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Back to school

After a summer break, UK school visits to CERN are resuming. At the end of the holidays, two visits took place that were slightly out of the ordinary. UKNFC went along to find out more.

Building confidence

Students from 10 different schools in Glasgow have just visited CERN on a visit organised by Aidan Robson (Glasgow and ATLAS) and sponsored by the Ogden Trust.

The students, who won their place on the trip in a competition after studying Higher Physics, spent three packed days at CERN. UK News from CERN met them and two of their teachers just before they set off for Geneva airport and the return trip to Scotland.

The students’ enthusiasm was infectious – they were all keen to share their highlights of the visit, talking about the scale of the experiments as well as the intricate engineering. Many of them cited the PhD students and post doc that they had met as inspirational – “they are so interested and excited by what they do,” commented one student. Another had picked up on the opportunities that physics offers to work abroad.

It wasn’t just the students and their teachers who were seeing parts of CERN for the first time. Aidan has organised several of these visits before, but this was the first time that he had seen LHCb (“exactly like the diagram!”) and CMS. “He was like a school boy in a sweet shop!” laughed Russell Henshelwood, a teacher from Drumchapel High School.

It’s 15 years since Russell graduated from university and the visit has boosted his confidence to teach the Advanced Higher physics syllabus. He’s also keen to take part in CERN’s teacher development programme.

“There’s a massive difference between reading about something, and then seeing it and being able to ask questions,” said Gerry Law from Our Lady’s High School in Motherwell. “For me, the highlight has been the enthusiasm of the staff – they love what they do. Now I’ve seen it, I’m more motivated to run a school trip to CERN.”
**Student teachers**

What started as an outreach activity to encourage school students to study physics at the University of Liverpool has become an important skills development activity for the department’s own PhD students.

Liverpool has been running its four-day physics school at CERN for four years. Developing and delivering the programme is the responsibility of a small group of PhD students led by Adrian Pritchard; it’s good preparation for their future academic teaching activities. This year, 17 students from four different schools took part, giving up the last week of their summer holiday.

The programme is a mix of talks, visits and hands-on activities. There is also some group work to prepare for a debating session on the last day.

Andrew Hicklenton is the Head of Physics at James Allen’s Girls School (JAGS), “We really value the engagement with the PhD students; activities such as data handling are led by people who do this full-time, and the guides at ATLAS and LHCb are people who work on the projects. This is the third year that JAGS has taken part and all the students that we have brought on previous visits have gone on to study STEM subjects at university.”

That’s Alice Handy’s plan; she’s a student at King Edward’s High School for Girls in Birmingham, “Out-of-classroom learning has helped me decide to study engineering; you can learn more in a short time. There is only so much that you can learn from the web.”

The visit has also had a significant effect on Bona Wang, from Whitgift School in Croydon, “I’m more excited about physics and looking at research as a possible career – everyone here at CERN is still fascinated by what they do.”

It’s clear that Adrian and his Liverpool colleagues have put a tremendous amount of effort into making the visit a success; there’s a vibrant atmosphere and everyone has had a good time.

“It is great to be in a position to give these students a real experience of what it is like to be a particle physicist, as they could well end up working here in the future,” explains Adrian. “Plus, it is important not to underestimate exactly how in awe many people are when coming to CERN for the first time; it is easy to forget sometimes just how privileged we are to work at such an amazing facility, so to be able to give school students the chance to be here for a week is great.”

“In fact, I myself came on a school visit to CERN when I was the same age as these students, and the visit was one of the main reasons I decided to study physics at university.”

**Raising the barre**

CERN inspires in many different ways; last year Rambert dance company spent time at CERN as part of the Visiting Artists scheme, contemporary composer Cheryl Frances-Hoad and choreographer and artistic director, Mark Baldwin were inspired to create a new piece which has just received its world premiere.
The Strange Charm of Mother Nature is a dance piece in three acts, with music by Bach, Stravinsky and a new composition by Cheryl called Quark Dances.

During their visit to CERN, Mark and Cheryl met various physicists, including cosmologist Subodh Patil as well as visiting the LHC.

