THE UNIVERSITY OF MELBOURNE

Recent Updates to the Popular ATLAS Virtual Visit Programme

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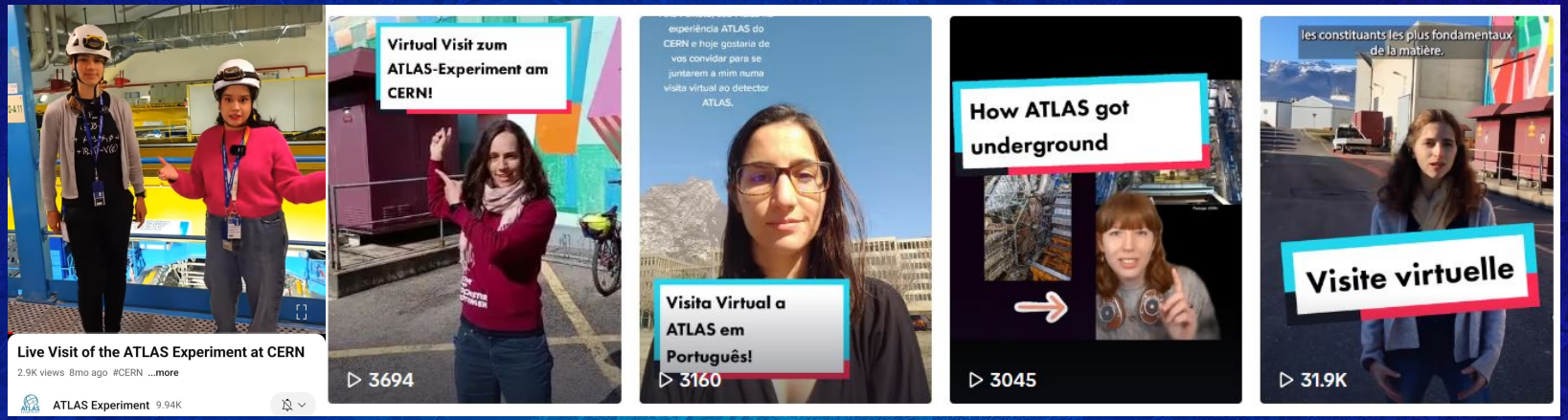
MOTIVATION

- Public engagement a key focus for the scientific community.
- Virtual Visits (VV) leverage video conferencing technology to reach global audiences who cannot visit in person.
- VV program provides opportunities for the public to explore cutting-edge particle physics research & to help bridge the gap between science and society, and to recognise the importance of this connection.
- VVs aim to bring the excitement of scientific exploration and discovery into classrooms. Students of all ages, levels, and backgrounds can benefit from visual resources for learning particle physics.

INTRODUCTION

- Timeline of the programme: 2010 - now
- Goals of VVs: designed to be interactive, dynamic and engaging
- Platforms: video conferencing systems, primarily through the ZOOM application (group visit), but also social media platforms like YouTube, Facebook and TikTok Live (open visits)



PROCEDURE

Structure:

- an introduction from the hosts, sharing their background and involvement in ATLAS
- An explanation of ATLAS & its subdetectors
- A discussion with the audience on various aspects of the experiment

VV requests are done through a booking system & hosts are matched with groups based on language and audience background

Open VVs: organised a few times each year, particularly during the LHC technical shutdowns

Focus: ATLAS, but can also be joint visits with other experiment(s)

