PROCEEDINGS OF SCIENCE

Engaging Classrooms: ATLAS Visits, Virtual Visits, Cheat Sheets, and More

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The ATLAS Collaboration provides a range of outreach and education opportunities appropriate for classroom engagement with particle physics developed by the ATLAS Collaboration at the LHC. Here we present details of the exhibits/features and use of the new ATLAS Visitor Centre at CERN – the most visited external visitor site at CERN – as well as an overview of the highly-successful Virtual Visit programme bringing CERN and the ATLAS experiment to tens of thousands of people. We also present an overview of ATLAS contributions to international Masterclasses and showcase resources such as "Cheat Sheets" and "Fact Sheets", which are intended to cover key topics of the work done by the ATLAS Collaboration and the physics behind the experiment for a broad audience of all ages and levels of experience. This contribution will also present some of the efforts to make visits and available resources more inclusive and accessible to a wider and more diverse audience.

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1. Introduction

Students of all ages and levels can benefit from visual resources for learning particle physics. Presenting new knowledge in a visually appealing way, as well as connecting to the students on a personal level, are some of the most engaging approaches to teaching. Through its wide range of outreach and education resources for students, the ATLAS Collaboration [1] at the LHC aims to do just that, bringing the excitement of scientific exploration and discovery into classrooms and giving students the opportunity to interact with particle physicists.

2. ATLAS Visitor Centre

The ATLAS Visitor Centre is one of CERN's official visit sites and is the most popular one, with more than 1,000 visits registered in 2022. Its location adjacent to the ATLAS Control Room at Point 1 near the CERN Meyrin site makes it easy to access and exciting to see. Although it started receiving visitors in 2009, it was recently remodeled and reopened to the public in 2022 with new and improved exhibits. It features a variety of screens, displays of detector components, and a window overlooking the ATLAS Control Room that can be made transparent or opaque.

3. Virtual Visits

ATLAS Virtual Visits [2] are a way to allow classrooms around the world to experience the ATLAS detector. They are "virtual" in that the visitors are not physically present at CERN, but the guide is on-site with a video camera and a Zoom videoconferencing connection to show the audience around the ATLAS detector or Visitor Centre, as if they were walking with him/her. In certain instances, the visit is also livestreamed to other platforms such as YouTube [3] or TikTok [4]. One of the goals of the Virtual Visit programme is to reach audiences all around the world, and thus the ATLAS Collaboration puts in considerable effort to find a guide who speaks the language requested by the visitors. In 2022, 121 Virtual Visits were conducted, spanning 35 countries on all continents and eight different languages.

4. Fact Sheets

The ATLAS Fact Sheets [5] are a printable resource for students to learn about ATLAS: the detector, the collaboration, its computing infrastructure, and its physics programme. The goal is to make these concise and illustrated such that they can serve as an introduction for beginners or as quick reference guides for more advanced students. Currently, ten sheets are available to download for free in up to seven languages.

5. Cheat Sheets

The ATLAS Cheat Sheets [6] are one-page summaries, similar to the Fact Sheets, which introduce students to common particle physics concepts such as Feynman diagrams, conservation laws, cross section & luminosity, and more. They are designed to make ATLAS' online scientific material more accessible to a wider audience, or to help students who are beginning in particle physics. Six sheets are currently available in up to five languages.

6. Summary

Members of the ATLAS Experiment at the LHC have developed a wide range of educational resources for students of all levels to help them learn about particle physics and become excited about fundamental research. These resources are made available to as many people as possible through free online content and translations.

References

[1] ATLAS Collaboration, JINST **3**, S08003 (2008).

[2] ATLAS Virtual Visits webpage: https://atlas.cern/Discover/Visit/Virtual-Visit

[3] ATLAS Experiment YouTube account: https://www.youtube.com/c/ATLASExperiment/videos

[4] ATLAS Experiment TikTok account: https://www.tiktok.com/@atlasexperiment

[5] ATLAS Fact Sheets: https://atlas.cern/Resources/Fact-sheets

[6] ATLAS Cheat Sheets: https://atlas.cern/Resources/Cheat-sheets