As Mark explains in the programme notes for The Strange Charm, "During this visit, I was told about the particles, known as quarks, used in the collider: up, down, top, bottom, strange, charm. Scientists at CERN are trying to work out how Mother Nature does things, hence my title The Strange Charm of Mother Nature. The particles all have different properties, such as colour, mass and spin. The six dancers in the first movement each represent one of these six quarks."

“The first movement begins with Bach’s Third Brandenburg Concerto, followed by Stravinsky’s Dumbarton Oaks. Stravinsky reconfigured the notes from the Third Brandenburg into this new work. The idea that notes, rather like particles, can be reformed into something quite different is one that I find very poetic. Cheryl Frances-Hoad, the composer of the last movement, also uses this process."

This is not the first time that Mark has been inspired by physics – he has always had a very strong interest in science, particularly particle physics. In 2005, to celebrate the centenary of Einstein publishing three papers that changed the way we see the Universe, Mark created the piece Constant Speed, partly funded by STFC. He has also run a scientist-in-residence scheme with his company.

If you would like to be inspired by The Strange Charm of Mother Nature, it is currently being performed by Rambert as part of its national tour:
- Theatre Royal, Plymouth - 24-26 Sep 2014
- The Lowry, Salford - 1-3 Oct 2014
- Marlowe Theatre, Canterbury - 8-10 Oct 2014
- Theatre Royal, Bath - 30 Oct - 1 Nov 2014
- Norwich Theatre Royal - 6-7 Nov 2014

‘I’m a scientist, get me out of here!’ is back. This time around, the X-factor style outreach competition is looking for scientists and engineers to take part in the big data and extreme temperature zones. The zone descriptions are applied quite loosely so if you’re working in data management, analysis or IT infrastructure architecture, any application of cryogenics, or you’re completely at home with quark gluon plasma, this is your moment to shine!

If you would like to hone your outreach skills through wide-ranging on-line Q&A sessions with students in UK schools, applications to take part close on 29 September.

There is more information on the ‘I’m a scientist’ website, or you could speak to one of the previous winners from the CERN user community (see UKNFC 41)!

Son of Thunder rolls in to CMS

It is not every day that CERN welcomes a 112 year old member of its university community.
Boanerges (‘Son of Thunder’) is one of the mascots of Imperial College and is looked after by volunteer students of Imperial College’s City and Guilds College Motor Club. Team Bo visited CERN as part of a wider tour of France and Switzerland. They were welcomed by James Devine (CERN), an Imperial College alumnus and former president of the club.

A 1902 James and Browne, Bo is thought to be one of only two remaining examples of this manufacturer. The car is in full working order - if you ignore the small pools of water and oil that accumulate beneath when he stands for any length of time! He can manage a death-defying top speed of 27 mph and turns heads wherever he goes. Bo completed most of the tour on the back of a trailer with excursions in selected locations such as a drive along the shore of Lake Geneva.

Back in 1902, Bo was the epitome of engineering excellence, and as part of the visit to CERN, it was important to introduce him to a modern day equivalent, the CMS experiment. Petrol heads Austin Ball (CERN) and Jim Virdee (Imperial) were on hand to make the introductions, and Austin, the Technical Coordinator for CMS, gave Team Bo (minus Bo himself) an impromptu underground tour of the experiment.

Of course, a car this age requires constant maintenance, and European tours don’t happen every year; James recalled that he “inherited the car in a thousand pieces.” For the current tour, the support vehicle was packed with tool boxes, spares, greasy rags, and copious amounts of Brasso.

Parked on the beamline (no chance of a collision) Jim Virdee and James Devine with the Imperial College Students and Bo. © CERN/S Hills

Valued at £250K, only the club’s president is insured to drive Bo. “He’s a bit of a handful,” said this year’s President, Sam Esgate. “Bo’s doing fine, it’s me that’s letting him down!”

Throughout Bo’s visit to CMS, a succession of technicians, security guards, engineers and physicists came to take a closer look at the car. Fortunately, that provided many extra pairs of hands when it came to helping this elderly gent back onto his trailer.

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Diary dates

CERN Council Week – 8-12 December
A world a particle in Liverpool - until 8 January