

OPEN-HEART SURGERY FOR CMS



The innermost part of the CMS detector, the Pixel Tracker, is being replaced with a brand-new one this week, as part of the EYETS activities. (Image: Max Brice/CERN)

This week the CMS collaboration is replacing the heart of its detector: its tracking system. The system determines the trajectories of charged particles and it is made of two components, the Pixel Tracker and the Strip Tracker.

The Pixel Tracker is being replaced with a brand-new one: its upgrade is among the most important EYETS activities for CMS and another feather in the cap of a busy but productive period for the collaboration.

The second-generation Pixel Tracker will operate until the early stages of the High-Luminosity LHC, when it will itself be replaced with a third-generation device.

With the replacement happening throughout the week, more news to come.

Achintya Rao

A WORD FROM SIJBRAND DE JONG

DIVERSITY? IT'S AN ISSUE FOR THE MAJORITY

On 27 January, I spent much of the day in the Globe, where I took part in the Gender in Physics day organised as part of the EU's Gender Equality Network in the European Research Area (GENERA). Two weeks later, it was a pleasure to see some of the many events organised around the world as part of UNESCO's International Day of Women and Girls in Science.

(Continued on page 2)

In this issue

News	1
Open-heart surgery for CMS	1
A word from Sijbrand de Jong	2
A new tool to evaluate complex tech systems' efficiency	2
Colliding ideas over lunch	3
Reaching out: IPPOG's new status to push physics outreach	4
Computer security: Offensive Public Browsing	4
Announcements	5
Obituaries	7
Ombud's corner	8



A WORD FROM SIJBRAND DE JONG

DIVERSITY? IT'S AN ISSUE FOR THE MAJORITY

On both of these occasions, however, one thing was very evident: most of the participants were women. It's true that after CERN Director-General Fabiola Gianotti's opening speech, in which she stressed her commitment to diversity in all its facets and described the actions CERN is taking to promote diversity, we heard from ESO Director-General Tim de Zeeuw, but overall only about 20% of the speakers were men, and as a man in the audience I was very much in the minority. This, I think, is where the challenge lies.

Whenever we look at diversity issues, it is far too easy for those in the majority to think "this is not for me", whereas actually it very much is. Diversity is always an issue for the majority, and in science, where there are still many more men than women, it is just as important for the men to enable women to progress as it is for the women to make their way.

At my university, this is something that I actively strive to do, and for very good reason. In my experience, women make excellent scientists. This should not surprise anyone, yet there's still an ingrained prejudice in society that some subjects are better suited for men and others for women. Even among scientists, who should know better, and who do know better if it is made explicit, this sentiment still holds some sway. As scientists, we should know that human ability in all areas follows a spectrum, and excellence can be found anywhere.

An example from an unexpected angle is that women are often asked how they combine raising children with their career. As a male single parent, I have never been asked this question. It just does not occur to people, be it female or male, to perceive this as a possible problem for a male. But why would it then be an issue for a female?

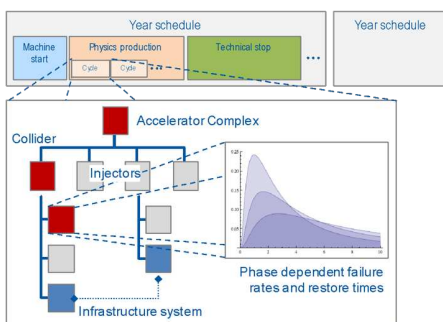
So what can we do? Much has been said about the importance of female role

models, and in my experience they certainly help. It is great, therefore, to see women rising to positions of authority in science. Strong female role models are not just important for aspirational young girls: they are also important for young boys, if we are to break the pattern of ingrained prejudice. It's important for everyone to see women succeed in science and elsewhere.

I thoroughly enjoyed my day in the Globe discussing and learning about issues of gender in physics. One thing both men and women in science can do is engage more with such initiatives. There's one more opportunity coming up to do so very soon with International Women's day on 8 March. Find out what's happening around you and get involved. You'll be enriched by the experience, and science will be better for it.

Sijbrand de Jong
President of CERN Council

A NEW TOOL TO EVALUATE COMPLEX TECH SYSTEMS' EFFICIENCY



The new modelling concept combining system description, phase-dependent failure and restore durations and operation schedules at multiple levels. (Image: CERN)

A key challenge in designing a future collider like those being explored as part of the FCC study is ensuring that the operation of

such a complex technical infrastructure remains reliable and affordable.

