



SCIENTIX

The community for science
education in Europe

SCIENTIX - иновативни практики и образователни технологии

Свежина Димитрова

НАОП "Николай Коперник - Варна"

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European Commission
Directorate-General for Research





Scientix е проект, управляван от Европейската Училищна Мрежа (EUN) от името на ГД "Изследвания" на Европейската Комисия и финансиран по 7-ма рамкова Програма.

<https://www.youtube.com/watch?v=J2WI101Y11o&spfreload=10&hd=1>

Европейска Училищна Мрежа (EUN)



Мрежа от
30 министерства на
образованието в Европа



Насърчаване на използването
на ИКТ и цифрови технологии
в класната стая?

Насърчаване на европейските
измерения в училищата

Подобряване на качеството на
образование в Европа

Три области на интерес:

- обслужване на училища,
- научни изследвания и иновации,
- споделяне на ресурси за обучение

• scientix.eu

- Навигация: 8 езика (en, fr, de, pl, it, es, ro, nl)
- Секции:
 - Проекти
 - Ресурси
 - Новини
 - Събития
 - Общност
 - Конференция
 - Scientix живот
 - Във Вашата страна
 - Наблюдение
 - Вестник + Email резюмета
 - Социална медия

WORKING TOGETHER

Learn about networking events for Science Education projects...



FEATURED RESOURCE



Design Your Alien

In this teaching material students review the environmental factors that make the Earth habitable and they compare them to other worlds within our Solar System. Its aim is to use creative thinking to design an alien life form suited for specific environmental conditions on an extra-terrestrial world.

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[SEARCH RESOURCES](#)

LATEST PROJECT



TEMI: Teaching Enquiry with Mysteries Incorporated

This project engages pupils in a unique way - by presenting each problem or task as a mystery that needs to be solved.

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LATEST NEWS



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 Science Teachers in Europe: Join the discussion!

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 **ALEJANDRA GODED**

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February, 2014 [«](#) [»](#)

[LEARNTEC - Learning with IT](#)
04.02 > 06.02 | Germany

[Schools in the Cloud](#)
11.02 | United Kingdom

[1](#) [2](#) [3](#) [View All](#)



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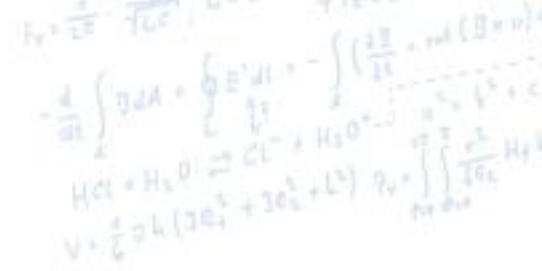
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34m

GM's Frankie James: A Women in Tech, From NASA to General Motors' Advanced Tech Lab on recode.net/1eX9Etn #STEM



Учебни ресурси на ЦЕРН

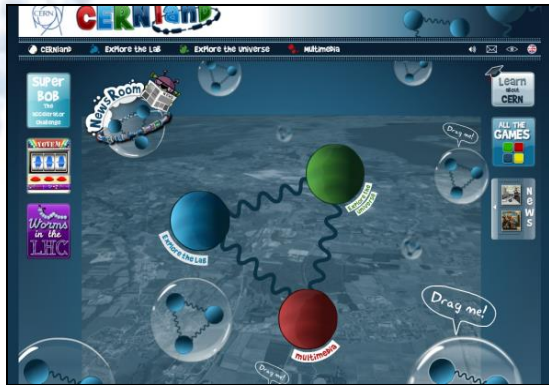
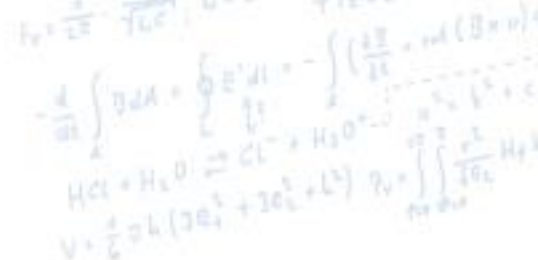
SCIENTIX В ЦЕРН



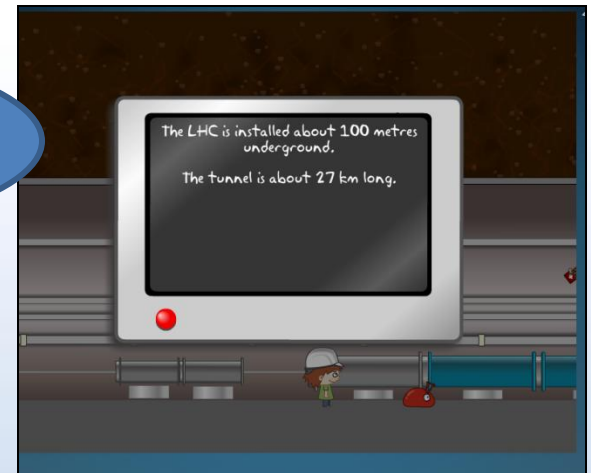
Scientix 2 | Speaker's name
Date | City
Name of event



