

ATLAS Education and Outreach

Michael Barnett
October 2007



News of The ATLAS Experiment

Mapping the Secrets of the Universe

RSS 2.0
Coming soon

HOME ATLAS Collab.

- For Press
- For Students
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Featured Story



2nd end-cap toroid magnet in cavern

On 12 July, the second of the two huge end-cap toroid magnets was lowered into the ATLAS cavern. This was the last of the truly large components of ATLAS.

More on this story...



Other Headlines

Pixel detector lowered into the cavern and installation completed.

[26 June 2007]



ESA/NASA astronaut Christer Fuglesang visits the ATLAS cavern.

[14 June 2007]



The complex and spectacular lowering into the cavern of the huge end-cap toroid magnet on side A.

[13 June 2007]



The President of Chile, Michelle Bachelet, visited CERN and the ATLAS cavern on 3 June.

[3 June 2007]



Earlier Headlines...

ATLAS video features



The pixel detector is lowered into the ATLAS cavern

Muon wheel

Toroid magnet

Features

Featured ATLAS people



Read about Valeria

Valeria Perez Reale

Past featured people

Other LHC News

CERN press releases
CMS Experiment news

FAQs

[View ATLAS FAQs](#)



Send your question to us!

Name:

Question:

Send

Reset

ATLAS webcams



View what's happening in the ATLAS cavern with the ATLAS webcams.

ATLAS detector overview



Learn about the different major systems of ATLAS and see how they work.

Earlier Headlines

ATLAS in the news

Technology Transfer

THE LARGE HADRON COLLIDER

**Nature
magazine
cover**





The ATLAS Experiment

Mapping the Secrets of the Universe



ATLAS multimedia

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ATLAS Multimedia

See It at 

Animated Clips



Descriptive animations of the ATLAS Experiment are here.

Video Clips



Short video clips of the ATLAS Experiment are here.

Full-length Features



Full-length ATLAS video and animated features are here.

How ATLAS Works



Animated clips showing how five ATLAS detector components work.

PowerPoint files here

ATLAS Detector Overview

ATLAS Home



Electromagnetic Calorimeter

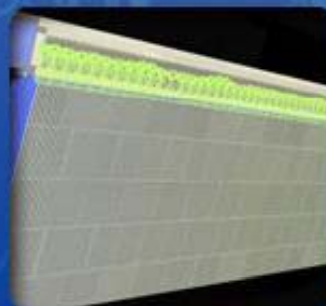
Choose a detector component to learn more about how the ATLAS detector works.



Inner Detector



Transition Radiation Tracker



Hadronic Calorimeter



Muon Detectors

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Search



[ATLAS - Episode 1 - A New Hope](#)

07:13

Added: 3 months ago
Views: 2,577

★★★★★

16 ratings



[ATLAS - Episode 2 - The Particles Strike Back \(Part 1\)](#)

09:45

Added: 3 months ago
Views: 1,791

★★★★★

22 ratings



[Protons Accelerate in LHC and Collide in ATLAS](#)

00:30

Added: 3 months ago
Views: 1,105

★★★★★

2 ratings



[The ATLAS Experiment - Mapping the Secrets of the Universe 1](#)

09:52

Added: 2 months ago
Views: 1,004

★★★★★

9 ratings



[ATLAS - Episode 2 - The Particles Strike Back \(Part 2\)](#)

04:24

Added: 3 months ago
Views: 881

★★★★★

9 ratings



[Aftermath of Proton Collision in ATLAS Experiment](#)

00:05

Added: 3 months ago
Views: 715

★★★★★

3 ratings



[The ATLAS Experiment - Mapping the Secrets of the Universe 2](#)

08:51

Added: 2 months ago
Views: 574

★★★★★

7 ratings



[Riding a Toroid Magnet into the ATLAS Cavern](#)

01:30

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Views: 512

★★★★★

2 ratings



[A Sweeping View of the ATLAS Detector at LHC](#)

00:15

Added: 3 months ago
Views: 341

★★★★★

1 rating



[From Space to LHC to the ATLAS Detector and Inside](#)

00:45

Added: 3 months ago
Views: 336

★★★★★

5 ratings



[Moving the Calorimeter into the Heart of ATLAS](#)

00:10

Added: 3 months ago
Views: 290

★★★★★

2 ratings



[The Black Eyed Peas visit ATLAS](#)

00:14

Added: 3 months ago
Views: 182



[Insertion of the particle detector into the heart of ATLAS](#)

00:29

Added: 1 month ago
Views: 129

★★★★★

2 ratings



[Zooming into the ATLAS Detector with Particle Tracks](#)

