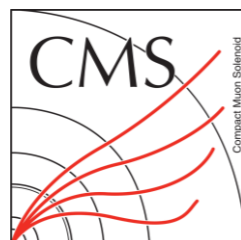


*Playing with Protons UK CPD Course, 30 Jul – 04 Aug
2018*

Playing with Protons for a wonder-full primary classroom

Angelos Alexopoulos (CERN)



Why?

“Children naturally enjoy observing and thinking about nature.” (Eshach & Fried, 2005, p. 315)

“It is, therefore, incumbent on the science educator to provide children with environments, materials, and activities, to develop their scientific reasoning while these ‘windows of opportunity’ are still open.” (ibid., p. 334)



Playing with Protons workshop at the National Observatory of Athens, Greece

Why?

“Action needs to begin at primary school - age 14 is too late.”

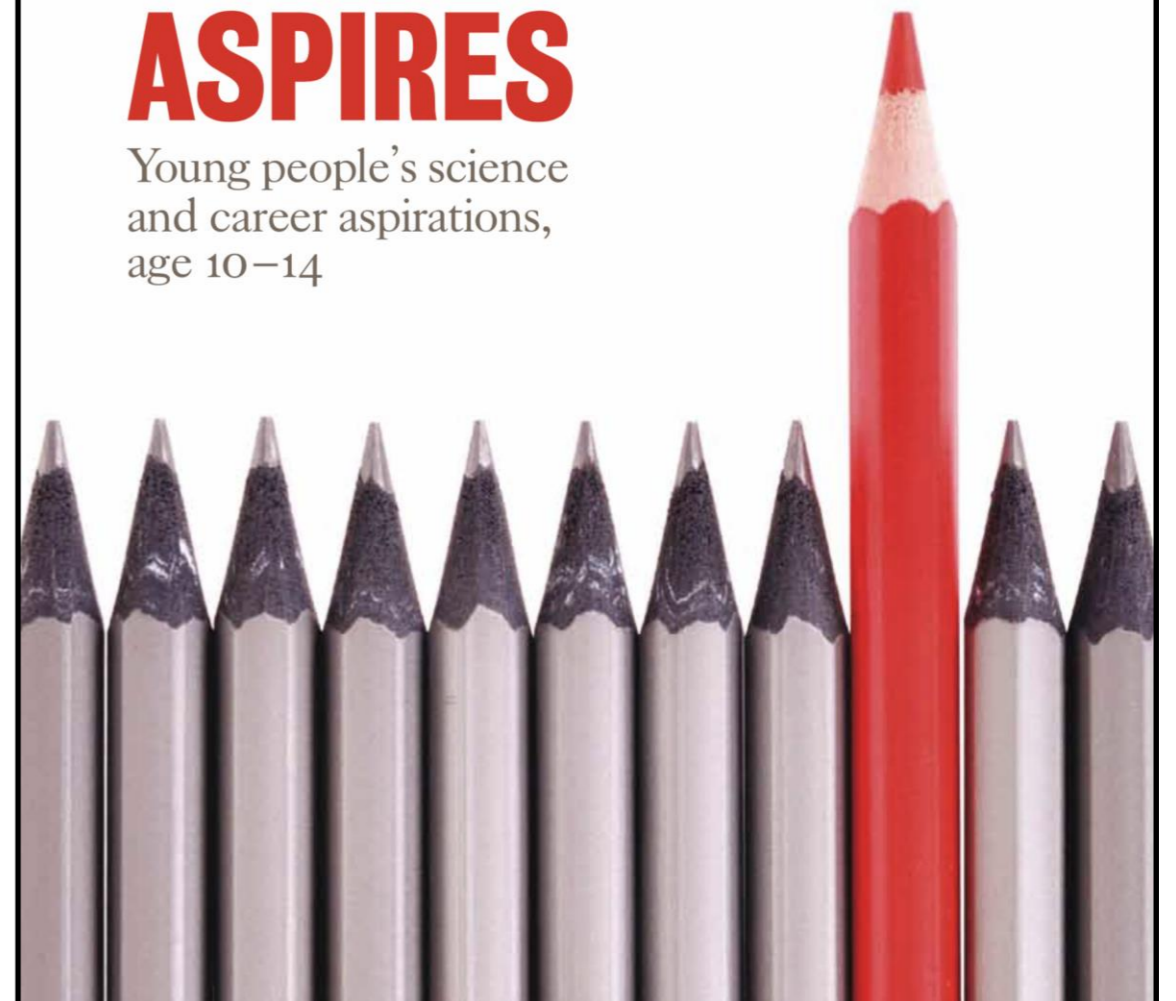
“Efforts to broaden students’ aspirations, particularly in relation to STEM, need to begin in primary school. Currently most activities and interventions are targeted at secondary school students.”

