ATLAS Public engagement: The CERN Open Days experience

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2019 CERN Open Days on September 14-15 welcomed more than 75000 visitors to CERN: ATLAS experiment was one of the highlights.

Activity stalls

Several tents around the famous Globe of Science and Innovation and also on the Meyrin site provided a wide range of activities:

Coffee time

Proton cookie: Visitors decorated their cookies (protons) with candy (quarks) using sugar glazing (gluons) while learning about protons.
Science café: ATLAS physicists were baristas for a day and answered visitor questions about the Universe and particle physics while serving coffee and cookies.

Focus

Higgs corner: ATLAS physicists explained through interactive games the challenges of studying this very special particle discovered here at the LHC.
Computing and software corner: billions of particle collisions recorded by ATLAS require an exceptional expertise in software and computing. Visitors learned about the extraordinary computing challenges of analysing LHC data and about how they can help as citizen scientists.

Hands-on

Build Your Own Particle Detector: design, construct and name your own particle detector using Lego bricks - fun for visitors of all ages.
Water balloons: Conservation of energy in particle collisions was demonstrated by collisions of balloons that really splashed!

Visualize

Colliderscope: An audio installation using real waveforms displayed on an oscilloscope (re)creating the different sub-detectors. The sounds were designed to draw images of the full detector.
Selfie wall: Taking a photo posing as a scientist in front of the detector was also one of the spotlight activities.
Puzzles: Challenged to build an ATLAS detector replica, the visitors were invited to assemble different sub-detectors.

Detector exhibition

A detector workshop offered the possibility to have a close look at the new ten-metre-tall wheel-shaped detectors. Part of a major upgrade of the ATLAS experiment, the **New Small Wheel detectors** will be installed underground and are currently being assembled and tested.
As this visit point was located 2 km from the ATLAS detector, volunteers spontaneously began organising **guided walking tours** through the CERN Meyrin campus to the workshop. These proved a resounding success, with a total of 15 walking tours organised.

From the closest sub-detector to the proton interaction point, the inner detector composed of the silicon pixel layers, to the outermost component of the ATLAS detector, the different detection techniques used in the experiment were explained profiting from a hands-on experience with real pieces of each sub-detector.

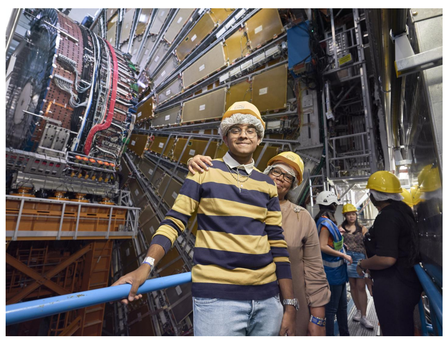
Underground detector visits

Around **3800 visitors** - a new record visit rate for ATLAS and 1300 more visitors than in 2013 - were guided by an ATLAS member for an unique opportunity to see the ATLAS detector and underground cavern, as well as experimental infrastructure and LHC access tunnel.
The challenge of welcoming 1900 visitors per day (400 more than expected) was met by diligent planning and real-time coordination:

- Every five minutes, a group of 14 people started their visit accompanied by two guides, with each guide taking 7 people through a different path through the cavern;

- A total of 24 crowd marshals at strategic points set the rhythm allowing about 90 visitors to be underground simultaneously.

Guided tours of the ATLAS control room for more than 1500 visitors who learned about how the ATLAS detector is operated when recording data.



Feedback and conclusions

The 2019 CERN Open Days were a major challenge and a great success as illustrated by some examples of the feedback received:

“Visiting CERN is something I've wanted to experience for at least 20 years. To get to see things like the ATLAS muon spectrometer and calorimeter down in the cavern was so exciting (to that extent that my hands were a bit shaky).”

“I was particularly impressed by the three high-school students in our ATLAS visit group, who had saved money all summer and travelled from Belgrade to attend the Open Days. Their future is bright, and I am sure they will work at CERN one day.”

The ATLAS Open Days in Numbers:

~ 1800 proton cookies served;

~ 267 registered LEGO models;

~ 1150 photos printed at the photo wall;

~ 2900 ATLAS cups given out, ~3000 science café cookies eaten and ~2000 coffees served.

Dedication of about 290 volunteers and their passion to share knowledge were the key ingredients for the popularity and success of the ATLAS site during CERN Open Days. Crowd marshals, guides, activity coordinators, site supervisors - everyone was well prepared for their tasks, welcoming visitors to ATLAS and adapting to the continuously evolving environment. The record number of underground visits was the major highlight that required a careful, safe implementation of the underground visits program, with many precisely choreographed steps. This program was planned and tested well in advance, and then diligently followed by all volunteers.

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