To meet these challenges, CERN has recently signed an R&D agreement with Ramentor Oy, a high-tech company based in Tampere, Finland. In a three-year project, engineers from CERN, Ramentor and other institutes participating in the Future Circular Collider study will develop a tool to assess the effectiveness of different designs and operation schedules for large technical systems.

At first, this tool will be used to create a model of LHC and injector operations that can be validated using actual LHC operation data. This model will then be used directly as additional aid to verify the operation concepts for the High-Luminosity LHC

upgrade. It will also be used to develop and refine system behaviour models, and explore a large set of different operation scenarios using a cloud-based setup. Indeed, today, simulating a ten-year LHC operation requires roughly up to an hour. One way of reducing this time is to divide the problem into manageable chunks for cloud computing, and this approach will be taken in the new system.

More specifically, the new tool integrates industry best-practices into model systems and run simulations that take into account the present condition and history of a facility. The simulation considers operation schedules ranging from seconds or months up to the entire lifespan of a facility.

In addition, the new tool will offer users an interactive experience, allowing engineers to receive instantaneous feedback about the performance and operation costs. The user-friendly software ensures that this doesn't require advanced programming skills.

Such a modelling and simulation ecosystem can also provide benefits for similar large-scale research infrastructures, including particle accelerators and telescope arrays. Since the models, parameters and

assessment results will be available in an open data format, the approach will enhance the sharing of knowledge in our community.

This development has already raised interest among leading energy providers: in an effort to make efficient use of resources, this tool will help us to design energy-efficient industrial plants and pinpoint elements in existing industrial installations with the highest potential for cost-effective efficiency improvements.

The project also has significant training value. So far, two doctoral students are actively contributing to this endeavour. The method and tool are now also included in reliability training at CERN, and the activity remains open for further students and collaborators to join.

For more information, visit the FCC website.

Panagiotis Charitos

COLLIDING IDEAS OVER LUNCH



The LunchCollider project sees strangers brought together in Restaurant 1 to build new friendships. (Image: Piotr Nikiel; Mietek Dabrowski; Roberto Campesato; Esther Zanon/CERN)

It's a typical, cloudy February morning on CERN's Meyrin site. After hours spent hunched over your computer, a quick glance at the clock tells you it's 12 p.m. – almost time for lunch. You frown as you imagine the chaotic, heaving crowds in R1, the long lines and the hunt for a free seat. You decide to spare yourself the trouble and stay at your desk.

Enter LunchCollider, a project that you register for in the morning and then an algorithm selects a random person with whom you meet for lunch. This social project has been built for the CERN community and is designed to encourage us to create friendships, build on ideas and share knowledge.

"We would be extremely happy if new CERN projects or new physics theories came to life thanks to LunchCollider," says Mietek Dabrowski, one of the founders of LunchCollider.

"Recently I had lunch with a person I've never met before. I had no idea who this person was, no idea where they came from, and no idea what they did at CERN," says one participant after their first experience of using LunchCollider. "But one hour and fifteen minutes passed very quickly. The list of topics we wanted to talk about, from our home countries to how we ended up at CERN, was long! Now we have to go back to work. That was an amazing experience; I'll do it again. Hopefully at 12 p.m. on Wednesday next week."

The lunch sessions are organised twice a week – either on Tuesdays and Thursdays or Wednesdays and Fridays. Between 8.30 and 11.30 a.m., you register for a lunch session on the website, where you also choose to meet with either one or two people. At 11.45 a.m., you receive an e-mail with the names of your lunch buddies and instructions on where to meet them. The time and place are fixed – 12 noon in Restaurant 1.

LunchCollider was launched in October last year and already has 150 subscribers. Its creators are Mietek, Piotr

Nikiel, Roberto Campesato and Esther Zanon. "We were bound together by a common vision," explains Piotr. "What if, in such a diverse and heterogeneous place like CERN, everyone could seamlessly exchange knowledge, ideas and interests with everybody else?"

The creators' hope to build not only friendships but also professional networks – places to seek and receive information.

"We understand that meeting strangers might be a bit frightening, but we want to fight that fear. Some people have admitted that they are slightly nervous before the meeting – they worry that the conversation won't flow smoothly. This never turns out to be the case and, in the end, everybody enjoys it," says Roberto.

The concept of meeting kind, smiling, albeit slightly nervous, new people over lunch is certainly refreshing. Besides physics, engineering and programming, the number of topics you can talk about is limitless – culture, arts, sports, politics, and anything else you might think of.

Try it for yourself: all you have to do is to register at LunchCollider.ch.

Iva Raynova

REACHING OUT: IPPOG'S NEW STATUS TO PUSH PHYSICS OUTREACH



Charlotte Warakaulle, CERN's Director for International Relations, and Hans Peter Beck, chairperson of IPPOG, sign a memorandum of understanding to make IPPOG an official collaboration. (Image: CERN)

The International Particle Physics Outreach Group (IPPOG) has recently (on 19 December 2016) been made into a formal collaboration.

Established 20 years ago, IPPOG has evolved from a European to a global network of members, which can include countries, laboratories and research collaborations, all with the aim of making a concerted effort to popularize particle physics.

The new collaboration status demonstrates a clear commitment towards sustainable

and systematic science outreach. Already IPPOG has 13 official members who signed the memorandum of understanding, and contribute a membership fee, with more expected to join soon.

Read more about what this new status means, and IPPOG's history here (<http://cerncourier.com/cws/article/cern/67712>).

Harriet Jarlett

COMPUTER SECURITY: OFFENSIVE PUBLIC BROWSING

For the convenience of everyone at CERN, public PC terminals are provided in many different locations so that people can access CERN's websites, as well as CERN's other computing services, even if they do not have a computer/tablet/smartphone to hand. PC terminals are available in the CERN library, in front of the Users' Office, and also for dedicated purposes in conference rooms and the training centre. However, note what they are: public PCs, located in public places.

In the past few months, we have received several complaints about inappropriate use of some of these public PCs, namely the browsing of pornographic material. To our knowledge, there is no professional need to access such websites, and therefore the browsing of pornographic images and

films is in violation of the CERN Computing Rules and the personal use policy. Worse, these activities took place in public places where others, by-standers and passers-by, including school pupils and young children, might accidentally notice it – and feel embarrassed or seriously offended! This is why we got the complaints in the first instance.

So, if you happen to use one of CERN's public PCs, please stick to the rules. Spare yourself the embarrassment of a third party seeing what you are doing (and spare yourself the embarrassment of getting a notification from us). This not only applies to browsing pornographic material, but also doing other private things: internet banking, following your friends on Facebook, reading your e-mails. Of course, this is also

true for laptops and tablets used in public places like the restaurants and cafeterias. Browsing pornographic material on an office PC is also in violation of the CERN Computing Rules and we would appreciate it if private activities could remain in the private sphere: at home.

Do you want to learn more about computer security incidents and issues at CERN? Follow our Monthly Report (https://cern.ch/security/reports/en/monthly_reports.shtml). For further information, questions or help, visit our website (<https://cern.ch/Computer.Security>) or contact us at Computer.Security@cern.ch.

Stefan Lueders and Computer Security Team

Announcements

GENEVA MIX & MASH-8 MARCH-BRASSERIE DES HALLES DE L'ILE



For more information, go to
<https://www.facebook.com/events/695325403979208/>.

1 MARCH: SUMMARY SESSION-LHC PERFORMANCE WORKSHOP 2017

Summary Session of the LHC Performance Workshop 2017, by Frédéric Bordry, CERN's Director for Accelerators and Technology.

Wednesday 1 March 2017
from 2 p.m. to 3 p.m.
CERN Main Auditorium (500-1-001)

See the Indico page at:
<https://indico.cern.ch/event/614870/>

6-8 MARCH: 10TH INVERTED CERN SCHOOL OF COMPUTING

Now in its 10th year, CERN's "Inverted School of Computing – iCSC 2017" will take place at CERN from **6 to 8 March 2017 in the IT Auditorium** (Room 31/3-004).

An excellent programme is planned, consisting of lectures selected from a range of proposals submitted by CSC 2016 students. You are not obliged to attend every

lecture, indeed you can simply attend the lectures that interest you the most.

Attendance is free and open to everyone, and will be webcast for those who cannot attend in person.

Registration is not compulsory, but will allow you to enjoy coffee courtesy of the

CSC, and obtain a hard copy of the booklet, which includes the lecture slides and notes (while stocks last).