00:42

Added: 3 months ago
Views: 125



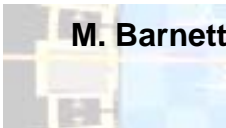
[Constructing a Giant Muon "Wheel" of the ATLAS Detector](#)

00:11

Added: 3 months ago
Views: 108

★★★★★

2 ratings



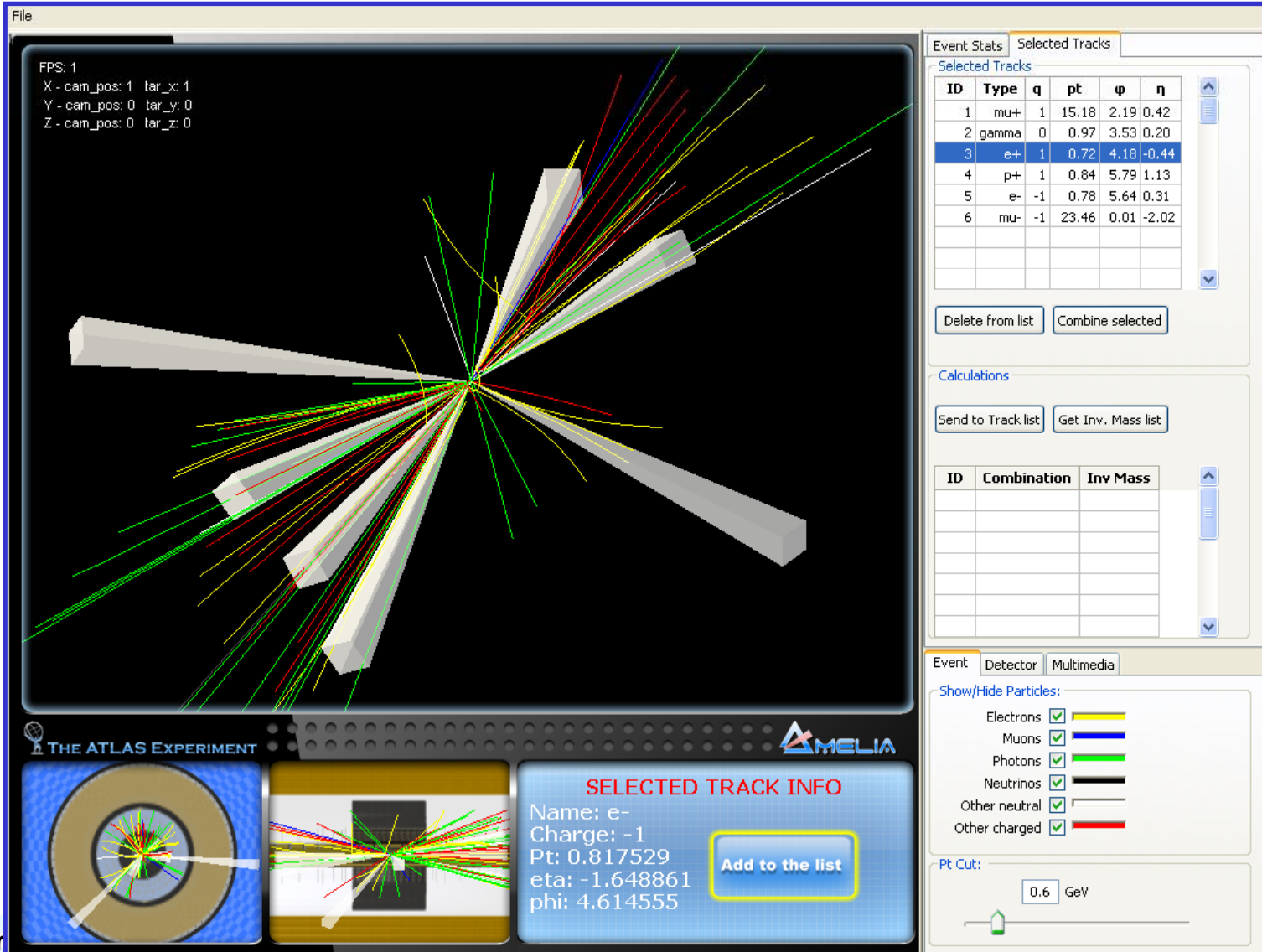
M. Barnett

title

Student Event Analysis (AMELIA)

Interactive event analysis for students and public

ATLAS Multimedia Educational Lab for Interactive Analysis



The screenshot displays the AMELIA software interface. The central window shows a 3D visualization of particle tracks originating from a central point, with several tracks highlighted in different colors. The interface includes several panels:

- Top Left:** FPS: 1
X - cam_pos: 1 tar_x: 1
Y - cam_pos: 0 tar_y: 0
Z - cam_pos: 0 tar_z: 0
- Top Right:** Event Stats | Selected Tracks
Selected Tracks table:

| ID | Type | q | pt | ϕ | η |
|----|-------|----|-------|--------|--------|
| 1 | mu+ | 1 | 15.18 | 2.19 | 0.42 |
| 2 | gamma | 0 | 0.97 | 3.53 | 0.20 |
| 3 | e+ | 1 | 0.72 | 4.18 | -0.44 |
| 4 | p+ | 1 | 0.84 | 5.79 | 1.13 |
| 5 | e- | -1 | 0.78 | 5.64 | 0.31 |
| 6 | mu- | -1 | 23.46 | 0.01 | -2.02 |

- Bottom Left:** THE ATLAS EXPERIMENT logo and a small 3D view of the detector.
- Bottom Center:** A larger 3D view of the detector with tracks.
- Bottom Right:**

SELECTED TRACK INFO

Name: e-
Charge: -1
Pt: 0.817529
eta: -1.648861
phi: 4.614555
Add to the list
- Right Panel:**

Calculations

Send to Track list | Get Inv. Mass list

| ID | Combination | Inv Mass |
|----|-------------|----------|
| | | |
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| | | |

Event | Detector | Multimedia

Show/Hide Particles:

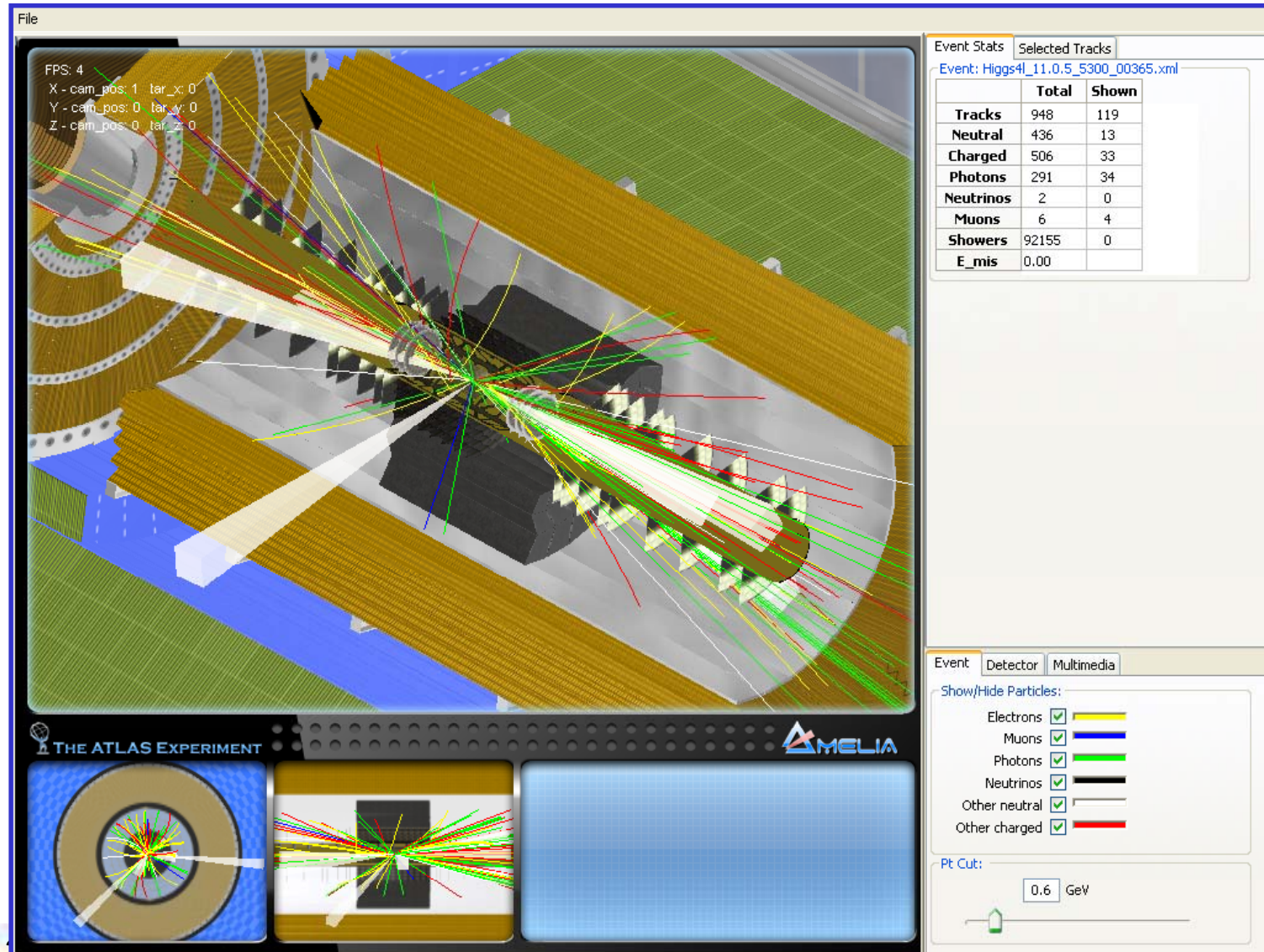
 - Electrons
 - Muons
 - Photons
 - Neutrinos
 - Other neutral
 - Other charged

