



UK news from CERN



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**UK News from CERN is taking a festive break and will be back on 21 January 2014.
We wish you a very merry Christmas and a happy new year!**

A beam line for schools

An ambitious project is giving school students the chance to compete to carry out an experiment using one of CERN's proton beam lines.



The successful students will use the T9 beamline © CERN / C Rembser

A large part of CERN's research and development is carried out using fixed-target beam lines, which are used for a variety of experiments that range from investigating the inner workings of protons to probing the mysteries of antimatter. In 2014, to coincide with its 60th anniversary, CERN will be making a fully equipped beam line available for a team of school students to run an experiment. Physicists, engineers and experts in data acquisition and analysis will offer students guidance.

Beam time will be allocated by scientific competition, just as it is allocated for all CERN experiments.

The beam line comes fully equipped with an existing set of standard detectors that students can choose from to design their own experiment. Proposals will be judged based on motivation and creativity, and the winning team will have the chance to refine their ideas with researchers before conducting their experiment at CERN. They will then spend one week at CERN for their experiment, with the unique opportunity to join the accelerator operators in the control room and steer the beam to their experiment. The results should be summarised in a document, and – who knows? – published in a scientific paper.

Peter Watkins (Birmingham and ATLAS) is the UK's representative on the International Particle Physics Outreach Group which is managing the competition. He's full of encouragement for UK schools to get involved, "It should be fun; you will learn many new things and you might even get to work at CERN for a week!"

Up to 30 students can be part of the research team although a maximum of nine, accompanied by two supervising adults will conduct the experiment.

Students need to first register by the end of January, then submit a proposal for a research



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project to be conducted at the beam line by the end of March. Like all CERN experiments, the proposal will be evaluated and approved by a scientific committee.

“I can, of course, help with questions about Particle Physics and the competition,” says Peter. “However, as it’s a competition I can’t help with ideas for experiments or with the proposal itself. But that doesn’t stop schools from contacting the Particle Physics group at their nearest university....”

More information is available on the [CERN website](#) or you can watch a recent [Google Hangout](#) about the competition.

[Elizabeth Cunningham](#), STFC’s Particle Physics and Nuclear Physics Outreach Officer can help schools find their nearest Particle Physics group.

For specific questions relating to the application process, please contact [Peter Watkins](#)

Beyond Google Translate

Spend any time at CERN and you will take it for granted that it is a bilingual organisation; everything from official documents and staff newsletters to the web site and signage are available in both French and English. Having two official languages requires a team of highly-qualified and dedicated professionals.

The Translation and Minutes (TM) Group is a nine-strong team comprising four French mother-tongue translators, four English mother-tongue translators and a secretary. As well as being responsible for translating and editing a wide range of official CERN documents, it provides minutes for the CERN Council and many other CERN committees so the topics of meetings can vary widely from finance or HR issues to engineering and physics.

“We all do both translation and minutes,” explains Lisa Morris-Sobczynska of the English Section, “but in practice more minutes are taken in English because most of the international meetings use English as their working language, and we do more translation into French as more

and more documents are written in English nowadays.”



Lisa (l) and Odile – miles better than machines! © CERN

Both Lisa and her colleague in the French Section, Odile Martin, are keen to point out that they don’t provide interpreting services. “That’s a very different skill,” explains Odile.

Both Lisa and Odile always wanted to be translators. They share a love of languages and relish being able to use their skills on a daily basis. Both agree that the most important skill for a translator is to master your mother tongue – for professional translators, being completely bilingual isn’t necessarily an advantage.

The team members are all qualified linguists and whilst they must all be able to turn their hands to any task the organisation requires, each member of the team has his or her specialisms; Odile particularly enjoys translating financial and legal texts, for example, and Lisa takes minutes for committees including the Pension Fund Investment Committee, TREF (the Tripartite Employment Conditions Forum) and the SPC (Scientific Policy Committee). “Physics is the hardest subject for us as non-physicists,” she says. Fortunately, during SPC meetings Lisa can draw on the expertise of a retired colleague who, unlike the other members of the Translation and Minutes Service, has a physics background.

Taking minutes in any language is a skill; in addition to being able to construct a well-structured, logical and diplomatically worded text from a discussion that may go off on numerous tangents, CERN minute-writers also have to decipher the hidden meaning behind

statements from speakers who often have English as their second or even third language.

“You can’t train to be a minute-writer,” says Lisa. “You have to learn on the job and each committee has its own specific requirements and inherent difficulties. But with experience you instinctively come to know what you should and shouldn’t say.”

Technology is increasingly becoming a useful tool for the translators and as you would expect, CERN is at the forefront of using technology in this area.

Anyone who has used Google Translate will be aware of both its benefits (getting the gist of texts drafted in exotic languages) and its limitations (bizarre and sometimes inappropriate phrases). “Machine translation, if handled with care, can be useful to the professional translator,” says John Pym, the TM Group Leader, “but it remains light years away from what a human can do.” That said, John believes that machine translation can give the human translator a head-start: “Tools like Google Translate will often give you a decent first draft, but you then need a human translator to post-edit the machine’s output.”

For confidentiality reasons, CERN uses its own statistics-based machine translation (SMT) tool based on the Moses technology developed by the University of Edinburgh. “It’s small-scale and easy to use. Our database contains about 100,000 sentence pairs in French and English taken from our own translations of CERN documents,” explains John. “Based on how a given word or phrase has been used previously, the SMT tool makes a translation suggestion based on statistical likelihoods, just like Google Translate does.”

“You can’t avoid evolutions in technology,” says Odile, “but even using a tool like SMT, you still need a human to check the context and meaning of a translation.” The human translator is definitely not facing extinction!

Unforgettable experience

It’s no exaggeration to say that invitations to attend the Nobel Prize ceremonies are rare, and treasured. CERN Accelerator Physicist, John Jowett shares his memories of joining Peter Higgs in Stockholm:

“Despite our long friendship with Peter Higgs, which goes back to when I was a student of his in the 1970s, my wife and I were thrilled to be invited as his personal guests at the Nobel Prize ceremonies.

“The Nobel Foundation and Royal Swedish Academy put on a magnificent week of events, from the prestigious Nobel Lectures and dazzling Nobel Prize Concert to the highlight of the week, the Prize award ceremony itself, and the sumptuous spectacle of the Nobel Banquet.



Peter Higgs shows his Nobel medal to Vatsala Virdee (standing) and Siobhan Jowett

© John Jowett

“Yet for those of us from within the world of physics, particularly the LHC experiments and collider—but, no less, I firmly believe, the rest of humanity—nothing compares with the triumph of the human intellect that these worldly splendours are designed to honour. That a piece of apparently arcane mathematical reasoning could reach across the decades between 1964 and the discovery of the Higgs Boson in 2012, so elucidating the fundamental enigma of mass, is awesome (in the original sense of the word).

“Some of the lower profile events of Nobel Week were equally unforgettable. On the Saturday there was a panel discussion, organised by the local universities, between the two physics laureates together with Dave Charlton (Birmingham, and Spokesperson for the ATLAS Collaboration) and Stockholm physicist, Jonas Strandberg. The contrasting views and personalities of Peter Higgs and co-Laureate François Englert made for a wonderfully good-humoured, intellectually stimulating and often hilarious debate. It was interesting to hear about Peter’s persistence in working on the unfashionable topic of quantum field theory, back in 1964, even when it had been declared dead by no less an authority than Landau.



The panel discussion in Stockholm © John Jowett

“We also greatly enjoyed a very pleasant lunch for Peter Higgs and Chemistry Laureate Michael Levitt, hosted by the UK Ambassador to Sweden and his wife. As Professor Sir Timothy O’Shea, Principal of the University of Edinburgh, mentioned in a speech before the award ceremony, it was wonderful to see Peter’s family brought together with the overlapping families of CERN and the University of Edinburgh for this historic occasion.

“Having the opportunity to share in this profoundly moving experience was something that none of us will ever forget.”

[In case you missed Peter Higgs’ Nobel Lecture, Evading the Goldstone Theorem](#) (it was quite

early on a Sunday morning!), it’s now available online.

Listen to the web on the radio

Tim Berners-Lee who developed the World Wide Web at CERN in the 1980s will be the first of the BBC Radio 4 Today programme’s Christmas guest editors.

Tim will take to the airwaves on 26 December and use his programme to start a conversation about the open web. He has commissioned BBC correspondents to produce reports assessing just how open the web is and to examine what threats there might be to its openness in the future. The programme will also consider the issue of Net Neutrality and the benefits (and dangers) of self-diagnosis online.

You can listen to the programme via the [Today Programme web site](#).

And finally....

Don’t forget to take your CERN pass with you to ensure free entry to the Collider exhibition at the Science Museum in London.

The museum is open from 10.00 - 18.00 (last entry 17.15) every day except 24 to 26 December.

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Diary dates

CERN closed – 21 December – 5 January inc.
CERN Council – 17-24 March
CERN Council – 16-20 June
[Collider exhibition](#) runs until 6 May