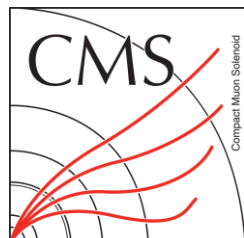


*Playing with Protons Greece CPD Course, 26 – 30 Aug  
2018*

---

# Playing with Protons for a wonder-full primary school

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.”

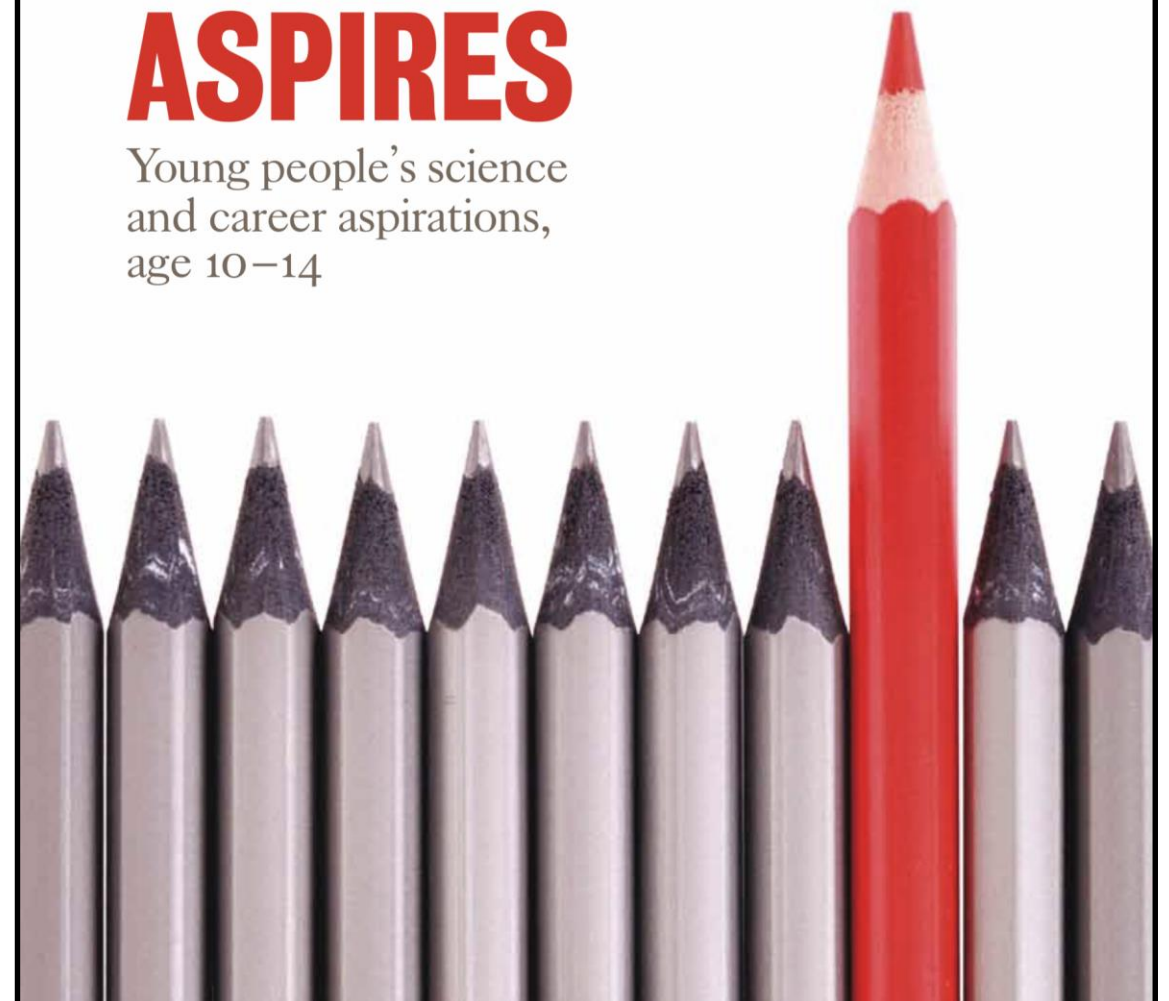
“Efforts to broaden students’ aspirations, particularly in relation to STEM, need to begin in primary school. Currently most activities and interventions are targeted at secondary school students.”

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.

Develop creative educational scenarios and lesson plans that build on and enrich their primary curriculum with modern physics ideas to increase the interest, motivation and wonder of students

Try out new teaching approaches, especially hands-on activities and experiments with everyday materials, to increase their confidence when teaching physics in particular and science in general.

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**

CPD COURSES  
COMMUNITIES & RESOURCES  
SCHOOL INITIATIVES



**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)

COMMUNITY 26.09.2016  
**Greek teachers learn ABCs of particle physics at CERN**



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



2013

2014

2015

2016

2017





  
Πειράματα Φυσικής  
με Απλά Υλικά



# 2016: 1<sup>st</sup> Greek Teacher PD course at CERN





# 1<sup>st</sup> 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 διεπιστημονική ομάδα στην ιστορία, είναι ένα από τα μεγαλύτερα ερευνητικά κέντρα στον κόσμο. Η «Ε» ακολουθεί τους Έλληνες δασκάλους που συμμετείχαν σε πρόγραμμα επιμόρφωσης στο διάσημο ερευνητικό κέντρο.

Οι δασκάλους, που εκπαιδεύονται για να είναι σε θέση να διδάξουν τα βασικά της φυσικής, συμμετείχαν σε πρόγραμμα επιμόρφωσης στο διάσημο ερευνητικό κέντρο.

Οι δασκάλους, που εκπαιδεύονται για να είναι σε θέση να διδάξουν τα βασικά της φυσικής, συμμετείχαν σε πρόγραμμα επιμόρφωσης στο διάσημο ερευνητικό κέντρο.









# 2017: Continuation and Expansion to UK

**2<sup>nd</sup>**

**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.

**1<sup>st</sup>**

**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 \_\_\_\_\_

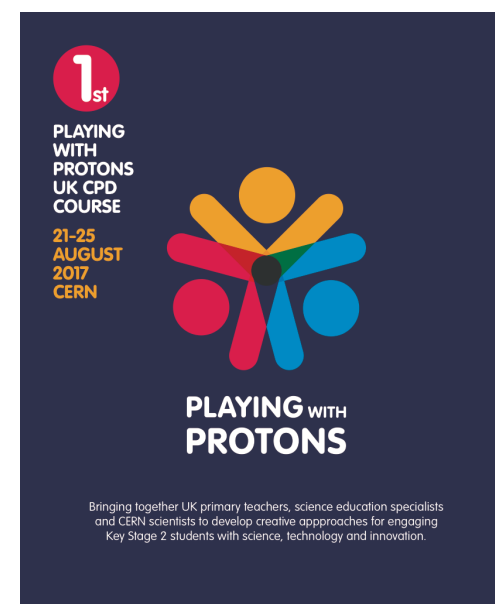
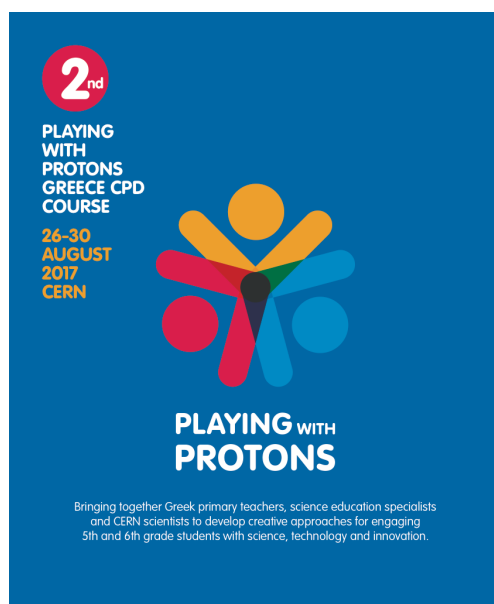