Programme and registration:
<https://indico.cern.ch/e/iCSC-2017>.

iCSC 2017

This year's programme, selected from a range of CSC 2016 student proposals, focuses on challenging and innovative topics, including:

- Distributed consensus and fault tolerance
- Artificial intelligence
- Anomaly detection
- Evolutionary computation
- Virtual machine images management
- Effective data visualisations

This year's lecturers are:

- Georgios Bitzes, CERN
- Daniel Hugo Campora Perez, CERN/University of Seville

- Michael Davis, CERN
- Daniel Lanza Garcia, CERN
- Lorena Lobato Pardavila, CERN/University of Oviedo
- Eamonn Maguire, Pictet Asset Management

About the iCSC

The Inverted Schools of Computing (iCSC) are part of an annual series of schools organised by the CERN School of Computing (CSC). The iCSC consists of lectures presented over a few days by former CSC students, providing advanced education in specialist topics. The Inverted School provides a platform for them to share their knowledge, turning the students into teachers.

The CERN Schools of Computing

The two other Schools that make up the annual CSC series this year are:

- The Thematic school (tCSC 2017) taking place in June in Split, Croatia;
- The Main School (CSC 2017) taking place in August in Madrid, Spain.

For further information on the CERN School of Computing, see <http://cern.ch/csc> or e-mail computing.school@cern.ch.

Sebastian Łopieński, Director, CERN School of Computing

SUSPENSION OF NOVAE'S ONLINE PAYMENT SYSTEM

Last October, we announced that a new online payment system had been introduced in the Novae Restaurants on the Meyrin site. This system, which was based on the Mobino smartphone app, was tested

over three months between October 2016 and January 2017. Unfortunately, a number of technical problems emerged, which led to the suspension of the system in mid-January.

However, having received a lot of positive feedback about the system, Novae is currently working on improving it and hopes to be able to offer an online payment system to customers again soon.

TRAINING: AXEL-2017-INTRODUCTION TO PARTICLE ACCELERATORS

AXEL-2017 is a course series on particle accelerators, given at CERN within the framework of the 2017 Technical Training Programme. As part of the BE Department's Operation Group Shutdown Lecture series, the general accelerator physics module has been organised since 2003 as a joint venture between the BE Department and Technical Training, and is open to a wider CERN community.

The lecturer is Rende Steerenberg, Group leader of the BE-Operation Group.

Programme : Basic Mathematics, Transverse Optics, Lattice Calculations, Resonances, Longitudinal Motion, Transfer Lines, Injection and Ejection, Longitudinal & Transverse Beam Instabilities, Colliders.

Target audience : Designed for technicians who are operating an accelerator, or whose work is closely linked to accelerators, but it is also open to technicians, engineers, and physicists interested in this field.

Pre-requirements : The course does not require any prior knowledge of accelerators. However, some basic knowledge of trigonometry, matrices and differential equations, and some basic knowledge of magnetism would be an advantage.

The series will be composed of 10 one-hour lectures (Monday 13.03.2017 – Fri 17.03.2017, from 09:00 to 10:15 and from 10:45 to 12:00), given in English with questions and answers also possible in French. Participation in all lectures is encouraged, to allow people to gain maximum benefit from the course.

If you are interested in AXEL-2017, please discuss with your supervisor. Registration is required, participants must sign up via the following link: <https://cern.ch/course/?089AXE01>.

The detailed program is available on the AXEL-2017 Indico webpage.

A small contribution of CHF20,- is requested when registering to cover the costs for the printed syllabus.

Attendance will be recorded in the personal training records.

Organizers:
Rende Steerenberg/BE-OP/79086/164518
Technical Training/HR-LD/72844

Obituaries

BERND DEHNING (1957 - 2017)



Bernd Dehning (Image: CERN)

We deeply regret to announce the death of Bernd Dehning on 14 January 2017.

Bernd Dehning, who was born on 3 May 1957, worked in the BE department and had been at CERN since 1 Octobre 1987.

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

*Social Affairs
Human Resources department*

Bernd Dehning was known to many of us as “the expert” on beam loss monitoring. One of his glowing achievements was to deliver a remarkably reliable beam loss monitoring system for the Large Hadron Collider, the most complex such system in the world, without which CERN's flagship machine simply would not work. Providing such a critical machine protection system required a person capable of calm reflection, great attention to detail and thorough preparation. Bernd of course ticked all of these boxes. It is difficult to personify Bernd's character better than with this citation in the acknowledgements from the book ‘Precision Tests of the Standard Electroweak Model’: “*Bernd insisted after 47 hours of tide-watching in the control room, to take the last, decisive point of figure 23*”.