Pt Cut: 0.6 GeV

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File







FPS: 4
 X - cam_pos: 1 tar_x: 0
 Y - cam_pos: 0 tar_y: 0
 Z - cam_pos: 0 tar_z: 0

Event Stats Selected Tracks
 Event: Higgs4L_11.0.5_5300_00365.xml

| | Total | Shown |
|-----------|-------|-------|
| Tracks | 948 | 119 |
| Neutral | 436 | 13 |
| Charged | 506 | 33 |
| Photons | 291 | 34 |
| Neutrinos | 2 | 0 |
| Muons | 6 | 4 |
| Showers | 92155 | 0 |
| E_mis | 0.00 | |

Event Detector Multimedia

Show/Hide Particles:

- Electrons 
- Muons 
- Photons 
- Neutrinos 
- Other neutral 
- Other charged 

Pt Cut: 0.6 GeV

THE ATLAS EXPERIMENT AMELIA

Intro

Unprecedented Energies

Starting in mid-2008, ATLAS will observe the dramatic head-on collisions of pairs of protons at unprecedented energies. It will bring physics into new territory with new processes and particles that will change our understanding of energy and matter.

START HERE



Learn particle physics basics at this

SIDE PATH

Learn more about ATLAS and the LHC at:

ATLAS eTours

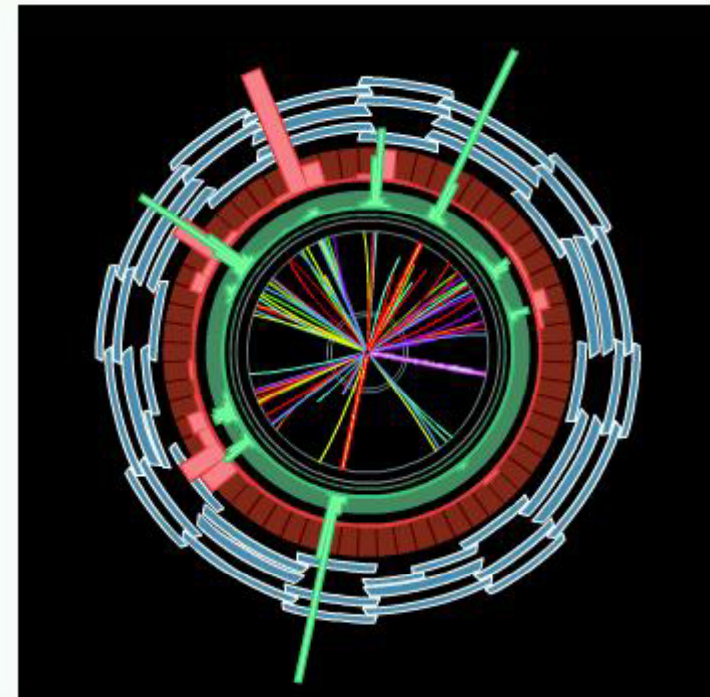


Figure Caption:

A collision event viewed along the beamline. After the unseen protons collide these particles emerge. This is a bird's-eye view of the ATLAS detector. The size of the inner detector is greatly exaggerated, whereas the size of the muon chambers on the outside is greatly reduced.

[Previous Page](#)

[AMELIA Home](#)

New Physics from Patterns

Since different particles decay in very different ways, the art of understanding the new processes and particles is to recognize the patterns, to choose the right set of particles to study, and to calculate the invariant masses.

This is what you will need to do in AMELIA to search for signs of new physics in the data from the ATLAS Experiment!

Figure Caption:

An event in which a Higgs boson and other particles was produced. The Higgs is moving upward and a jet of particles is moving downward. The Higgs boson decays into two Z bosons, one Z boson decays to an electron and a positron shown by the blue histograms (going upwards), the other Z boson decays to two muons shown by the red tracks.

