experience in experimental particle physics help being an astronaut?

Not specifically. But in general terms: experiments at CERN are large and technically complex with many people involved, which is also the case with space vehicles. I have used my experience in particle physics to work with radiation caused by cosmic rays affecting astronauts in space, which is a direct "heritage" of my work at CERN. But in fact, this is not something astronauts generally do.

## What is your next mission? What will come after that?

I will fly on the mission STS-128, planned for 25 August. It's a 13-day flight with the space shuttle Discovery to the International Space Station (ISS). We are bringing logistics to the ISS: food, clothing and other things to keep the permanent crew of six alive and well. We are also bringing new experiments onboard, and spare parts. Among other things we will exchange a large ammonia tank for cooling on the outside of ISS. That job will take almost two full space walks. After STS-128 I don't expect to fly more missions. Not that I wouldn't like to, but there are other European astronauts in line waiting and ESA have too few flight opportunities.

More information about the STS-128 mission is available from:

[http://www.nasa.gov/mission\\_pages/shuttle/main/index.html](http://www.nasa.gov/mission_pages/shuttle/main/index.html)

A video interview with Christer is available at:

<http://cdsweb.cern.ch/record/1200735>

The plush particle with the CERN logo hand-made by Julie Peasley (<http://www.particlezoo.net/>) and taken into space by Christer Fuglesang.



European Space Agency (ESA) astronaut Christer Fuglesang, STS-116 mission specialist, participates in the mission's second extravehicular activity (EVA) as construction resumes on the International Space Station. Image: NASA.



# A twenty-seven kilometre film

**W**hile working towards his film degree in 2008, Bram Conjaerts won an award at the International Documentary Festival for his documentary "Henri and the Islands", an anthropological documentary about the smallest village in Belgium. In an unlikely change of subject matter he decided to use the prize money to make a film about the LHC.

"With the money granted by the Flemish government, I wanted to create a documentary about something adventurous and something that I did not know about," explains Conjaerts. "I started doing research about the LHC and CERN and I came across the fantasy of black holes and all the conspiracies revolving around CERN."

However, the proposed documentary will not focus on black holes. Conjaerts plans on taking a tour of the countryside under which the LHC ring is laid, in order to gain perspectives from those who inhabit the local surroundings. "We will follow the path of the ring above ground. So we'll interview scientists, but also meet locals who have

**F**or the past two weeks, Bram Conjaerts, a Belgian filmmaker, has been touring the CERN sites and surrounding countryside conducting research for his new documentary. The film will follow the entire 27 Km length of the LHC ring, but unlike most documentaries about the LHC, it will take place mostly above ground!

formed their own opinions about what is going on at CERN," says Conjaerts. "We might also meet the priests of churches on the route, who have special ideas about

religion and science. And also the Chateau Voltaire is near the top of the ring, so there are ideas about incorporating philosophical perspectives of science and the history of the chateau."

Conjaerts, who is only beginning his career as a filmmaker, will be conducting research for three weeks before starting preliminary filming in September. The rest of the filming will be completed before December 2010.



Bram Conjaerts during his visit to CERN.

## Hardronic Festival



**T**he terrace of Restaurant 3 was once again transformed into the CERN version of Glastonbury on 25 July, for the 20th edition of the CERN Hardronic Festival. This mythical yearly music event gathered over 1000 CERNois, CERNoises and CERNoisettes (the little ones jumping on bouncy castles) for a fabulous hot day in a spirit of summer fairs and good music. Twelve of the best bands in the CERN Musicclub played an assortment of excellent music ranging from country to pop and rock, ending with metal mayhem by midnight, which spread havoc amongst a crowd of students who rocked and headbanged into the night.

Produced by the CERN Musicclub and Softball clubs as a community event, under the motto "Have fun together to work better together", the Hardronic has always been the most popular family entertainment day at CERN.

## Awards and Honours



**L**yn Evans, LHC project leader and Welsh physicist, received an Honorary Doctorate from the University of Glamorgan on July 14. The University of Glamorgan is the second largest University in Wales with over 22,000 students. Visit the University website at <http://www.glam.ac.uk> and read the full Press Release issued by the University at

<http://news.glam.ac.uk/news/en/2009/jul/14/honorary-doctorate-welsh-physicist/>

# Anne-Sylvie Catherin, Head of the Human Resources Department

**A**nne-Sylvie Catherin has been appointed Head of the Human Resources Department with effect from 1 August 2009.

Mrs Catherin is a lawyer specialized in International Administration and joined CERN in 1996 as legal advisor within the Office of the HR Department Head.