Bernd joined CERN as a PhD student from Munich in 1989, working on the LEP polarimeter, supervised by Walter Blum. He became a staff member in the Beam Instrumentation Group in 1992, where he worked for the remainder of his career. He had a remarkably wide field of knowledge spanning not only particle and accelerator physics, but also electronic, software and mechanical engineering. With Bernd this knowledge was never at a superficial level. He had to know the details of everything he was working on and would always dive right down to the fundamentals of any particular area of interest.

Bernd's contribution to the accurate measurement of the mass and width of the Z and W bosons cannot be overestimated.

He was instrumental to the outstanding success of the energy calibration campaigns at LEP, using both the resonant depolarisation and spectrometer techniques, which demonstrated the sensitivity of LEP's beam energy to the orbit of the moon as well as to the departure of TGV trains from Geneva station.

In recent years, in addition to constructing the highly reliable LHC beam loss system, Bernd continued to work on novel beam instrumentation techniques, investigating the use of diamond detectors for loss monitoring and developing a beam gas vertex detector for profile measurements in collaboration with colleagues from several universities and from the LHCb experiment. He really enjoyed leading these efforts in research and development and was always looking for the chance to introduce some cutting-edge technology into these projects.

Happiest when he had a hoard of students around him, Bernd taught many of our current generation of accelerator beam instrumentalists and guided them in the early days of their careers, with numerous others profiting from Bernd's supervision to go on to find their own niche in industry or academia.

We will remember Bernd as the mild-mannered, methodical professional that he was and our community will be the poorer for his passing.

His CERN friends and colleagues

Ombud's corner

HORNS AND HALOS

Labelling colleagues – either in negative (“horns”) or positive (“halos”) terms – is like looking at them through a lens that colours all our perceptions, as well as those of others around us. This may result in a preconceived bias towards them that affects our judgements and, regardless of whether this takes the shape of horns or halos, makes us less objective in our assessments. It is therefore important to refrain from buying into such labels, and to keep an open mind at all times.

Barbara has just taken up an offer of internal mobility after returning from sick leave. She is looking forward to the job and the new relationships that it will bring. However, within a very short time, she starts to feel isolated, realising that she is often left out of invitations to meetings and informal exchanges and, as a result, lacks the up-to-date information she needs. Quite by chance, she learns that Sasha, her supervisor, had not been keen for her to join the team and had warned the others not to share too much with her, as she “was very close to someone in a rival experiment”. She realises that she had been perceived to be wearing the horns of untrustworthiness from her very first day in this new job.

Labels of this kind can be very difficult to shake off – particularly in an organisation like our own where people build long-term careers and the origins of such biases rapidly become obscure and impossible to verify.

Barbara tries to take the matter up with Sasha, who denies having spread rumours about her untrustworthiness whilst at the same time contradicting himself by saying that she should not be surprised by the cool reception as she was parachuted into the team without his agreement. She decides to focus on her work in the hope of carving out a place for herself over time but finds that despite all her efforts, the label persists and she is unable to establish good working relationships with Sasha or anyone else in the team. She tries to raise the issue with Luca, her group leader, but he brushes her off saying that he has known Sasha for years and trusts his judgements implicitly.

Far from addressing the issue, the group leader's reaction in this case only serves to amplify the problem, acting as he does from a position of giving a positive label or halo to his line manager, who to his mind

could not be capable of this discriminatory behaviour.

Whether it is a question of horns or halos, the long-term impact of labelling people can have serious consequences as objective judgement may be impaired by preconceived notions and biases. When generalised beyond an individual to groups of people, these biases can lead to many forms of discrimination such as racism, sexism and physical or cultural isolation.

Even where labels may have resulted from traceable actions in the past, they should be limited to that specific context or circumstance, and colleagues should be allowed to grow and evolve over the years without being trapped by or revered for past action. Indeed, whether framed by horns or a halo, everyone is capable of surprising us with unexpected or contradictory behaviour from time to time. That specific behaviour should be either rewarded or reprimanded – as appropriate and in a timely fashion – and not be allowed to colour all other actions over time.

Sudeshna Datta Cockerill