Department of Education &
Professional Studies

KING'S
College
LONDON

ASPIRES

Young people's science
and career aspirations,
age 10–14



Primary Teacher Professional Development at CERN

Experience the unique culture of cutting-edge science, technology and innovation at the world's largest particle physics laboratory.

Utilize creative methodologies to develop educational scenarios and lesson plans for enhancing primary physics teaching and learning.

Try out new learning activities, especially hands-on experiments with everyday materials, to increase student interest, motivation and wonder.

Get inspired and motivated to share newly acquired knowledge and wonder-full experience with peers, parents and the local community.



What, Where, When



Playing with protons in primary
by Angelos Alexopoulos



Safety first! Hill Primary School students get ready to build a cloud chamber at CERN (Image: Stella Tsirikla)



PLAYING WITH PROTONS

**CPD COURSES
COMMUNITIES & RESOURCES
SCHOOL INITIATIVES**



COMMUNITY 26.09.2016
Greek teachers learn ABCs of particle physics at CERN
SARIS IOANNIDIS



CMS AND CERN INSPIRE UK PRIMARY-SCHOOL TEACHERS TO PLAY WITH PROTONS



2013

2014

2015

2016

2017




Πειράματα Φυσικής
με Απλά Υλικά

2016: 1st Greek Teacher PD course at CERN



1st Greek Teacher PD at CERN: Publicity

COMMUNITY 26.09.2016

Greek teachers learn ABCs of particle physics at CERN

SAKIS IOANNIDIS



[Enri Canaj]

Education

GENEVA - The three wo
back of a T-shirt worn by
physicists at the Europe

Παιζοντας με τα πρωτόνια



Η ΚΑΘΗΜΕΡΙΝΗ
Τέχνες
& γράμματα

«Παιζοντας» με σωματίδια στο CERN

Η «Ε» ακολουθεί τους Έλληνες δασκάλους που συμμετείχαν σε πρόγραμμα επιμόρφωσης στο διάσημο ερευνητικό κέντρο

Το CERN, η μεγαλύτερη διεθνής οργανοποίηση στην ιστορία, βρίσκεται στην πόλη Γενεύης, στην Ελβετία. Είναι το μεγαλύτερο ερευνητικό κέντρο στον κόσμο, όπου οι επιστήμονες ασχολούνται με την φυσική των σωματιδίων. Το 2012, οι ερευνητές του CERN ανακοίνωσαν την ανακάλυψη του μποζονίου του Χιγκς, το οποίο δίνει μάζα στα σωματίδια. Το 2015, οι ερευνητές του CERN ανακοίνωσαν την ανακάλυψη των πρώτων σημάτων για την ύπαρξη της σκόνης μαύρης, η οποία αποτελεί ένα από τα μεγαλύτερα μυστήρια της φυσικής. Το 2016, οι ερευνητές του CERN ανακοίνωσαν την ανακάλυψη των πρώτων σημάτων για την ύπαρξη της σκόνης μαύρης, η οποία αποτελεί ένα από τα μεγαλύτερα μυστήρια της φυσικής.




2017: Continuation and Expansion to UK

2nd

PLAYING WITH PROTONS GREECE CPD COURSE

26-30 AUGUST 2017 CERN



PLAYING WITH PROTONS

Bringing together Greek primary teachers, science education specialists and CERN scientists to develop creative approaches for engaging 5th and 6th grade students with science, technology and innovation.

1st

PLAYING WITH PROTONS UK CPD COURSE

21-25 AUGUST 2017 CERN



PLAYING WITH PROTONS

Bringing together UK primary teachers, science education specialists and CERN scientists to develop creative approaches for engaging Key Stage 2 students with science, technology and innovation.

Organized by _____ Hosted by _____ Funded by _____ Under the auspices of _____ Supported by _____



Organized by _____ Hosted by _____ Supported by _____



Our UK Ambassadors*



*UK teachers trained at CERN. We have more ambassadors/members – see next slide!

Footprint*



2 countries



3 CPD courses

50+ schools 150+ teachers

~4,000 students

*Up to 01 Aug 2018



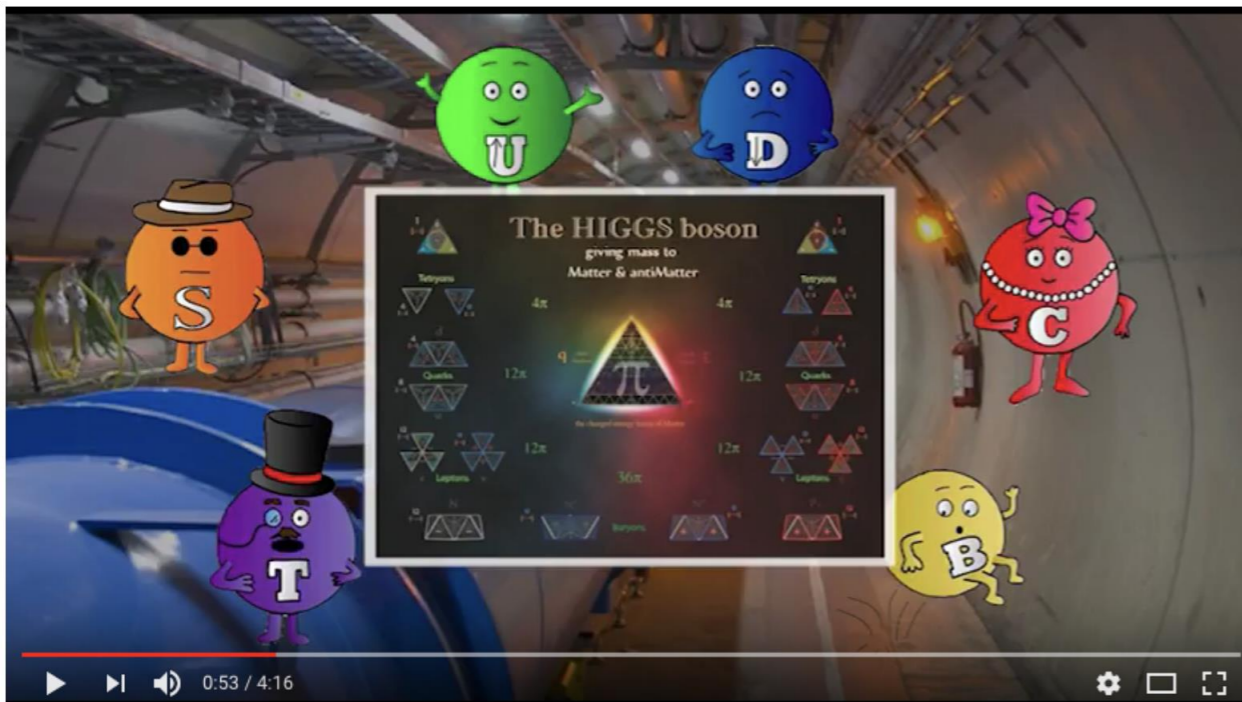
Happy Families	Snap	Happy Families	Snap
Name: Up Surname: Quark	Likes: Z, W+, W-, gluon, photon	Name: Anti-up Surname: Quark	Likes: Z, W+, W-, gluon, photon
Mass: very light	Charge: +2/3	Mass: very light	Charge: -2/3
one of the main components of protons and neutrons	together with the down they are the lightest of all quarks	one of the main components of anti-protons and anti-neutrons	together with the anti-down they are the lightest of all anti-quarks
amongst the first quarks to be discovered	physicists thought up and down were the only quarks	when colliding with an up quark they annihilate	

Distinctions

Particles4U (IPPOG)

Primary School (Age 12 and under) Winners

2nd and 6th Primary Schools of Artemida, Athens, Greece



Students from the 2nd and 6th primary schools of **Artemida**, a region near **Athens, Greece** combined particle physics with humor and to imagine a dialogue among particles. Their video is called "The Quark Show."

Looking...Up! (IAU OAD)




Moving on!

2nd

PLAYING WITH PROTONS UK CPD COURSE

30 JULY-03 AUGUST 2018 CERN




PLAYING WITH PROTONS

Bringing together UK primary teachers, science education specialists and CERN researchers to develop creative approaches to engage Key Stage 2 students with physics, discovery and innovation.

3rd

PLAYING WITH PROTONS GREECE CPD COURSE


26-30 AUGUST 2018 CERN




PLAYING WITH PROTONS

Bringing together Greek primary teachers, science education specialists and CERN scientists to develop creative approaches to engage 5th and 6th grade students with physics, discovery and innovation.

Let's go!



2nd
PLAYING WITH PROTONS
UK CPD COURSE
30 JULY-03 AUGUST
2018
CERN



PLAYING WITH PROTONS

Bringing together UK primary teachers, science education specialists and CERN researchers to develop creative approaches to engage Key Stage 2 students with physics, discovery and innovation.



@playprotons

<https://playprotons.web.cern.ch>