Organized by \_\_\_\_\_ Hosted by \_\_\_\_\_ Supported by \_\_\_\_\_





# 2017: Continuation and Expansion to UK





# Footprint\*



2 countries



3 CPD courses

91 schools 183 teachers

5,184 students

\*In 2 school years (2016-17 & 2017-2018)



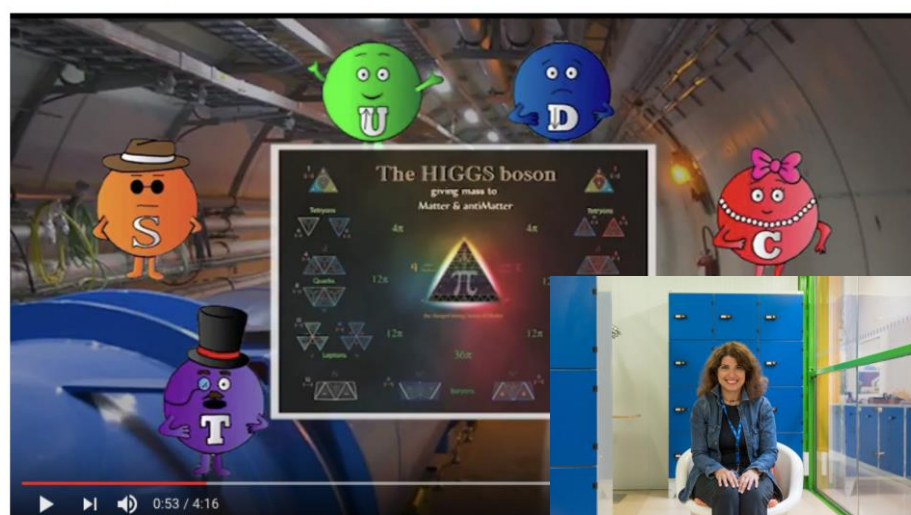


# Awards & Recognitions

## 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)



## Science Communication Awards 2018 ΕΠΙ<sup>2</sup>





# Teacher Follow-up Feedback

After taking part in the 'Playing with Protons' course at CERN:

I've become more creative with how to teach physics, particle physics and science in general

100%

I've become more interested in physics, particle physics and science in general

96%

4%

I've become more confident to teach physics, particle physics and science in general

80%

16%

4%

I've shared my knowledge and experience with colleagues back in my country

68%

28%

4%

n=25

0%

25%

50%

75%

100%



Strongly agree



Agree



Neutral



# Teacher Follow-up Feedback

Impact on teachers' professional development	Impact on teachers' personal outlook
<p>“I’ve applied to and taken part in similar training courses in other European organisations. This wouldn’t be possible if I hadn’t taken this course.”</p> <p>“I’ve taken part in several seminars and presented ways to teach physics with everyday materials. Many schools have invited me to present what I did during the summer course at CERN.”</p> <p>“In the next school year, I will lead a new regional network of schools and teachers inspired by Playing with Protons.”</p> <p>“The course triggered my involvement in interdisciplinary STEM projects but also my development as a Scientix ambassador.”</p>	<p>“It opened up a new way of perceiving nature.”</p> <p>“The fact that I met and kept contact with great scientists gave me self-esteem, knowledge and confidence.”</p> <p>“I became more positive and patient as a person. Maybe more mature...”</p> <p>“New horizons, new knowledge, new friendships.”</p> <p>“Personally speaking, there was a positive impact on my views and also my knowledge related to physics, cosmology, CERN and more generally of science.”</p> <p>“My professional and also my recreational choices are more closely related to science. Even my relationships with my students, both professionally and personally, have been improved as a result of my involvement with this course ”</p>




# Moving on!

**2<sup>nd</sup>**

**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.

**3<sup>rd</sup>**

**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!



@playprotons  
#PlayingwithProtons