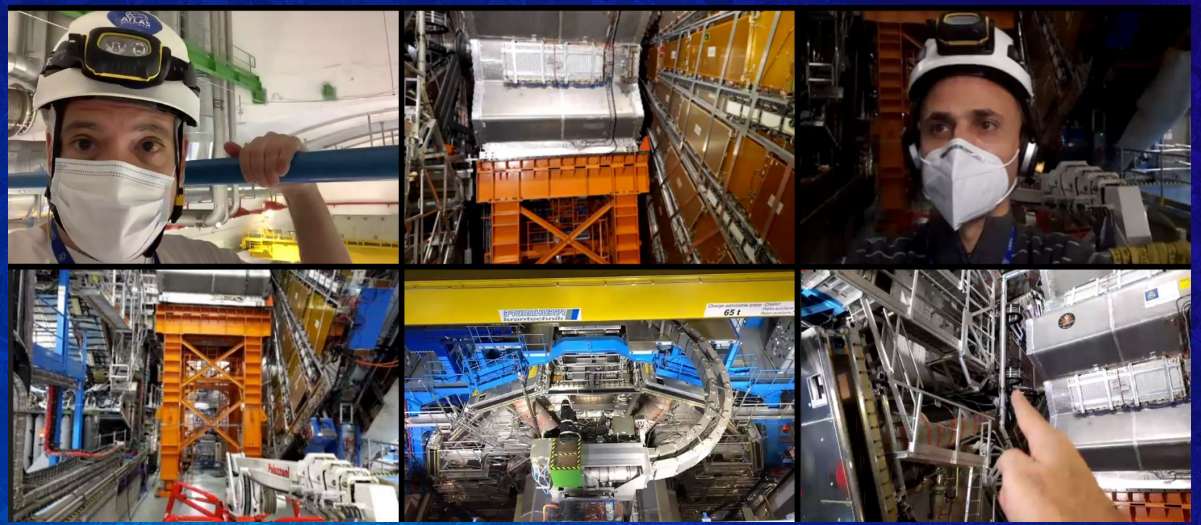
Duration: ~ an hour

LIVE VISIT of the ATLAS and CMS Experiments

LIVE VISIT of the ATLAS and CMS Experiments, June 2024

ATLAS CAVERN

- **ATLAS CAVERN**: primary location, offered during the LHC technical shutdown, giving a unique opportunity to showcase the ATLAS detector.
- Equipment: smartphones, tripods, and laptops to share additional media content (optional)
- Benefits: showing "behind-the-scenes" view of the technology at CERN



ATLAS VV for National Youth Science Forum by Dr Goldfarb and Dr Alhroob , Jan 2023, Australia

ATLAS CAVERN

Structure of the tour:

- begin the tour from the surface, providing an introduction and demonstrating how to access the cavern
- lead a virtual tour around the detector, and highlight the magnets and subdetectors
- Q&A session for the audience

Dr Katarina Anthony, Dilia Portillo & Muhammad Alhroob during the joint open VV between ATLAS & CMS (2024)

VISITOR CENTER

ATLAS VISITOR CENTER (AVC): (photos by Ordan J 2021)

- Flexible schedule, not restricted to normal working hours 07:00-19:30
- Adjacent to ATLAS Control Room (ACR), with windows that can be made transparent/ opaque.
- Many interactive screens and exhibitions

VISITOR CENTER

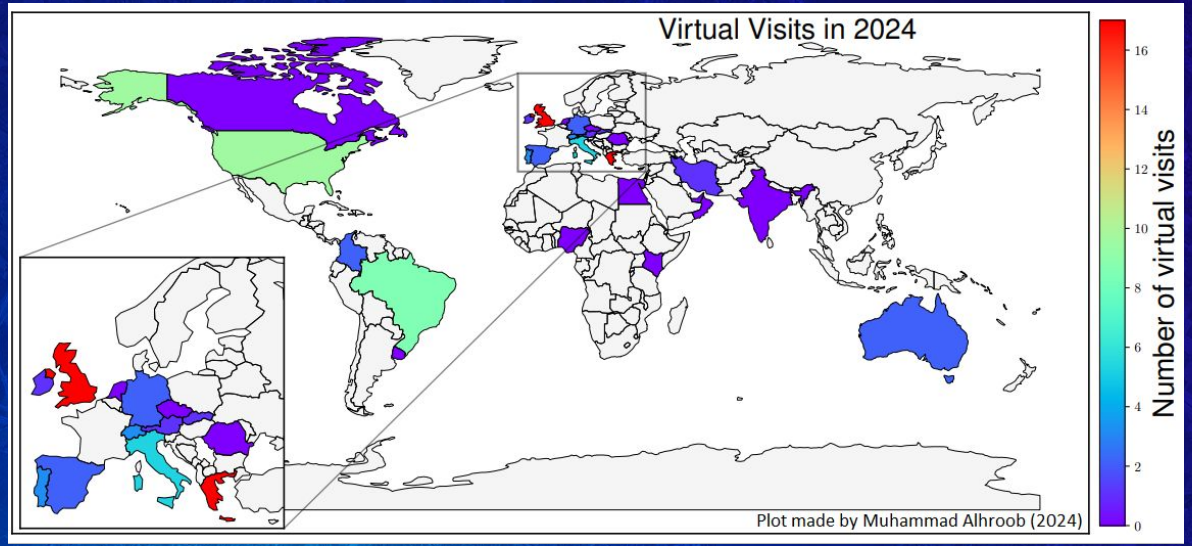
New audio-video system installed to improve the quality of VVs:

- Two HD cameras: both in the AVC and ACR, which can be remotely controlled by a tablet (changing angles, zoom in/out etc)
- A tablet to help hosts connect to the Zoom meeting more easily, and a big screen on the wall to help the hosts see the audience, without the need of a personal smartphone

ATLAS VV (2024) host by Dr Muhammad Alhroob using the new AV system at AVC, photos from Dr Steve Goldfarb

STATISTICS

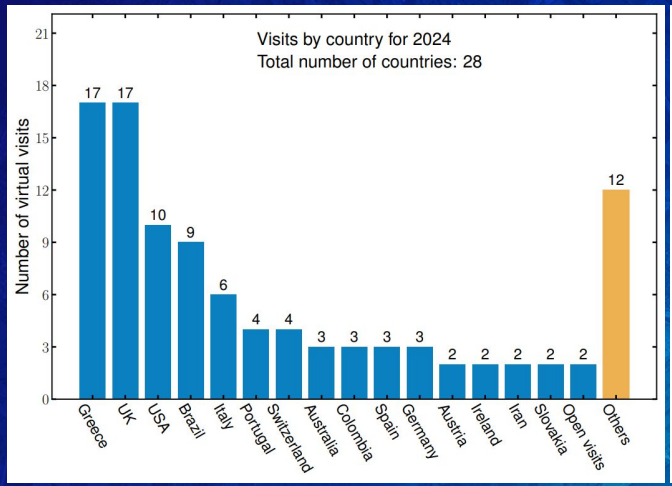
- Thousands of participants from all continents & in multiple languages
- Between 10-600 participants per visit
- Open visits for individuals on a regular basis.

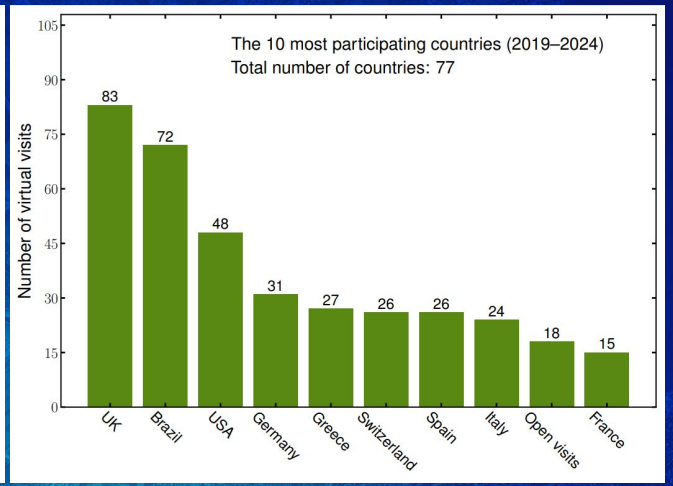


STATISTICS

Visits by country

- The UK, Brazil & the US are the countries with the highest numbers of VVs in the last 5 years
- 2024: 101 visits from 27 countries (the UK & Greece top the list - 17 visits)
- 2023: 87 visits from 31 countries