CERN Land



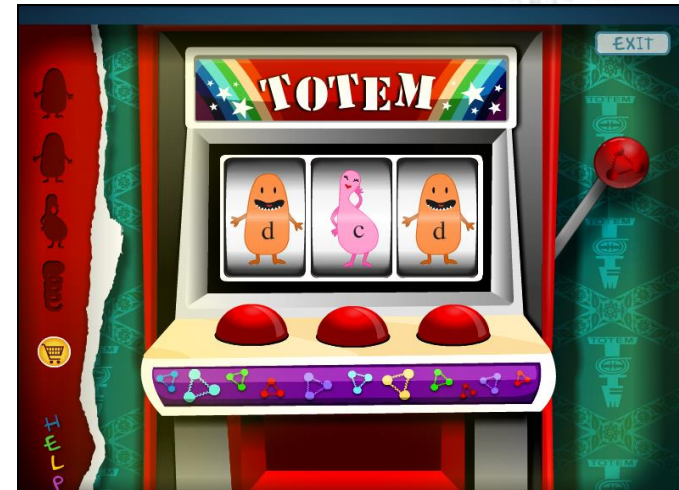
<http://www.cermland.net>



Scientix 2 | Speaker's name
Date | City
Name of event



CERN Land

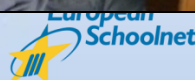


Scientix 2 | Speaker's name
Date | City
Name of event





В захлас от игрите на ЦЕРН



Name
Date | City
Name of event



Учебни ресурси на Атлас

ATLAS EXPERIMENT

Home Info Multimedia Store Blogs Links Visit ATLAS Contact Collaboration Site Press Student/Teachers

Terms of use of ATLAS images

Videos Also available at **YouTube**


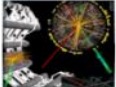
Episode II: The Particles Strike Back
 The second episode in a three part series that uncovers the mysteries of the ATLAS experiment.
Alternate Language Versions
 French | German | Greek | Portuguese
 Order a DVD of this movie here.

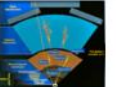
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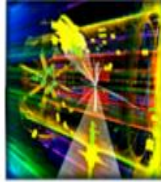

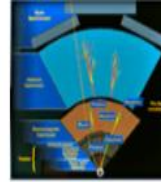
- How ATLAS Detects Particles
- Electromagnetic Calorimeter
- Muon Detectors
- Pixel Detector and Silicon Tracker

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Construction of ATLAS **Personalities & Miscellaneous**

ATLAS EXPERIMENT

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ATLAS for Students and Teachers

Learn More About ATLAS

Student Event Analysis Programs

MINERVA - (Masterclass INvolving Event Recognition Visualised with Atlantis) is a project by the Rutherford Appleton Laboratory and University of Birmingham, UK

HYPATIA - (Hybrid Pupil's Analysis Tool for interactions in Atlas) is a project by the University of Athens, Greece.

LPPP - Lancaster Particle Physics Package is a project by the University of Lancaster, UK. Try it out online

CAMELIA - CAMELIA (Cross-platform Atlas Multimedia Educational Lab for Interactive Analysis) is a project by the Lawrence Berkeley National Laboratory in the United States.

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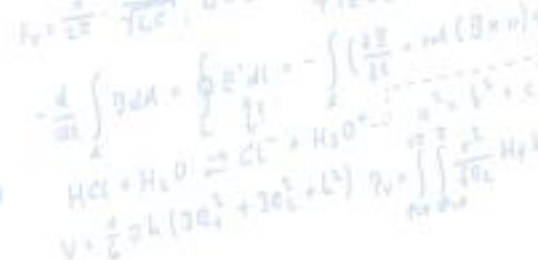
Learning with ATLAS

Just For Fun

Scientix 2 | Speaker's name
<http://www.atlas.ch/multimedia/#higgs-discovery>
 Name of event



Мастерклас MINERVA



MINERVA Home About Support Contact

Masterclass *IN*volving Event Recognition Visualised with Atlantis.

Start MINERVA

Masterclass resources

MINERVA is a masterclass tool for students to learn more about the ATLAS experiment at CERN. It is based on a simplified setup of the ATLAS event display, Atlantis, which allows users to visualise what is happening in the detector. The aim is to look at ATLAS events and try to recognise what particles are seen in the detector. There are tutorial events, then a selection of events to categorise and finally a search for the Higgs! The project is a joint venture between the Rutherford Appleton Laboratory (RAL) and the University of Birmingham.

European Organization for Nuclear Research

MINERVA Home About Support Contact

[While you are reading, click here to start downloading Minerva.](#)

Minerva: Aims of the exercise

- Identify electrons, muons, neutrinos in the ATLAS detector using the Atlantis event display
- Types of Events (particles produced in one collision):
 - $W \rightarrow \text{electron} + \text{neutrino}$ (missing energy)
 - $W \rightarrow \text{muon} + \text{neutrino}$ (missing energy)
 - $Z \rightarrow \text{electron} + \text{positron}$
 - $Z \rightarrow \text{muon} + \text{anti-muon}$
 - Background from jet production
 - (events which might look like W or Z event)
- All of these events are "well-known" processes from previous experiments

The massive W and Z created in the proton-proton collision decay very quickly!



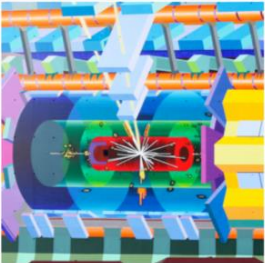
Date | City
Name of event



HYPATIA

GO-LAB Search Online Labs Apps Inquiry Spaces Big Ideas About Support

HY.P.A.T.I.A. - Hybrid Pupils' Analysis Tool for Interactions in ATLAS



Go-lab approved

Lab type: Data set
 Lab owner: Christine Kourkoumelis
 Age range: 14-16, 16-18, >18
 Language: English, German, French, Greek
 Level of difficulty: Medium
 Level of interaction: High
 Booking required: No
 Web link: <http://hypatia.iiasa.gr/>

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Create an Inquiry Space

HY.P.A.T.I.A.

Hybrid Pupils' Analysis Tool for Interactions in ATLAS

Start HYPATIA 1 HYPATIA 2 HYPATIA 3 HYPATIA 4 Exercise Instructions Help

Do you want to learn what happens when protons of the highest energy in the world collide with protons of the same energy?

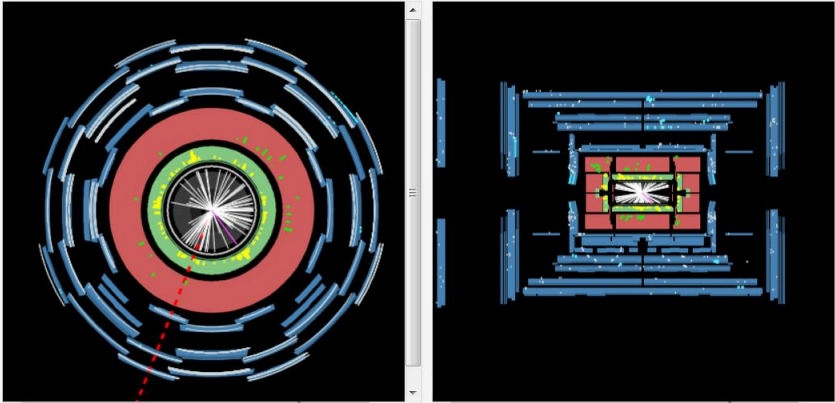
Do you want to learn how to identify tracks and distinguish electrons from muons?

Do you want to discover invisible particles? (Z^0 , 91 times heavier than the proton)?

Do you want to make histograms of the new particles and learn about their width (Heisenberg uncertainty principle)?

Hybrid Pupils' Analysis Tool for Interactions in ATLAS

Start HYPATIA 1 HYPATIA 2 HYPATIA 3 **HYPATIA 4** Exercise Instructions Help



Event: 1/10 (1986314/178047) 2011-03-23
 ETMiss: 12.43 GeV ϕ : -1.94 rad

Previous Event Next Event Insert Electron Insert Muon Delete Track

Track p_T [GeV] η [rad] ϕ [rad] Event Name ETMiss Track p_T [GeV] η [rad] ϕ [rad] m_e [GeV] m_μ [GeV] $m_{\mu\mu}$ [GeV]

Context 2 | Speaker's name
 Date | City
 Name of event

Hypatia [Read About](#) [Simplified Basics](#) [Use Simplified Version](#) [Basics](#) [Use HYPATIA](#) [Downloads](#) [Useful Links](#) [Contact Us](#)

UNIVERSITY OF ATHENS
INSTITUTE OF PHYSICS BELGRADE

HYPATIA

HYbrid Pupil's Analysis Tool for Interactions in ATLAS

The project is dedicated to Liana Kotronopoulou, a 22 year old graphic designer, who was killed by a truck shortly after she designed our logo.

Hypatia of Alexandria (370-415 AD) was a mathematician, astronomer and philosopher. She was the first woman to make a

Hypatia [Read About](#) [Simplified Basics](#) [Use Simplified Version](#) [Basics](#) [Use HYPATIA](#) [Downloads](#) [Useful Links](#) [Contact Us](#)

Home :: Simplified Basics

BASICS FOR SIMPLIFIED HYPATIA

Throughout the project you will be looking at different "events" which take place when there is a proton-proton collision. The events which you will be looking at, are the result of simulations where one of the products of the proton-proton collision was a **Z particle**. The Z is a very short lived particle and decays immediately. Sometimes it decays to a pair of electron-positron or to **muon** antimuon particles. The events which you will be looking at, contain only such decays but the decay products are not necessarily detected (because of not complete coverage of the detector, cracks etc). In general though, the electrons and muons interact with the detector and produce traces in different parts of the detector; these traces are called "tracks". If they originate from the decay of the same particle, they should join together at the same point, called "vertex" (in your case, the production point of the Z particle). Each decay product leaves a different signature in the detector as will be explained below.

The ATLAS detector consists of several components, stacked so that all particles go through different layers sequentially. An example of different particles interacting in different layers, is shown in the following figure.

View Options

Name	(GeV)
1 Track 27	Pt: -1.323

Name
1 testEvent01
2 testEvent02
3 testEvent03
4 testEvent04
5 testEvent05
6 testEvent06
7 testEvent07

Events List

Elements Visibility

Gen. Tracks Jets

Muons Missing Et

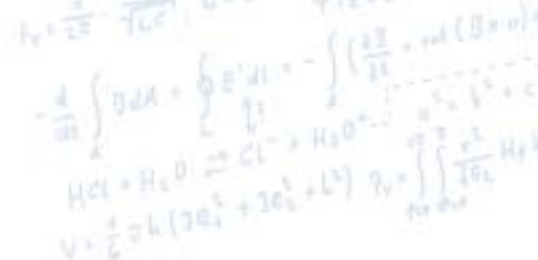
PT Cutoff

0.00 GeV




Да построим атом

Build an Atom




GO-LAB Search Online Labs Apps Inquiry Spaces Big Ideas About



Atom


Build an Atom

Build an atom out of protons, neutrons, and electrons, and see how the element, charge, and mass change. Then play a...




Star in a Box

Star in a Box is an interactive webapp which animates stars with different starting masses as they change during...

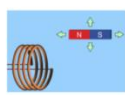


Concentration


Watch your solution change color as you mix chemicals with water. Then check molarity with the concentration meter. What are all the ways you can change the concentration



Space

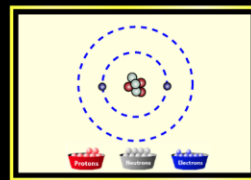


Lab

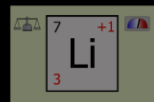


Lab


Build an Atom



Atom



Symbol



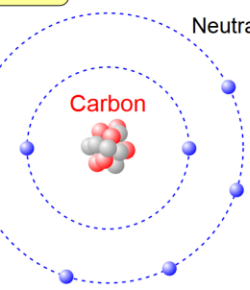
Game

Protons: ●●●●●

Neutrons: ●●●●●

Electrons: ●●●●●

Neutral Atom



Carbon

Element

H	He																
Li	Be	B	C	N	O	F	Ne										
Na	Mg	Al	Si	P	S	Cl	Ar										
K	Ca	Sc	Ti	V	Cr	Mn	Fe	Cu	Zn	Ga	Ge	As	Se	Br	Kr		
Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe
Cs	Ba	La	Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu	Hf
Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At					

Net Charge

0

Mass Number

12

Show

Element Name

Neutral/Ion

Stable/Unstable

Protons: ●●●●●

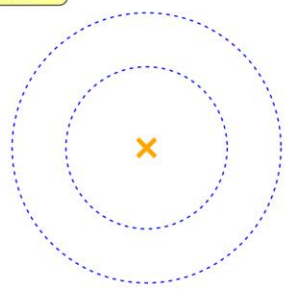
Neutrons: ●●●●●

Electrons: ●●●●●

Protons: ●●●●●

Neutrons: ●●●●●

Electrons: ●●●●●



Element

H	He																
Li	Be	B	C	N	O	F	Ne										
Na	Mg	Al	Si	P	S	Cl	Ar										
K	Ca	Sc	Ti	V	Cr	Mn	Fe	Cu	Zn	Ga	Ge	As	Se	Br	Kr		
Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe
Cs	Ba	La	Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu	Hf
Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At					

Net Charge

-

Mass Number

-

Model:

Orbits

Cloud

Show

Element Name

Neutral/Ion

Stable/Unstable

Protons: ●●●●●

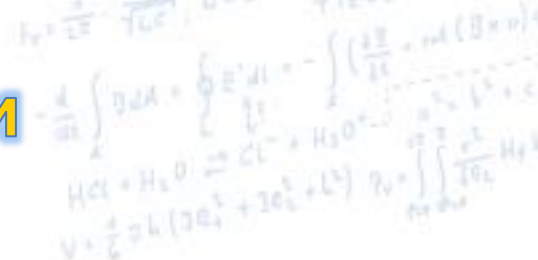
Neutrons: ●●●●●

Electrons: ●●●●●





Интерактивни симулации



QUANTUM SPIN-OFF: CONNECTING SCHOOLS WITH HIGH-TECH RESEARCH AND ENTREPRENEURSHIP

Share this project

BASIC INFORMATION | **RESEARCH INFORMATION** | **TEACHER INFORMATION**

quantum spinoff
Quantum Spinoff brings science teachers and their pupils in direct contact with research and entrepreneurship in the high-tech sector.

Quantum Spin-Off seeks to link the insights of modern physics and the opportunities it offers to high-tech enterprising. The project is aimed at teachers and students in upper secondary level and (a) brings them into contact with basic research in nanotechnology and quantum physics and (b) provides opportunities to do their own research.

The idea is to show students how an innovative idea can lead to an application in an enterprise. Under the guidance of researchers and entrepreneurs, the participating schools develop a technical application based on research results and convert this into a business plan.

The outcomes will also include learning and teaching materials on quantum physics and a science teacher training programme.

The particular activities of Quantum Spin-off:

- National Quantum Spin-Off Teacher Training events organised in all participating countries

quantum spinoff
Connecting schools with high-tech research and entrepreneurship

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Simulations

These simulations are a selection of the result of the PhET™ project at the University of Colorado with topics related to quantum physics and its technological applications.

TRAINING ACTIVITIES

Photoelectric effect | Quantum Tunneling and Wave Packets | Quantum Bound States

Home

Simulations

- New Sims
- Physics
 - Motion
 - Sound & Waves
 - Work, Energy & Power
 - Heat & Thermo
 - Quantum Phenomena
 - Light & Radiation
 - Electricity, Magnets & Circuits
- Biology
- Chemistry
 - General Chemistry
 - Quantum Chemistry
- Earth Science
- Math

Alpha Decay

Multiple Access | Single Access

• Alpha Decay
• Half Life
• Radiation

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 - Electricity, Magnets & Circuits
- Biology
- Chemistry
 - General Chemistry
 - Quantum Chemistry
- Earth Science
- Math
- By Grade Level
 - Elementary School
 - Middle School
 - High School
 - University

Beta Decay

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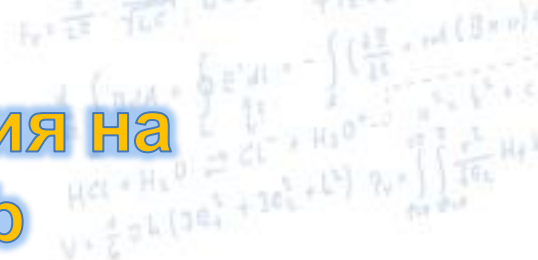
ABOUT

- FOR TEACHERS
- TRANSLATIONS
- RELATED SIMULATIONS
- SOFTWARE REQUIREMENTS
- CREDITS





Възможности и приложения на лабораторията Go-Lab



GO-LAB Search Online Labs Apps Inquiry Spaces

Measurement of Magnetic Field

by hskou

Age range: 12-14, 14-16
Language: English
Level of difficulty: Easy
Level of interaction: High
Average learning time: 1 didactic hour
Access rights: Creative Commons Attribution (CC BY)
Student's link: [Student view of Measurement of Magnetic Field](#)
Contact Person: hskou

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Copy this Inquiry Space

Measurement of Magnetic Field Sveji

Orientation Conceptualisation Investigation Conclusion Discussion

Introduction

Let's have a look at the Sun's wild surface!

Earth to Scale

LHC Game

Go-lab approved

Lab type: Virtual lab
 Lab owner: Emma Sanders
 Age range: 12-14, 14-16
 Language: English, German, French, Italian
 Level of difficulty: Easy
 Level of interaction: Medium
 Booking required: No
 Web link: <http://education.web.cern.ch/education/2/Teaching/games/LHCGame/>

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Create an Inquiry Space

High learning and primary aims of the lab:
 The water interactive developed for the Microcosm exhibition at CERN introducing the workings of a particle accelerator like the Large Hadron Collider. Users of the interactive discover how, for example, protons are accelerated using electromagnetic fields. They then put the knowledge to the test as they are asked to regulate the accelerating field to accelerate a proton before passing to the next stage. On successful completion of the 3 steps (acceleration, bending and focusing) collisions occur and data taking can commence.

Measurement of Magnetic Field

Orientation Conceptualisation Investigation Conclusion Discussion

A simulated collision event viewed along the beampipe. The event is a blackhole was produced and decayed immediately. The black area in tracks represents the inner detector (pixel detector, semiconductor tracker), which has been enormously magnified relative to the rest of the

ATLAS Event - Protons Accelerate in LHC and Collide in ATLAS

Large Hadron Collider

GO-LAB Search Online Labs

Star in a Box

Lab type: Virtual lab
 Lab owner: Edward Gomez
 Contact person: Edward Gomez
 Age range: 12-14, 14-16, 16-18, >18
 Language: English
 Level of difficulty: Medium
 Level of interaction: Medium
 Booking required: No
 Web link: <http://coogt.net/siab/>

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Create an Inquiry Space

<http://www.go-lab-project.eu/teachers>





За Go-Lab

➤ Какво е Go-Lab:

Проектът Go-Lab довежда отдалечените и онлайн лабораториите до класните стаи

➤ Основни цели:

- Дава възможност на учениците да изпълняват персонализирани научни експерименти в онлайн лабораториите
- Предлага на учителите възможност да обогатят своите дейности в класната стая с демонстрации и достъп до лаборатории и дейности, като се предоставя и онлайн достъп до Go-Lab общността



Открий бозона на Хигс

GO-LAB Search Online Labs Apps Inquiry Space

Discover the Higgs boson

by hhourkou



Age range: 14-16, 16-18, >18
 Language: English
 Level of difficulty: Medium
 Level of interaction: High
 Average learning time: 3 didactic hours
 Access rights: Creative Commons Attribution (CC BY)
 Student's link: [Student view of Discover the Higgs boson](#)
 Contact Person: [hhourkou](#)

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Discover the Higgs boson Niki


Orientation Conceptualisation Investigation Conclusion Discussion

a. CERN

CERN is one of the world's largest research centers. It is dedicated to basic research: looking for answers to questions like "what the Universe is made of?", "what are the forces governing the behavior of the smallest constituents?", "what is the dark matter made of?".

View the video below for further information

CERN in 3 minutes



Discover the Higgs boson Niki


Orientation Conceptualisation Investigation Conclusion Discussion

b. The LHC

CERN's facilities include the LHC ("Large Hadron Collider") which is the most powerful accelerator in the world, allowing scientists to probe deeper and deeper the matter. Beam of particles –mainly protons–are accelerated in the 27m circumference of LHC, which is an underground accelerator spanning the border between France and Switzerland.

View the video below for further information

A simulated collision event viewed along the beampipe. The event is one in which a microscopic blackhole was produced and decayed immediately. The black area in the center with many particle tracks represents the inner detector (pixel detector, semiconductor tracker, and transition radiation tracker), which has been enormously magnified relative to the rest of the detector (in this view).



Large Hadron Collider

Discover the Higgs boson Niki

Orientation Conceptualisation Investigation Conclusion Discussion

c. The ATLAS experiment

The products of the head-on collisions of the accelerated particles are detected by giant detectors situated at the collision points. One such detector is the ATLAS detector/experiment (A Toroidal LHC Apparatus). It is the largest detector ever made -25m high and 46m long- a precision instrument with the size of a seven-storey building, weighting as much as the Eiffel tower..

The detector took over 15 years to be built. The international collaboration exploiting the data collected by the detector include 3,000 physicists from 38 countries in all five continents.

View the video below for further information on teh ATLAS construction

A compilation of webcam footage mixed with photographs of the ATLAS detector during it's construction, from the first components to the final assemblies.

Учениците ще използват експериментални данни, събрани от експеримента ATLAS в ЦЕРН за да "открият" невидими частици и да изчислят тяхната маса. За тази цел те ще използват известното уравнение на Айнщайн за еквивалентността на масата и енергията. Частицата, която ще търсят е известният -"Хигс" бозон, наскоро открит в ЦЕРН след 50 години на изследвания!!

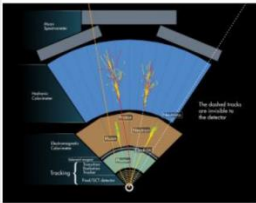
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Открий Z бозона

GO-LAB Search Online Labs Apps Inquiry Spaces

Discover the Z boson

by hkourkou



Age range: 14-16, 16-18, >18
Language: English
Level of difficulty: Medium
Level of interaction: High
Average learning time: 2 didactic hours
Access rights: Creative Commons Attribution (CC BY)
Student's link: [Student view of Discover the Z boson](#)
Contact Person: [hkourkou](#)

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Open this Inquiry Space

Discover the Z boson Sveji

Orientation Conceptualisation Investigation 1 Investigation 2 Conclusion Discussion


particles and the work done by scientists at CERN.

a. CERN

CERN is one of the world's largest research centers. It is dedicated to basic research: looking for answers to questions like "what the Universe is made of?", "what are the forces governing the behavior of the smallest constituents?", "what is dark matter made of?".

View the video below for further information

CERN in 3 minutes




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CERN's facilities include the LHC ("Large Hadron Collider") which is the most powerful accelerator in the world, allowing scientists to probe deeper and deeper the matter. Beam of particles –mainly protons– are accelerated in the 27m circumference of LHC, which is an underground accelerator spanning the border between France and Switzerland.

View the video below for further information on the acceleration

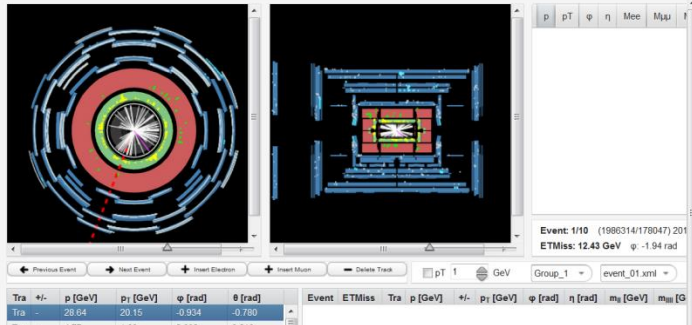
A simulated collision event viewed along the beampipe. The event is one in which a microscopic blackhole was produced and decayed immediately. The black area in the center with many particle tracks represents the inner detector (pixel detector, semiconductor tracker, and transition radiation tracker), which has been enormously magnified relative to the rest of the detector (in this view).



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Orientation Conceptualisation Investigation 1 Investigation 2 Conclusion Discussion

6. How do you use energy and momentum conservation in this exercise? Is energy and mass the same thing?



Trk	+	-	p [GeV]	p _T [GeV]	φ [rad]	θ [rad]
Trk	-	28.04	20.15	-0.934	-0.780	

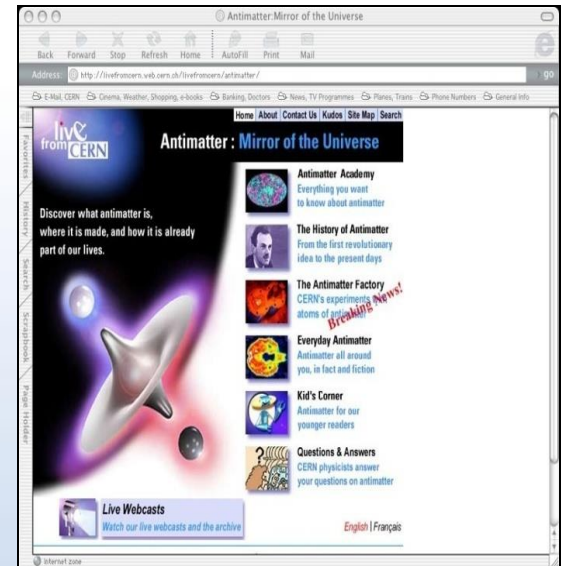
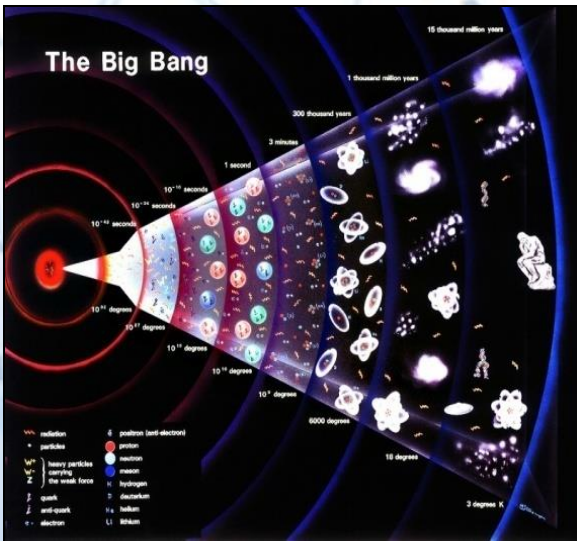
Event: 1/10 (1986314/178047) 201
 ETMiss: 12.43 GeV φ: -1.94 rad

Учениците ще използват експериментални данни, събрани от експеримента ATLAS в ЦЕРН да "открият" невидими частици и да изчислят масата им. За тази цел те ще определят различните видове лептони и ще използват известното уравнение на Айнщайн за еквивалентността на маса и енергия. Ще използват също векторно допълнение, за да добавят импулсите от няколко частици, които са продуктите от разпада на невидимите частици. Частицата, която ще търсят, е частицата отговорна за слабото взаимодействие - Z бозона.