After having been promoted to the position of Group Leader responsible for social and statutory conditions in 2000, Mrs Catherin was appointed Deputy of the Head of the Human Resources Department and Group Leader responsible for Strategy, Management and Development from 2005 to date. Since 2005, she has also served as a member of CCP and TREF. In the execution of her mandate as Deputy HR Department Head, Mrs Catherin closely assisted the HR Department Head in the organization of the Department and in devising new HR policies and strategies. She played an instrumental role in the last five-yearly review and in the revision of the Staff Rules and Regulations.



## Environmentally friendly AND cheap?

**W**hat with the Medical Service's "Be active" health campaign, the emphasis placed on two-wheel

safety this spring and the sheds for two-wheeled vehicles that are springing up all over the CERN site, it's time to get on your bike... or one of the bikes available to the personnel, such as the DG/SCG's new electric cycle.

On Tuesday, 21 July, Building 57 welcomed CERN's first electric bicycle, and the message to the DG/SCG group is clear: "Use it rather than taking one of the CERN cars as often as you can".

With this new means of transport that's easy on the environment (no direct gas emissions) as well as on the wallet (the only cost being the electricity needed to charge the battery), the Safety Commission has embarked on a policy of sustainable development.

This environmentally clean vehicle fits in particularly well at CERN, which is not only a centre of excellence and innovation at the cutting edge of technology but also a laboratory with an extensive surface area and two sites that many members of the personnel need to travel between on a daily basis, not to mention the need for repeated journeys of varying length throughout the day.

**In the context of the initiative to make CERN a greener laboratory (see the Word from the DG in issue 20-21/2009 of the Bulletin), the Safety Commission's General Safety Group has acquired CERN's first electric bicycle.**

The new electric cycle has a maximum speed of 25 km/hour and a range of up to 50 km. Need we say more? No more excuses of the type "I don't want to arrive at my meeting all hot and bothered" or "I'm tired"!

And let's not forget the safety side in all this. The bike comes with a safety helmet and reflecting jacket, as well as puncture-resistant tyres. We are sure that this initiative will have a snowball effect and other groups will wish to follow suit.

Over to you!



Picture of a cyclist wearing personal protective equipment riding the new bike at CERN.

# Jan Nassalski

With great sadness we have learned of the sudden and unexpected passing of Jan Nassalski. Jan was a long-standing and faithful friend of CERN, a prominent figure in the deep inelastic scattering community and more recently a diligent CERN Council delegate. But first and foremost he was an ingenuous physicist and dedicated teacher.

Jan Nassalski graduated from the Physics Department of Warsaw University in 1966. He started his scientific career at the Warsaw University of Technology and in 1971 joined the Institute of Nuclear Research (now the Soltan Institute for Nuclear Studies), which he finally headed as Scientific Director.

He has collaborated with the Laboratory of High Energy Physics in the Joint Institute of Nuclear Studies in Dubna, the Rutherford Laboratory in Didcot, and the Fermi Laboratory in Batavia, but from the late 70's his activity was concentrated at CERN.

His continuous participation in experiments on one of CERN's longest running experimental facilities, the muon beam, started by joining the European Muon Collaboration. In the early 80's he set up a group studying the nucleon structure in deep inelastic muon scattering. He participated in the ground-breaking discovery that the quark spins contribute little to the nucleon spin (1988) and was a key contributor to the structure function studies in NMC, leading to the measurement showing violation of the Gottfried sum rule. In the 90's Jan focused on high precision experiments of the polarised structure of the nucleon. Under his leadership the Warsaw group



contributed to the first test of the Bjorken sum rule (SMC) and was essential in studying the gluon polarisation in the nucleon (COMPASS), an important step in understanding the quark/gluon structure of the matter around us. For his colleagues Jan Nassalski was reference point for all aspects of physics in the domain of deep inelastic scattering.

Jan's group from the Soltan Institute for Nuclear Studies also successfully contributed to the NA48 experiment, with electronic elements required for read-out of the Liquid Krypton Calorimeter. Jan's group was very active in physics analysis, leading some rare kaon decay studies and precise measurements of fundamental properties of neutral mesons. In particular, Jan was one of the main authors of the precision-measurement of the eta meson mass. He was a rigorous physicist, a great motivator and a crystal clear communicator.

