ATLAS, US-ATLAS
DEI and Outreach
Sarah Demers, Yale University
February 23, 2022
The Large Hadron Collider
CERN Accelerator Complex
*(the world’s largest refrigerator, and highest energy collider)*

LHC: Last step in a series of accelerators

Protons end up traveling close to the speed of light before we **SMASH** them into each other…
Why High Energy?

We are trying to study very MASSIVE particles
We need enough energy to create them

\[ E = mc^2 \]

It takes a lot of energy to break up the proton to study the constituents (quarks)

The higher the energy, the more phase space we can explore
How big is 27 km in circumference?
Run: 279685
Event: 690925592
2015-09-18 02:47:06 CEST
COLLECTING RAW DATA

ATLAS records over 10,000 TB of data per year – that’s equivalent to 320,000 hours of 4K streaming. The data are distributed to over 130 computing centres worldwide – located on every inhabited continent – and filtered according to the needs of individual physics analyses. As part of these analyses, ATLAS processes 25,000 TB of data every week.
ATLAS Collaboration member nationalities

Over 5500 members of 103 nationalities
ATLAS Authors sign papers with their names listed in alphabetical order!
We follow the **CERN code of conduct**. This means that we abstain from and actively discourage all forms of harassment as well as verbal, non-verbal, written or physical abuse.

- Yelling at someone to make your point is abusive
- Be mindful of the language that you use. For example, sexual language and imagery, sexist, racist, or otherwise exclusionary jokes are not appropriate

Give your colleagues the courtesy and respect that you would like to receive

In meetings we welcome questions, which should be asked and answered respectfully, and pay particular attention to those new to the Collaboration. We want all participants to be able to express their opinions freely

**We kindly ask that all Collaboration members follow these principles**

https://cds.cern.ch/record/2240689/files/BrochureCodeofConductEN.pdf
Broader Context

- ATLAS
  - Has a statement on Diversity and Inclusion that recognizes the existence of discrimination, explicitly supports LGBTQ+ rights, and notes that particular challenges can be faced by women, caretakers, and those with disabilities.
  - Has elected contacts for D&I since 2017 and an Early Career Scientist Board that focuses on networking and mental health
  - Maintains (and makes public) demographic information
  - Has a very strong public engagement program
EPO Broader Context

• ATLAS has an Education and Outreach Group that has collaboration-wide elected conveners and meets weekly

• Highlighting two examples that are in strong support of U.S. ATLAS EPO efforts:
  • ATLAS Virtual Visits
  • ATLAS Social Media

• We additionally have strong links with other LHC experiments
  • Many links through Quarknet and Masterclasses
  • Common assessment framework developed through MREFC

• We have strong links with the ongoing Snowmass efforts
  • Community Engagement Frontier Activities
  • Education and Public Outreach Group Activities
ATLAS Social Media
• Twitter: 91.6k followers
• Facebook: 35.6k followers
• Instagram: 30.5k followers
• Youtube: 7.3k followers
• Tik Tok: 3.6k followers
• flickr
Who is the ATLAS Collaboration?
ATLAS Early Career Scientist Board

- The ATLAS Early Career Scientist Board (ECSB) was created in 2017 [mandate]

- Goal: maximally integrate and support early career scientists within ATLAS

- Early Career Scientist (ECS): all students and anyone within 10 years of PhD completion

- Activities:
  - Follow up with ATLAS management and collaboration board on ECS-related issues
  - Carry out surveys to collect feedback from the collaboration
  - Organize events to support ECSs

Ben Davis-Purcell  Flavia de Almeida Dias  Michele Faucci Giannelli  Sébastien Rettie  Sukanya Sinha  Giordon Stark  Emily Thompson
Latest Events

Induction Day and “A year in ATLAS”

- Induction Day is for the newest ATLAS members
- Participants get their questions answered by collaboration leaders, learn how to be new to ATLAS and how to do an ATLAS analysis
- Next Induction Day (+ software tutorial) taking place October 29th, registration is now open!
- “A year in ATLAS” is a similar event, but aimed at those who have finished their qualification task. Next iteration will be held early next year.
- Please advertise these events to newcomers in your group!

Latest Events

Introduction to Mental Health

- Held in May 2021, event introduced mental health concepts and how to deal with them
- Workshop run by Sarah Speciali (therapist and life coach, with connections to CERN)
- Check out resources and slides
- Over 250 participants, with 98% interested in another event on this topic

Latest Events

A Conversation Over Ice Cream

- Annual event initiated by ECSB and hosted with early career fora from CMS, ALICE, and LHCb with the objective of broadening the knowledge horizon of young scientists
- Latest iteration devoted to machine learning in high energy physics
- No ice cream this time, hopefully next time!

Latest Events

Meet & Eat

- Have lunch with another member of the ATLAS collaboration
- Senior+junior members are paired randomly, they arrange a time to meet virtually for coffee/lunch/chat
- We usually have a dedicated group of ~60 people who regularly participate, please join us!
- Taking place during the weeks of November 22nd to December 10th
- Registrations are now open until November 14th, please sign up!
Who is U.S. ATLAS?

• There are ~44 U.S. Institutes that are members of U.S. ATLAS
  • roughly 3/4 are funded by the Department of Energy (DOE)
  • roughly 1/4 are funded by the National Science Foundation (NSF)

• In terms of distributions of people
  • ~580 “Scientific” personnel
  • ~100 “Technical” personnel
  • ~75 “Computing” personnel
  • ~20 “Administrative” personnel
US ATLAS Committees

• We have a number of groups that keep us running:
  • Speakers Committee
  • Nominations Committee
  • Well-Being Committee
  • Equity, Diversity and Inclusion Committee
  • Public Education and Engagement Committee

• There is, after all, more than physics to doing physics!
U.S. ATLAS EDI Plan

• We have developed an EDI plan
  • It includes the U.S. ATLAS EDI Committee, but extends far beyond the committee

• Goals Include:
  • **Equity**: Ensure fair access to opportunities and advancement to all members of U.S. ATLAS
  • **Diversity**: Ensure that U.S. ATLAS management reflects the diversity of our collaboration across categories that include gender, geographic location and type of institution
  • **Inclusion**: Improve the climate in support of retaining a diverse group of U.S. ATLAS Collaborators
  • **Diversity in HEP**: Build diversity in our field by reaching out to the broader and diverse society, educating the public, and encouraging students of all demographics to pursue and maintain interest in the scientific disciplines
  • **Metrics**: Achieve a 70% participation rate of U.S. ATLAS members answering our request for demographic information
There are four fundamental forces between particles:

1. **Gravity**, which obeys this inverse-square law:
   \[ F_{\text{gravity}} = \frac{G m_1 m_2}{d^2} \]
   and also Maxwell’s equations
   \[ F_{\text{static}} = k_e \frac{q_1 q_2}{d^2} \]
   Also what?
   \[ \text{OK...} \]

2. **Electromagnetism**, which obeys this inverse-square law:
   \[ \text{...well, umm...} \]
   \[ \text{...it holds protons and neutrons together.} \]
   \[ \text{I see.} \]
   \[ \text{It's strong.} \]

3. **The strong nuclear force**, which obeys, uh...
   \[ \text{...well, umm...} \]
   \[ \text{...it holds protons and neutrons together.} \]
   \[ \text{I see.} \]
   \[ \text{It's strong.} \]

4. **The weak force**: it [mumble mumble] radioactive decay [mumble mumble]
   \[ \text{That's not a sentence. You just said 'radio--} \]
   \[ \text{--and those are the four fundamental forces!} \]

xkcd comics : Fundamental Forces