Материали за учители и ученици

- Всички лекции и материали се записват и архивират
- Специални училищни материали, видео клипове, анимации, игри и много други
- Образователен уебсайт на CERN - cern.ch/education

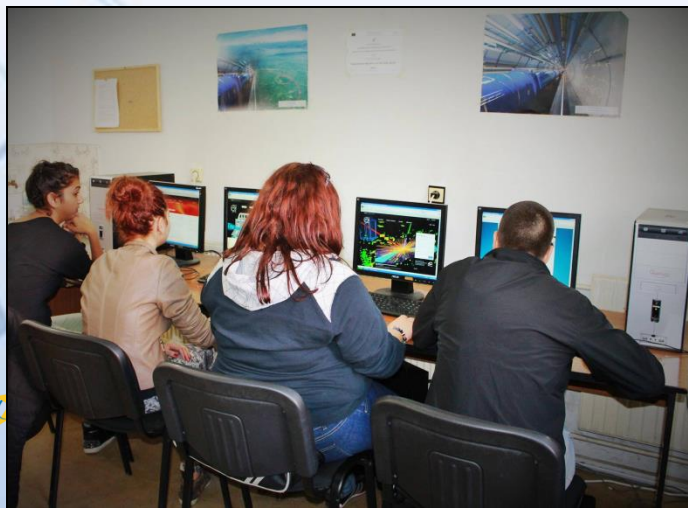
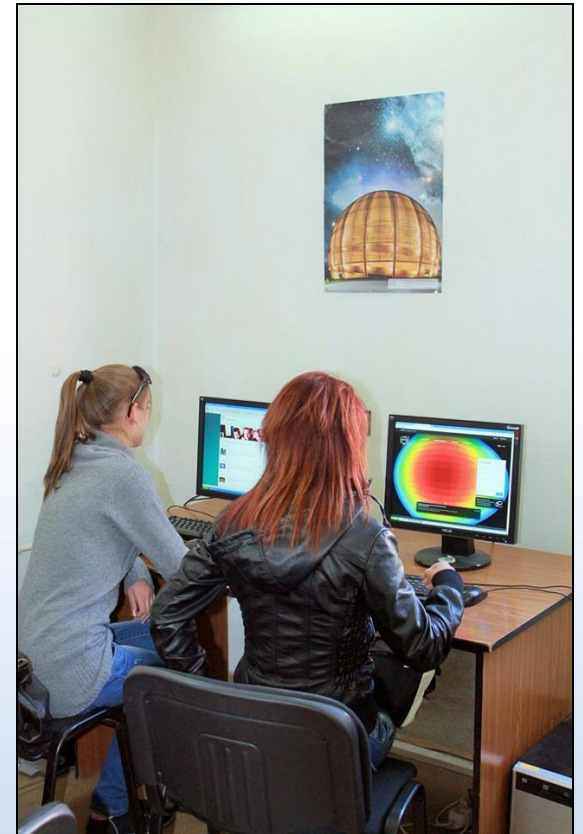
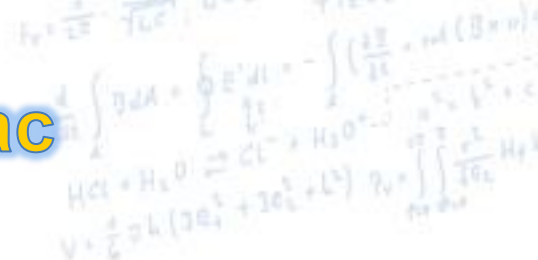


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HYRATIA и MINERVA в клас

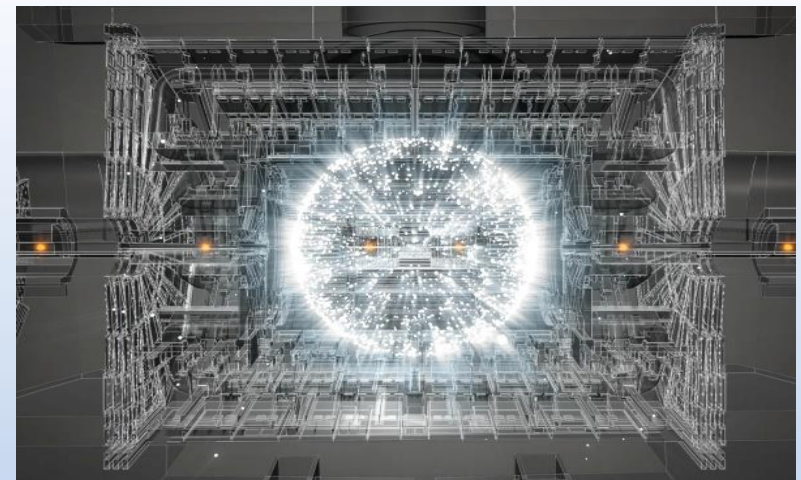
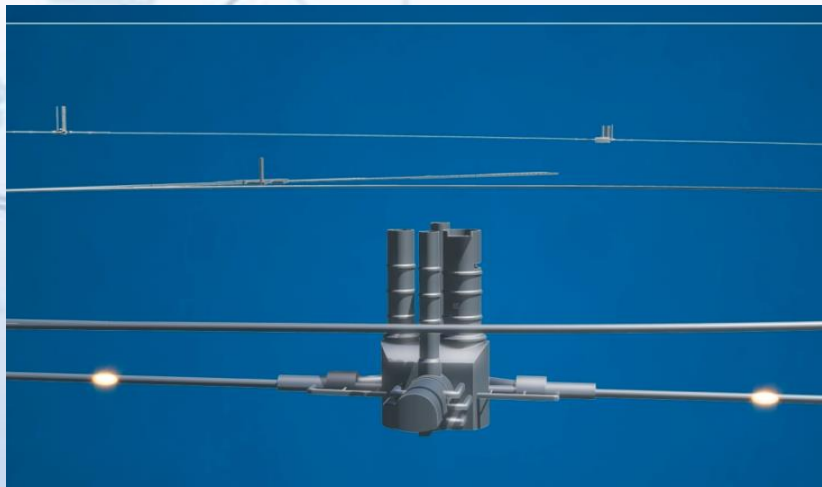


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Учебни ресурси : Анимации



European Commission
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SEVENTH FRAMEWORK
PROGRAMME



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FAULKES TELESCOPE

<http://www.faulkes-telescope.com/>

The screenshot shows the website for the Faulkes Telescope Project. At the top, there is a navigation menu with links for Home, Support, User Showcase, Education, Information, Multimedia Resources, and News. Below this is a secondary menu with links for Educational Resources, Gallery, Register, Astronomical Targets, About Us, and FT team. The main content area is divided into several sections:

- Welcome:** A large section with a nebula image and text: "The Faulkes Telescope Project, part of LCOGTN, provides access to a global network of robotic telescopes and supplies free resources for science education".
- Important Notices:** A section with three sub-sections:
 - Universal Time:** Includes an image of a clock and text: "GMT begins in the UK on 27th October 2013. When booking a slot after this date, remember that GMT = UT so a slot at 12:00 GMT = 12:00 UT."
 - Data archive search:** Includes an image of a person looking through a telescope and text: "Search the telescopes data archive, by object name, filter set, telescope name. Download the FITS and see if there is any SDSS data for the object."
 - What to do if...:** Includes a box that says "No Image Available" and text: "...a jpeg image doesn't appear at the end of each exposure? It's likely that the data will have been taken. You can search for your data files here: http://ari-archive.lcogt.net/cgi-bin/ft_search"
- Login:** A section with a button and text: "Click here to log into your telescope account."
- Registration:** A section with a button and text: "Click here to register for a telescope account."
- Search:** A search bar with a "Go" button.
- Status Updates:** A section with a list of items:
 - Faulkes Telescope North
 - Faulkes Telescope South
- Shutdown times:** A section with a list of items:
 - Faulkes Telescope North shutdown times
 - Faulkes Telescope South

Pathway

<http://www.pathway-project.eu/>

PATHWAY Search... Search

The Pathway to Inquiry Based Science Teaching

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TRAINING ACTIVITIES

SHUMEN University of Shumen (BG)

**Konstantin Preslavsky University of Shumen**

The Institution

Shumen University is a prestigious university approved both in Bulgaria and abroad. It has modern facilities for teaching, research and art work. Its specialities comprise the variety of higher education subjects, consisting of humanities, natural, mathematical, pedagogical and technical sciences.

Working Group

The Pathway group of Shumen University is led by Assoc. prof. Dragomir Marchev, lecturer in astronomy at the Department of Natural Sciences. There are five staff members working part-time on the project activities. The working team has established a wide network of former students, teachers and other specialists working in the field of

Science: it's a girl thing!

<http://www.scientix.eu/web/guest/science-girl-thing>

science-girl-thing.eu/bg

Най-посещавани Начални насоки на Fi... (367 непочетени) - A... Web Slice Gallery Scientix blog

Европейска комисия

НАУЧНИ ИЗСЛЕДВАНИЯ И ИНОВАЦИИ

Науката: точно за момичета!

Европейска комисия > Научни изследвания и иновации > Науката: точно за момичета!

Начало | Профили на жени в науката | Шест причини поради които науката се нуждае от теб | [Споделяне](#)

Професии мечта

НАУКАТА: ТОЧНО ЗА МОМИЧЕТА!

Искаш да спасяваш човешки живот? Желаяш да откриеш какво се крие в космоса или в дълбините на океана? Интересуваш се от околната среда?

[Научи повече! \[+\]](#)

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Лейре Ортиз Гарсиа,
Испания,
Ученик,
Европейско училище

Открий изследователя в теб
Въпросник

Фотоконкурс

Социални мрежи

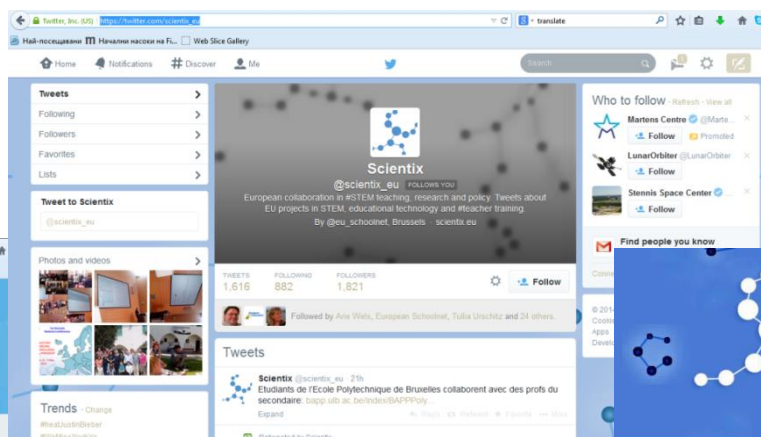


Scientix blog

Блога съдържа коментари, репортажи от SCIENTIX събития (семинари, уебинари), становища по актуални тенденции в STEM образование и др.

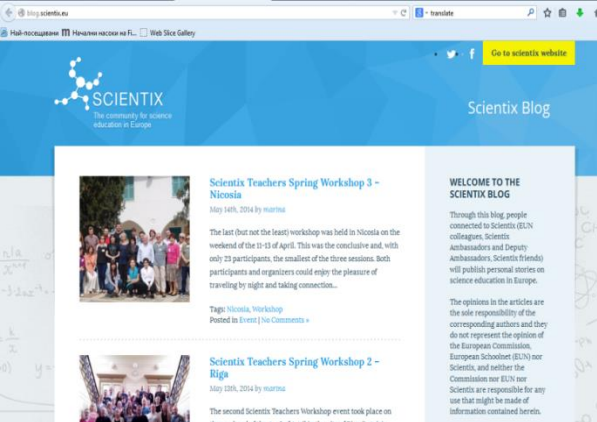
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