In his home country of Poland, he was tireless in his outreach activities, publishing widely in the Polish media. Whenever CERN launched a new outreach initiative, the uptake in Poland was phenomenal, and Jan's hand could be seen behind that success. For example, a CERN educational CD was distributed free with a popular science magazine, and more recently, Jan has played a vital role in making CERN's high school teacher programme a great success in Poland. Jan was particularly proud of this work, and justifiably so.

As a Council delegate, Jan represented his country's interests powerfully and with great conviction. Although softly spoken, he knew how to carry an argument. Yet even in the most heated of debates, he was a model of politeness and courtesy. Jan's colleagues at CERN and in the CERN Council agree that he will be strongly missed. Particle physics has lost not only an excellent physicist, but also a true gentleman.

Thanks to his natural kindness and sense of humor, his infinite patience and above all his extreme rigour and great integrity, exchanges with Jan were of high standard and rewarding. The quality and accuracy of his judgments always made them an irreplaceable reference. Jan was to all of us more than a colleague, we will greatly miss his perceptiveness and sensitivity as well as his advice. We will all remember him as a precious friend.

*His colleagues and friends*



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.

## ANNUAL REPORT OF THE PENSION FUND

The 2008 Annual Report and Accounts of the Pension Fund which was approved by Council at its session of 19 June 2009, is now available from the Departmental secretariats.

It is also available on the Pension fund site:

<http://pensions.web.cern.ch/Pensions/>

Pension beneficiaries can obtain this document from Emilie Clerc (tel. + 41 22 767 87 98), building 5-5/017.

*Secretariat of the Pension Fund  
72742*



## Take note

## REVIEW YOUR COMPUTER SECURITY NOW AND FREQUENTLY!

The start-up of LHC is foreseen to take place in the autumn and we will be in the public spotlight again. This increases the necessity to be vigilant with respect to computer security and the defacement of an experiment's Web page in September last year shows that we should be particularly attentive. Attackers are permanently probing CERN and so we must all do the maximum to reduce future risks.

Security is a hierarchical responsibility and requires to balance the allocation of resources between making systems work and making them secure. Thus all of us, whether users, developers, system experts, administrators, or managers are responsible for securing our computing assets. These include computers, software applications, documents, accounts and passwords. There is no "silver bullet" for securing systems, which can only be achieved by a painstaking search for all possible vulnerabilities followed by their mitigation. Additional advice on particular topics can be obtained from the relevant

## GENERAL MEETING OF THE PENSION FUND

All members and beneficiaries of the Pension Fund are invited to attend the

**Annual General Meeting to be held**

**in the CERN Council Room  
on Wednesday 9 September 2009  
from 14:00 to 16:30 p.m.**

The Agenda comprises:

1. Opening Remarks - F. Ferrini
2. Results and presentation of the Annual Report 2008. - C. Cuénoud  
*Recent evolution of financial markets. 2009-2010 work plan - T. Economou.*  
*Copies of the 2008 Report are available from departmental secretariats.*
3. Report on Funding policy and principles of the Pension Fund:  
*Working Group 2 Report. - F. Ferrini*
4. Questions from members or beneficiaries  
*Persons wishing to ask questions are encouraged to submit them, where possible, in writing in advance, addressed to the secretariat of the Pension Fund.*
5. Conclusions - F. Ferrini

As usual, participants are invited to drinks after the Meeting.

NB The minutes of the 2008 General Meeting are available from the Administration of the Fund (tel. + 41 22 767 27 42 ; e-mail [Sevda.Budun-Kocaturk@cern.ch](mailto:Sevda.Budun-Kocaturk@cern.ch)

IT groups or members of the security team, but we include here a basic list of items to be considered by all CERN computer users:

- Review access rights to your computers, documents (InDiCo, EDMS, TWiki, etc.), as well as files and directories on AFS, DFS and local disks. Don't give write access if read access is sufficient and limit access only to those who need it.
- Protect web sites. Very few should be publicly accessible and those which are should not reveal details of system architecture and design, computer configurations or source code.
- Ensure that accounts have been closed for individuals who have left.
- Reduce the number of service accounts where possible.
- Harden computers by removing unnecessary applications, disable unneeded services such as for Web, FTP, etc., use automated update and patching services as well as up-to-date antivirus-software

for PCs (but also for embedded devices like oscilloscopes), upgrade SLC3 to SLC5, use local firewalls to block both incoming and outgoing traffic which is not expected.

- Protect private SSH keys.
- For experiment networks, review central firewall openings and review whether devices need to be trusted or exposed.

Further information about how to improve computer security may be found on the Web sites <http://cern.ch/security/> as well as [www.ISSEG.eu](http://www.ISSEG.eu) which include material on risk analysis, training and recommendations for general users, developers and system administrators. As well as the many security awareness presentations which are given, training courses are also available on writing secure code and secure Web applications (see <http://cern.ch/security/training> ).

*CERN Computer Security Team  
[computer.security@cern.ch](mailto:computer.security@cern.ch)*



## Take note



### ACCU MEETING

**DRAFT Agenda  
for the meeting to be held  
on Wednesday 9 September 2009  
At 9:15 a.m. in room 60-6-002**

- |                                    |   |
|------------------------------------|---|
| 1. Chairman's remarks              | 8. An update on Safety at CERN                            |
| 2. Adoption of the agenda          | 9. The CERN shuttle service                               |
| 3. Minutes of the previous meeting | 10. Reports from ACCU representatives on other committees |
| 4. Matters arising                 | 11. Users' Office news                                    |
| 5. News from the CERN Management   | 12. Any Other Business                                    |
| 6. Code of Conduct                 | 13. Agenda for the next meeting                           |
| 7. Equal Opportunities at CERN     |   |

Anyone wishing to raise any points under item 12 is invited to send them to the Chairman in writing or by e-mail to

**Christopher.Onions@cern.ch**

*Chris Onions (Secretary)*

ACCU is the forum for discussion between the CERN Management and the representatives of CERN Users to review the practical means taken by CERN for the work of Users of the Laboratory. The User Representatives to ACCU are (CERN internal telephone numbers in brackets):

Austria	G. Walzel (76592)	Norway	J. Nystrand (73601)
Belgium	C. Vander Velde (71539)	Poland	M. Witek (78967)
Bulgaria		Portugal	P. Bordalo (74704)
Czech Republic	P. Závada (75877)	Slovak Republic	A. Dubnickova (71127)
Denmark	J.B. Hansen (75941)	Spain	S. Cabrera Urbán (71170)
Finland	K. Lassila-Perini (79354)	Sweden	K. Jon-And (71126)
France	F. Kunne (76342)	Switzerland	M. Weber (71271)
	A. Rozanov (71145)	United Kingdom	M. Campanelli (72340)
Germany	H. Lacker (78736)	Non-Member States	S. McMahon (77598)
	O. Biebel (72974)		D. Acosta (71566)
Greece	G. Tsipolitis (71162)		E. Etzion (71153)
Hungary	F. Siklér (76544)		C. Jiang (71972)
Italy	F. Navarría (Chairman) (74703)		N. Zimine (75830)
	N. Pastrone (78729)	CERN	E. Auffray (75844)
Netherlands	G. Bobbink (71157)		F. Teubert (73040)

CERN Management is represented by S. Bertolucci (Director for Research and Computing), S. Lettow (Director for Administration and General Infrastructure) and J. Salicio Diez/PH with C. Onions/PH as Secretary. The Human Resources Department is represented by J. Purvis, the General Infrastructure Services Department by M. Tirakari and the CERN Staff Association by M. Goossens. Other members of the CERN Staff attend as necessary for specific agenda items. Anyone interested in further information about ACCU is welcome to contact the appropriate representative, or the Chairman or Secretary (75039 or Christopher.Onions@cern.ch).

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



## Take note

### CARLSON WAGONLIT TRAVEL INFORMS

From 7 to 9 September come and visit our "Andalusia" stand at the entrance to Restaurant No. 1 – Novae. Take part in our competition where you could win over 1000 Swiss francs worth of travel vouchers from our partner VT Vacances!

*Carlson Wagonlit Travel*  
<http://www.carlsonwagonlit.com>



## Management & Communication training

### CERN MANAGEMENT & COMMUNICATION TRAINING PROGRAMME

#### Timetable of courses from September to December 2009

Please check our Web site to find out the number of places available, which may vary.

#### Management Curriculum

Project Scheduling & Costing	3, 4 September	(2 places available)
Communicating Effectively – Residential	15, 16, 17 September	(6 places available)
Personal Awareness & Impact – Follow-up	17, 18 September	(full)
Project Management	22, 23 September	(full)
Personal Awareness & Impact	22, 23, 24 September	(full)
Introduction to Leadership	7, 8, 9 October	(full)
Managing Teams	10, 11, 12 November	(full)

#### Communication Curriculum

Managing Time	22 September + 27 October + 18 November	(3 places available)
Making presentations	14, 15 October + 9 November	(Full)
Communiquer efficacement dans votre équipe	19, 20 octobre	(complet)
Communiquer efficacement	21, 22 octobre + 9, 10 novembre	(complet)
Techniques d'exposé et de présentations	10, 11 novembre + 8 décembre	(1 place disponible)
Service Orientation/Orientation service	12, 13 November/novembre	(5 places available/disponibles)

If you are interested in attending any of the above course sessions, please talk to your supervisor and/or your DTO, and apply electronically via EDH from the course description pages that can be found at : <http://cta.cern.ch/cta2/f?p=300>

*Management & Communication programme  
 Sudeshna Datta Cockerill, Head of the programme 74127 - Sudeshna.datta.cockerill@cern.ch  
 Secretariat 78144 - Nathalie.dumeaux@cern.ch*



## Seminars

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### MONDAY 24 AUGUST

#### CERN HEAVY ION FORUM

11:00 - Bldg. 1-1-025

#### Transport coefficients of the “perfect fluid” created in RHIC collisions

R. LACEY / STONY BROOK UNIVERSITY

### TUESDAY 25 AUGUST

#### TH STRING THEORY SEMINAR

14:00 - TH Auditorium, Bldg. 4

#### Quantum Tunneling in Flux Compactifications

J. J. BLANCO-PILLADO / TUFTS UNIVERSITY

#### TECHNICAL PRESENTATION

14:00 - Main Building, Room A, 61-1-017

#### SEMIC RF Electronic GmbH & Orient Microwave Corporation

### WEDNESDAY 26 AUGUST

#### TH THEORETICAL SEMINAR

14:00 - TH Auditorium, Bldg. 4 3-006

#### New state of matter in white dwarfs

G. GABADADZE / NEW YORK UNIVERSITY

### THURSDAY 27 AUGUST

#### TH PHENCLUB

11:00 - Bldg. 1-1-025

**TBA**

G. SENJANOVIC

#### CONFERENCES & WORKSHOPS

14:00 - Main Auditorium, Bldg. 500

#### Celebration in Honour of Andre Martin's 80th Birthday

L. ALVAREZ-GAUME / CERN

#### TH BSM FORUM

14:00 - Bldg. 1-1-025

**tba**

T. VOLANSKY / PRINCETON, INST. ADVANCED STUDY

### FRIDAY 28 AUGUST

#### CERN COLLOQUIUM

16:30 - Main Auditorium, Bldg. 500

#### Cosmology as Science?: From Inflation to Eternity

L. M. KRAUSS / ARIZONA STATE UNIVERSITY

### THURSDAY 3 SEPTEMBER

#### TH BSM FORUM

14:00 - Bldg. 1-1-025

#### (Non-)Abelian discrete anomalies

M. RATZ / UNKNOWN

#### TH STRING THEORY SEMINAR

14:00 - TH Auditorium, Bldg. 4

**TBA**

J. HECKMAN / HARVARD UNIVERSITY

#### BE SEMINAR

16:00 - Main Auditorium, Bldg. 500

#### Beam loss mechanisms in relativistic heavy-ion colliders

R. BRUCE / LUND UNIVERSITY, SWEDEN

#### CERN COLLOQUIUM

16:30 - Main Auditorium, Bldg. 500

#### Climate Change: The Physical Basis and Latest Results

T. STOCKER / PHYSICS INSTITUTE, UNIVERSITY OF BERN

### WEDNESDAY 4 SEPTEMBER

#### COMPUTING SEMINAR

10:00 - IT Auditorium, Bldg. 31-3-004

#### Securing with the OSSTMM 3

P. HERZOG, C. BAUMGARTNER

### WEDNESDAY 9 SEPTEMBER

#### CERN COLLOQUIUM

16:30 - Main Auditorium, Bldg. 500\*

#### The Creation of the Universe

S. HAWKING / UNIVERSITY OF CAMBRIDGE

\* PLEASE NOTE UNUSUAL DATE AND TIME!