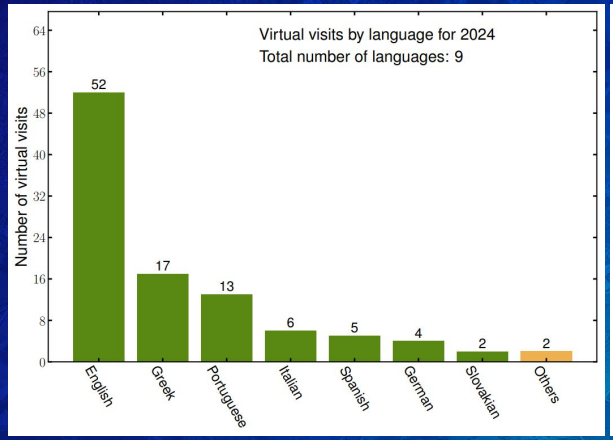


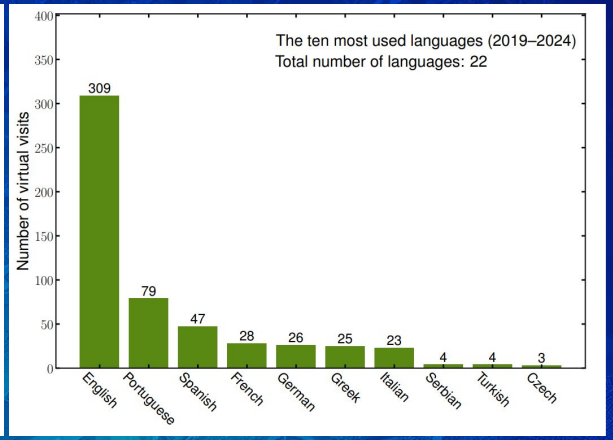
Plots made by Muhammad Alhroob (2024)

STATISTICS

Visits by language:

- Most of the visits are requested to be in English (52% in 2024)
- Dominant languages: English, Portuguese, Spanish, French, German, Greek & Italian (between 2019-2024)
- 2024: an increase in the number of VVs in languages other than English



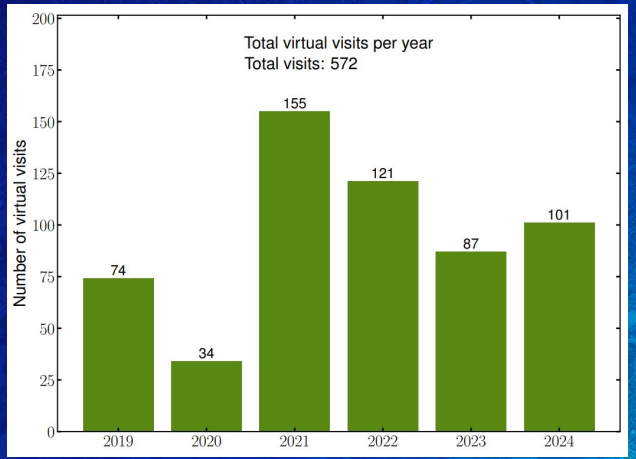


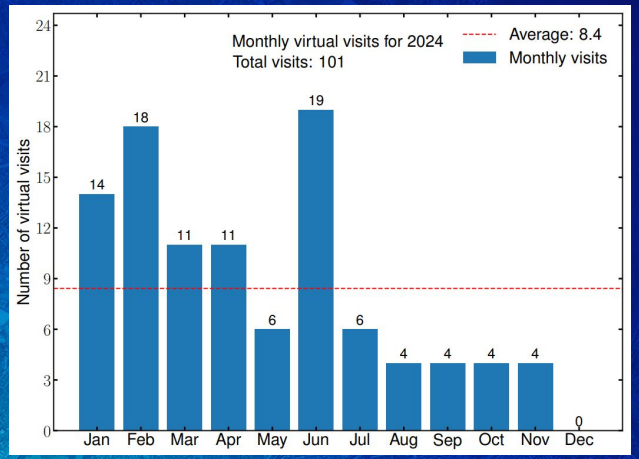
Plots made by Muhammad Alhroob (2024)

STATISTICS

Visits per month/year:

- A drop in 2020 due to the pandemic and a sharp peak in 2021 due to the shift to remote engagement
- The peaks due to the cavern access and International MasterClasses, and the drop due to seasonal break





Plots made by Muhammad Alhroob (2024)

INTERNATIONAL MASTERCLASSES

International MasterClasses (IMC), in collaboration with IPPOG, offer 13,000 high school students, 200+ places, 60 countries to

- Get insight into topics and methods of basic research at the fundamentals of matter & forces.
- Perform measurements on real data from experiments at CERN.
- Participate in an international video conference for discussion of results.

VVs have been offered as a part of IMC to bring particle physics to students from different backgrounds, including those from remote areas and in warzones.

Dr Goldfarb and Ukrainian students Tiulchenko & Boreiko hosted ATLAS VV for the International MasterClasses in Kharkiv, Apr 2023.

CONCLUSION

- The ATLAS collaboration has been proactive in public engagement through group & open virtual visits on different media platforms
- VVs leverage video conferencing technology to reach global audiences with a diversity in background (countries, languages etc)
- VVs offer learning opportunities to classrooms worldwide, even in remote regions and warzones.
- VVs can broaden public access to the ATLAS experiment and showcase their scope and impact
- ATLAS Outreach group contact: