

Scientix, общност за научно образование в Европа

Scientix has received funding from the European Union's H2020 research and innovation programme – project Scientix 3 (Grant agreement N. 730009), coordinated by European Schoolnet (EUN). The content of the presentation is the sole responsibility of the presenter and it does not represent the opinion of the European Commission (EC) nor European Schoolnet (EUN) and neither the EC nor EUN are responsible for any use that might be made of information contained.



<http://scientix.eu>



SCIENTIX

The community for science education in Europe

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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=J2Wl101Y11o>

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Best practice in *education*
according to the
hundrED



SCIENTIX

The community for science
education in Europe

1 of the 100
top global *innovations*
in *education*
according to the

hundrED



We were presented on this poster at the annual funding from the European Union 2020 research and innovation programme (SME 3) (grant agreement N. 730020), coordinated by European Schoolnet (EUN). The content of the poster is the sole responsibility of the presenter and it does not represent the opinion of the European Commission (EC) nor European Schoolnet (EUN) and neither the EC nor EUN are responsible for any use that might be made of information contained.

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Проекта Scientix



Представя и подкрепя различни представители на образователното съсловие занимаващо се със природни науки и математика: учители, научни работници, проект мениджъри и хора, които разработват и апробират образователни политики.

Инициатива на Европейската комисия като нейната концепция се координира от European Schoolnet, консорциум от 30 министерства на образованието в Брюксел, която е двигател на иновациите в преподаването и ученето и насърчава общоевропейското сътрудничество между училищата и учители.

Scientix has received funding from the European Union's Horizon research and innovation programme – project 101019150. The project is coordinated by European Schoolnet. The project is not the sole responsibility of the project partners. The European Commission (EC) and the European Union (EU) are not responsible for any use that might be made of the information contained.

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

the EC nor EUN are responsible for any use that might be made of information contained.

Фази на проекта

2009-2012: * конструкция на online портала за събиране и представяне на европейските STEM (природни науки, технологии, инженерни науки и математике) образователни проекти;

* организиране на няколко учителски работни срещи;

* 1^{ва} *Scientix* Конференция, проведена през май 2011 в Брюксел.

2013-2015:* развитие на проекта на национално ниво през националните контактни точки (NCPs);

* 2ра *Scientix* Конференция, през Октомври 2014 в Брюксел.

2016-2019 (финансиран по Horizon 2020 програма на ЕС за изследване и иновации): * продължение на проекта.

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Ползи за Нас учителите :

- Прегледайте ресурсите на Scientix и намерете идеи за вашите уроци;
- Участвайте в европейски проекти за обучение по STEM
- Участвайте в европейски семинари за професионално развитие;
- Изтеглете всички презентации, видеоклипове и материали от конференции и очаквайте бъдещи;
- Участвайте в онлайн обучения, веб семинари или практически ; ...

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SCIENTIX
science

Schoolnet



Scientix Website

- Ресурси
- Библиотека за доклади от проекти

Споделете и/или вземете планове на уроци, активности, игри, ..., на различни езици.

В Scientix на живо

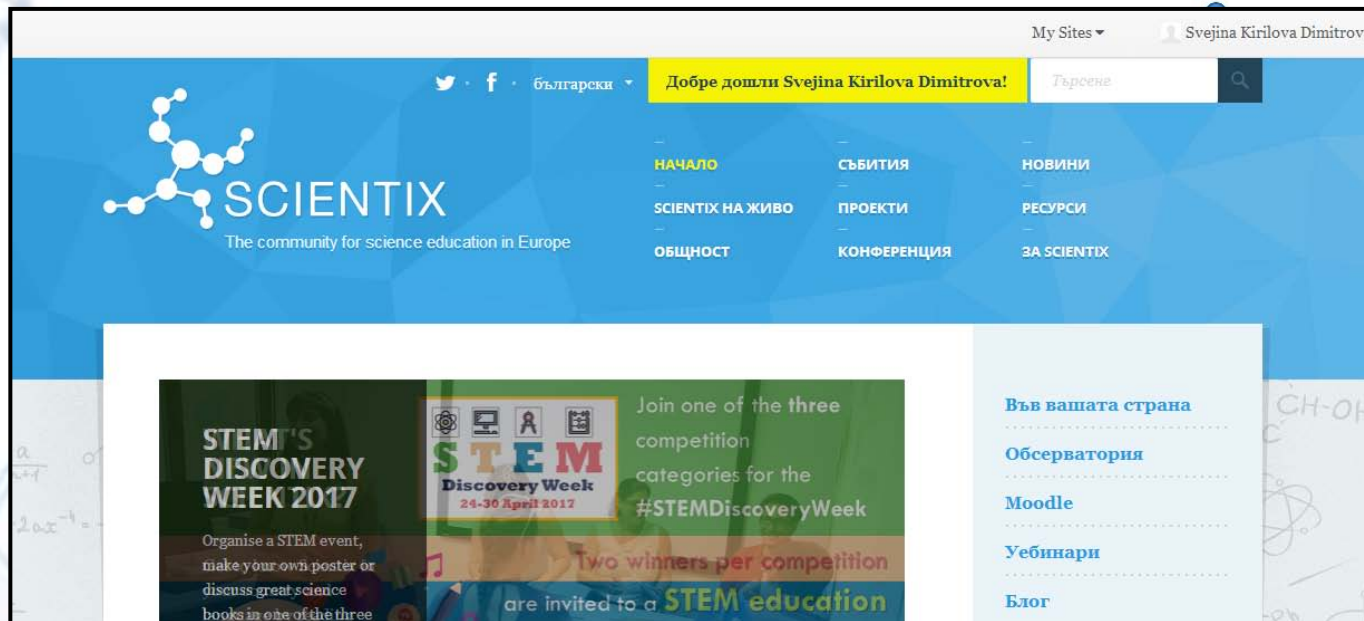
- Moodle (*Online курсове*)
- Уебинари (кратки онлайн тренинг курсове)
- Работни срещи и Презентации

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SCIENTIX - Портал



Портал на SCIENTIX

<http://www.scientix.eu>

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НАЧАЛО

SCIENTIX НА ЖИВО

ОБЩНОСТ

СЪБИТИЯ

ПРОЕКТИ

КОНФЕРЕНЦИЯ

НОВИНИ

РЕСУРСИ

ЗА SCIENTIX

SCIENTIX – Събития

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СЪБИТИЯ

« April »

« 2017 »

ПОНЕДЕЛНИК	ВТОРНИК	СРЯДА	ЧЕТВЪРТЪК	ПЕТЪК	СЪБОТА	НЕДЕЛЯ
					1	2
					EUROMATH 2017	

ОЩЕ ЗА
ОБРАЗОВАТЕЛНИТЕ
КАМПАНИИ В
ОБЛАСТТА НА STEM

Ако организирате
конференция, работен

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SCIENTIX – Новини

SCIENTIX НА ЖИВО

ОБЩНОСТ

ПРОЕКТИ

КОНФЕРЕНЦИЯ

РЕСУРСИ

ЗА SCIENTIX

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ПОСЛЕДНИ НОВИНИ

SEARCH NEWS



Подредени по критерий

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Държава

Тема

Target groups

[Във вашата страна](#)

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SCIENTIX – Новини

ПОСЛЕДНИ НОВИНИ

Обсерватория

Moodle

Уебинари

Блог

Абонирайте се по имейл,
за да получавате всички
актуални новини!

АБОНИРАЙТЕ СЕ

SCIENTIX IN FIGURES

Sveiki atvykę!
Scientix in lietuvių

BG HR CS DA NL
FI FR DE EL
IT LV LT

SEARCH NEWS



Подредени по критерий

[Вижте всички](#)

Държава

Тема

Target groups

Език

ПРИЛОЖИ ФИЛТЪР

SPACE
awareness

NEW MASSIVE ONLINE OPEN COURSE FOR SPACE LOVERS

12/05/2017

“Our Wonderful Universe” is the third online training course of the Space Awareness project, funded by the Horizon 2020 programme of the European Union. Teachers can now register for this course at the European Schoolnet Academy.

[Read more ...](#)

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SCIENTIX – На живо

НАЧАЛО > SCIENTIX НА ЖИВО

SCIENTIX LIVE

Here you will find information about face-to-face activities organised by Scientix (e.g. workshops in European Schoolnet's Future Classroom Lab or at other venues) and Scientix's contributions to conferences, workshops and other events.

You can find the presentations, programmes, etc. of past events here, but you can also see at what events and when Scientix will be present in the future.

РАБОТЕН СЕМИНАР ЗА НАУЧНИ ПРОЕКТИ В КЛАСНАТА СТАЯ НА БЪДЕЩЕТО

„Класната стая на бъдещето“ (Future Classroom Lab, FCL) независим проект на European Schoolnet (EUN), базиран в офис осигурява платформа, където политиците могат да си представят стратегии и където учителите, директорите и



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Във вашата страна

Обсерватория

Moodle

Уебинари

Блог

CALENDAR OF
SCIENTIX LIVE
EVENTS

TIX
science
e

РАБОТНИ СЕМИНАРИ НА SCIENTIX ПО ВРЕМЕ НА ДРУГИ СЪБИТИЯ



Семинарите на Scientix непрекъснато се провеждат на различни места в Европа в контекста на събития, организирани от други проекти или организации.

Целта на тези работни семинари е или да представят услугите на Scientix на учителите, ръководителите на проекти или другите значими действащи лица в областта на научното образование, или да подпомогнат представянето на други научно-образователни проекти.

Ако се сещате за събитие, в което Scientix може да допринесе към програмата или бихте искали да се включите в някой семинар на Scientix като водещ, изпратете ни имейл на [agueda.gras\(at\)eun.org](mailto:agueda.gras(at)eun.org).

ПРОЧЕТЕТЕ ОЩЕ

ПРЕЗЕНТАЦИИ



За да гарантираме по-широкото разпространение на Scientix и неговите услуги сред ръководителите на проекти, учителите и изследователите в областта на научното образование, е важно той да присъства на колкото се може повече събития (било то чрез плакати, презентации или просто посредством мрежови дейности).

SCIENTIX – На живо

УЕБИНАРИ



Scientix редовно организира уебинари, които са безплатни и достъпни за всички! Уебинарите представляват онлайн форум за обучение и предоставят идеална възможност на преподавателите да бъдат в крак с новостите в областта на обучението по природни науки.

Уебинарите обикновено са едночасови и са чудесни за всеки, който иска да изследва вълнуващи теми в областта на STEM образованието, като например осигуряване на електронно устройство и дигитални учебни материали за всеки отделен ученик (1:1 computing); чужд език и природни науки; STEM в началното образование или онлайн научни симулации в рамките на подхода „Учене чрез изследване“.

[ПРОЧЕТЕТЕ ОЩЕ](#)

MOODLE



Разработеният за Scientix Moodle е платформа за партньорско обучение и обмен на добри практики сред STEM учителите. Най-новите курсове в платформата на Moodle са подготвени от учители от различни националности, които споделят своя опит с разнообразни инструменти и педагогически методи в час. Курсовете предполагат обучение със собствен темп и са достъпни за всеки, по всяко време. Потребителите не се нуждаят от регистрация в Moodle, за да могат да си огледат

SCIENTIX – Проекти

НАЧАЛО > ПРОЕКТИ

ПРОЕКТИ



Подредени по критерий

[Вижте всички](#)

Държава	Тема	Target groups
Bulgaria x	Astronomy x	
Funding	Starts after	Ends before

☐ Projects looking for teachers

☐ Ongoing projects

ПРИЛОЖИ ФИЛТЪР



STEM ALLIANCE

01/02/2017

inGenious education & industry.

[Read more](#)

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ence

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SCIENTIX - Ресурси

<http://www.scientix.eu/resources>

НАЧАЛО > РЕСУРСИ

RESOURCE REPOSITORY

Find resources by keyword

OK

РАЗШИРЕНО ТЪРСЕНЕ

Предмет

Астрономия

Min age

Max age

Вид

демонстрация

Езици

български



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НАГРАДИТЕ НА SCIENTIX

TRANSLATION SERVICE

Възползвайте се от **безплатен** превод на учебни материали от хранилището на Scientix.

КАК РАБОТИ

СТАТУС НА ЗАЯВКИТЕ

КАКВО ДА НАПРАВИТЕ, ЗА ДА МОГАТ ВАШИТЕ РЕСУРСИ ДА ПОДЛЕЖАТ НА ПРЕВОД?

НАРЪЧНИК ЗА

СОБСТВЕНИЦИТЕ НА

УЧЕБНИ МАТЕРИАЛИ

REPORTS LIBRARY

TRAINING COURSES

LRE MATERIALS

9 RESULTS FOUND.



Levitating Astronaut

Вижте това в:

ro - en



Добавете в любими



Report a problem

Editable version

Request translation (What is it?):

en - bg - bs - ca - cs - cy - da - de - el - es - et - eu - fi - fr - ga - gl - he - hr - hu - is - it - lt - lv - mk - mt - nl - no - pl - pt - ro - sk - sl - sq - sr - sv - tr - uk

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Scientix общност

- Практическа общност (онлайн форум, воден от определени експерти)
- *Online Meeting Room* (кратки online training курсове)
- *Дискусионен форум*
- Scientix чат
- Scientix блог
- Бюлетин /Резюме на Scientix web/guest/newsletter)
- Twitter ([@scientix_eu](https://twitter.com/scientix_eu))
- Facebook ([Science Teachers in Europe](https://www.facebook.com/ScienceTeachersinEurope))



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SCIENTIX – Общество

ОБЩНОСТТА НА SCIENTIX

МРЕЖОВИ ДЕЙНОСТИ ЗА НАУЧНО-ОБРАЗОВАТЕЛНИ ПРОЕКТИ



Тези мрежови дейности за научно-образователни проекти събират на едно място координатори, ръководители и други представители на европейски и национални проекти в сферата на науката и организации, които участват в STEM образованието. Целта на тези събития е участниците да споделят и обменят опит от проекти, да представят работата си и да улеснят създаването на нови сътрудничества и партньорства. Всяко от тези събития е съсредоточено върху конкретно предизвикателство (или тема), с което са се сблъскали проектите.

[ПРОЧЕТЕТЕ ОЩЕ](#)

ОНЛАЙН КОНФЕРЕНТНА ЗАЛА



Scientix има за цел да улесни работата на различните обществено финансирани проекти в сферата на научното образование. В този контекст Scientix предлага на проектите възможността да използват онлайн

SCIENTIX – Общество

ДИРЕКТОРИЯ С ПУБЛИЧНИ ПРОФИЛИ



Създайте си публичен профил в Scientix, потърсете партньори за проект или обединете усилия с единомислещи колеги от други европейски страни!

Директорията на Scientix с публични профили е нов инструмент за мрежови дейности и търсене на партньори, който ви помага да набележите потенциални партньори за проекти от ЕС или образователни специалисти в областта на STEM със сходен опит и интереси. Можете да търсите хора по страна, опит, предметна област или позиция, или по ключови думи.

За да се възползвате изцяло от услугата, трябва да се регистрирате в портала на Scientix и да попълните вашата профилна страница.

РЕГИСТРАЦИЯ

ДИРЕКТОРИЯ С ПУБЛИЧНИ ПРОФИЛИ

ИНСТРУМЕНТ ЗА СВЪРЗВАНЕ



Инструментът за свързване на Scientix дава възможност на изследователите и ръководителите на проекти да се свързват с членовете на общността на Scientix (учители и други образователни професионалисти) и да ги канят за сътрудничество по образователни проекти и инициативи в областта на STEM.

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SCIENTIX – Общество

ДИСКУСИОНЕН ФОРУМ



Включете се в дискусии относно най-новите инициативи в областта на научното образование! Във форумите на Scientix има отделни дискусии за всеки проект и всяка държава. По заявка могат да бъдат създавани нови теми за дискусия.

Форумите са достъпни за всички, но е необходима регистрация в портала на Scientix, за да можете да участвате в дискусиите. За да добавите нова публикация, изберете категория по ваш избор и кликнете върху „Публикуване на нова тема“. Можете да пишете на всеки език.

[КЪМ ФОРУМА](#)

ЧАТ



Чат инструментът на Scientix е вашият начин да общувате директно с другите потребители. За да започнете да чатите трябва да сте регистрирани в портала. След като се регистрирате, инструментът за чат ще се появи автоматично в долния десен ъгъл на страницата. Кликнете върху „Приатели онлайн“, за да видите кои потребители са на линия. За да отворите чат прозорец и да започнете разговор, просто кликнете върху името на потребителя. От настройките можете да изберете дали другите потребители да виждат, че сте

SCIENTIX – Общност

БЛОГ



Блогът на Scientix е разработен като пространство за хората и проектите от мрежата на Scientix, в което да публикуват лични истории по актуални теми в областта на научното образование в Европа. Основният принос за блога е от представителите на European Schoolnet и посланиците на Scientix, макар че всички останали членове на общността на Scientix (например всеки по света, който се занимава със STEM образование), които имат желание и готовност да споделят опита си със Scientix, са добре дошли да се включат.

Блогът на Scientix включва редица публикации - от отразяване на различни Scientix събития до мнения и коментари относно актуалните тенденции в изследванията и практиките в областта на STEM образованието, включително новинарски поредици и обзори.

Становищата в публикуваните в блога на Scientix статии са отговорност единствено на съответните автори и не отразяват мнението на Европейската комисия, European Schoolnet (EUN) или Scientix.

Ако искате да допринесете за блога, моля, свържете се с нас на [scientix \(at\) eun.org](mailto:scientix@eun.org)

ПРОЧЕТЕТЕ ОЩЕ



SCIENTIX : Бюлетин - TWITTER

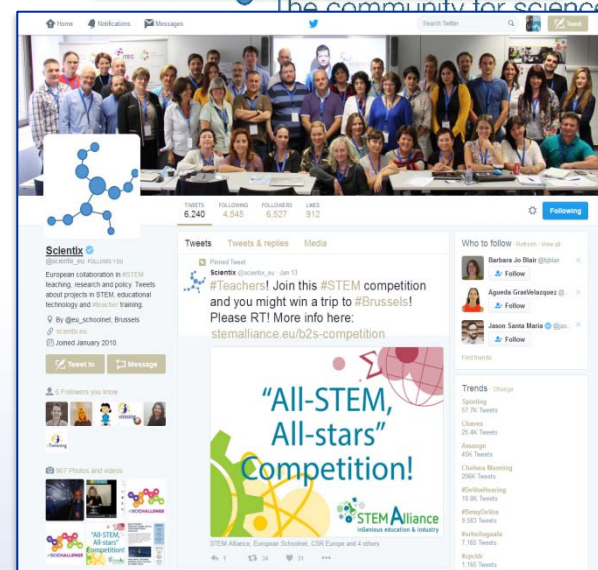
Бюлетин



<http://www.scientix.eu/web/guest/newsletter>

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groups/ScienceTeachersEurope

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3) Gamify your class

- Make quizzes
- Create tests and assessments
- Survey the class

Make quizzes
Create tests and a
Survey the class



Record learning effectively.

3) Try virtual reality.

- Google Cardboard
- YouTube 360
- Writing prompts
- School trips
- Explore objects

4) Utilize an online class

Google Classroom
'Flipped learning'
Set homework
Communicate effectively

5) Crea

- QR Codes
- Engaging
- Active learning
- Group work
- Add images
- Link to websites

Top Tech Tools For Teachers
10 Ideas For Classroom Practise.

Neil Jarrett
09/01/2017

a class learning

padlet

coordinated
the sole res
the Europea
the EC no
information

Превод

НАЧАЛО > Translation on demand

TRANSLATION ON DEMAND

Намерили сте интересен материал в [Научни материали за преподаване](#)? Ако не е на езика, който предпочитате, можете да поискате той да бъде преведен чрез услугата „превод по поискване“. Тя е безплатна и е достъпна само на уеб страницата на Scientix.

Как става това?

Ако учебният материал отговаря на условията на услугата, в долната част на неговата страница ще видите надпис „Заявете превод“. Дали един ресурс подлежи на превод или не зависи от следните критерии:

1. Трябва да е предназначен за директно използване в клас (само учебни материали, без доклади или курсове);
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Потребителят може да поръча превод на материал като избере езика, на който желае да бъде преведен. Това става като се кликне кода на езика на лентата „Request translation“ (Поръчайте превод) на страницата, където е публикуван материалът.

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- Авторите на учебния материал или хората, които са го предали ще трябва да осигурят редактируема версия на ресурса, когато попълват [формата за качване](#).

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Регистрирайте се на уебсайта на *Scientix* и *Scientix moodle* и ни следвайте



чрез *twitter* и *facebook* .

Други интересни проекти и сайтове:

European Schoonet Academy,

Teacher Academy (SchoolEducationGateway),

Inspire Science Education,

Go-Lab/Next-Lab, STEM Alliance, ...

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Страници/Линкове

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SCIENTIX

The community for science
education in Europe

SCIENTIX ресурси

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$$-\frac{d}{dt} \int_A \eta dA = \oint_L \mathbf{E}' \cdot d\mathbf{l} = - \int_V \left(\frac{\partial E}{\partial t} + \text{curl}(\mathbf{B} \times \mathbf{v}) \right) dV$$

$$\text{HCl} + \text{H}_2\text{O} \rightleftharpoons \text{Cl}^- + \text{H}_3\text{O}^+ \quad \left(\frac{\partial \eta}{\partial t} + \text{curl}(\mathbf{B} \times \mathbf{v}) \right)$$

Scientific innovation
innovative
coordinating
the sole
the Euro
the EC
informat

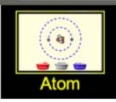


Scientix
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the EC
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Да построим атом

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...

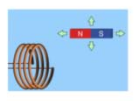


Concentration


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

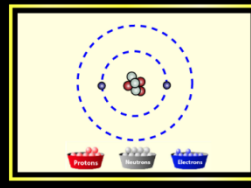


Lab

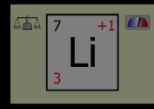


Lab

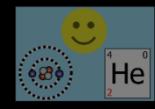
Build an Atom



Atom



Symbol



Game

Protons: 6
Neutrons: 6
Electrons: 6

Neutral Atom

Carbon

Model:
● Orbits
○ Cloud

Element
C

Net Charge
0

Mass Number
12

Show
☒ Element Name
☒ Neutral/Ion
☐ Stable/Unstable

Protons Neutrons Electrons

Protons:
Neutrons:
Electrons:

Element
-

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

About Partners News Resources Contest Area Training Activities Summer School Contact

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

Alpha Decay

Multiple Atoms Single Atom

• Alpha Decay
• Half Life
• Radiation

DONATE

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FOR TEACHERS

Teacher Tips

Overview of sim controls, model simplifications, and insights into

Home
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 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

Beta Decay

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
 By Grade Level
 Elementary School
 Middle School
High School
 University

ABOUT
FOR TEACHERS
TRANSLATIONS
RELATED SIMULATIONS
SOFTWARE REQUIREMENTS
CREDITS

DOWNLOAD **EMBED**

<http://qs-project.ea.gr/en/content/simulations>

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

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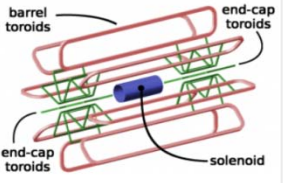


Възможности и приложения на лабораторията Go-Lab

GO-LAB Search Online Labs Apps Inquiry Spaces

Measurement of Magnetic Field

by hkourkou



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: [hkourkou](#)

Like 0 Tweet 0

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!

Fiery Looping Plasma Rain - Sound of the Sun

Earth to Scale

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 the 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

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/CollaborativeTeaching/games/LHCGame/>

Like 0 Tweet 1 8+1 0

Create an Inquiry Space

Lab description and primary aims of the lab:
 The LHC Game is an 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 their 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.

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://loogt.net/siab/>

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Create an Inquiry Space

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

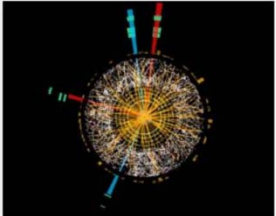
2020 research and
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 the presentation is
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 (EUN) and neither
 ight be made of

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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GO-LAB logo and social media icons at the bottom.

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 beam pipe. 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).



ATLAS Event - Protons Accelerate in LHC and Collide in ATLAS.

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 the ATLAS construction

A compilation of webcam footage mixed with photographs of the ATLAS detector during its 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 !!

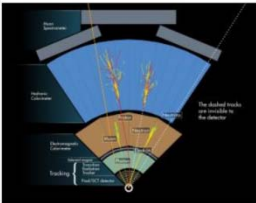


Открий Z бозона

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](#)

Like 0 Tweet 0 +1 0

Get 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




Discover the Z boson Sveji

Orientation Conceptualisation Investigation 1 Investigation 2 Conclusion Discussion

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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).

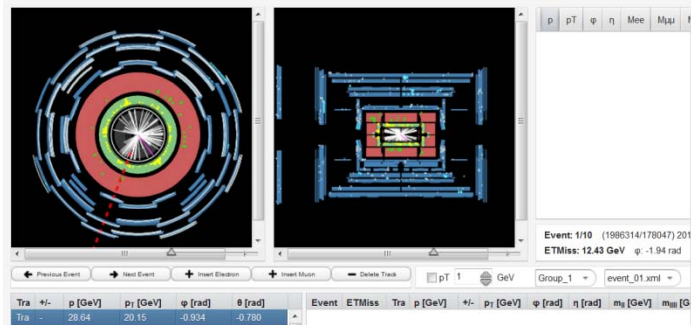


Large Hadron Collider

Discover the Z boson Sveji

Orientation Conceptualisation Investigation 1 Investigation 2 Conclusion Discussion

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



Tr	p [GeV]	p _T [GeV]	φ [rad]	η [rad]
1	28.64	20.16	-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.

HYRATIA и MINERVA в клас



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FAULKES TELESCOPE

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

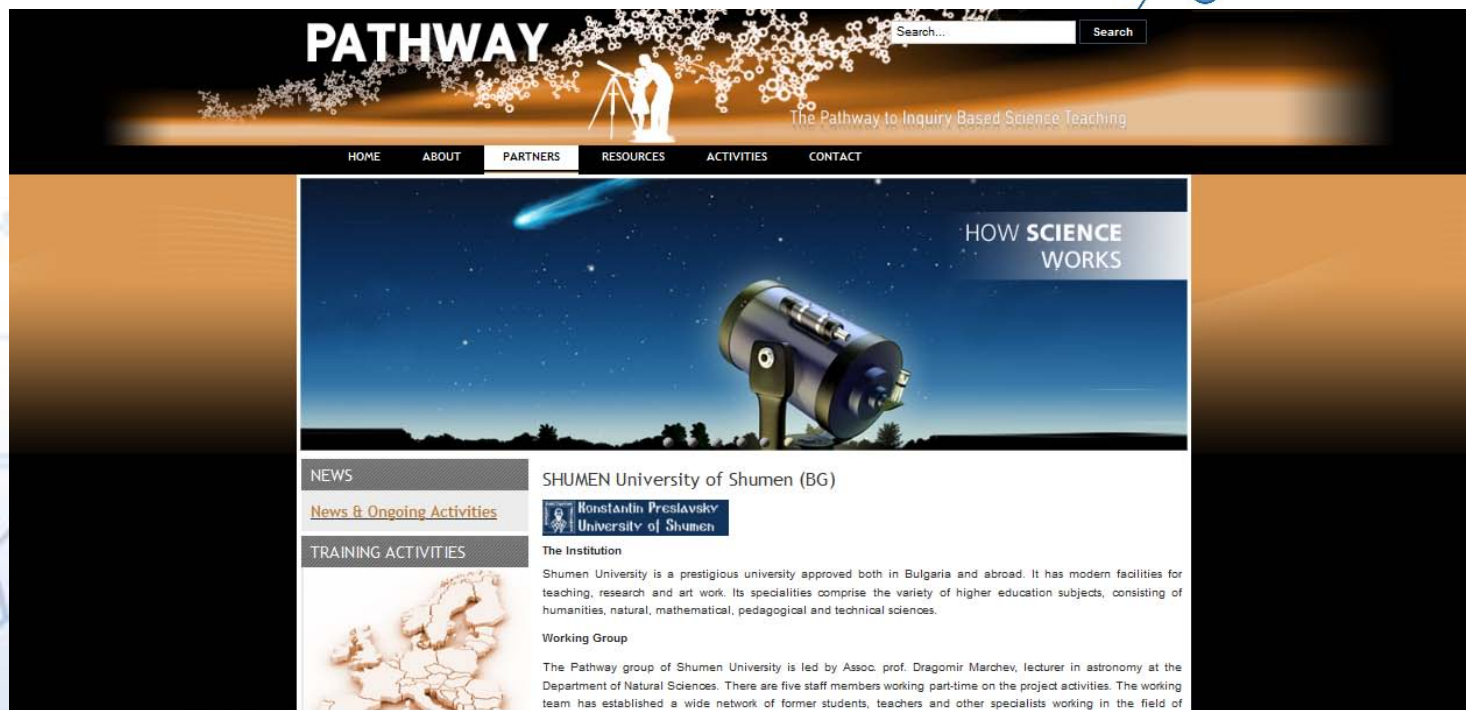
The screenshot shows the Faulkes Telescope Project website. At the top, there's a navigation bar with links: Home, Support, User Showcase, Education, Information, Multimedia Resources, and News. Below this is a secondary navigation bar with links: Educational Resources, Gallery, Register, Astronomical Targets, About Us, and FT team. The main content area features a large 'Welcome' section with a cosmic background image and text stating: 'The Faulkes Telescope Project, part of LCOGTN, provides access to a global network of robotic telescopes and supplies free resources for science education'. To the right of the welcome section are three boxes: 'Login' (with a link to log in), 'Registration' (with a link to register), and 'Search' (with a search bar and a 'Go' button). Below the welcome section is an 'Important Notices' section with three columns: 'Universal Time' (explaining GMT vs UT), 'Data archive search' (with a search icon and instructions), and 'What to do if...' (addressing a common issue with jpeg images). To the right of the notices are two more boxes: 'Status Updates' (listing Faulkes Telescope North and South) and 'Shutdown times' (listing shutdown times for both telescopes). The website is part of the LCOGTN network, as indicated by the logo.

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Pathway

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



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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 непрочетени) - 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? Желаете 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

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Повече информация



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