

**Exhibitions and  
Event Highlights  
Panel**

**IPPOG Meeting  
Lisbon, April 2017**

# **Event Highlights**

**Nicolas**

See Thursday afternoon talk about  
« La Nuit des ondes gravitationnelles »



**Despina**

## INTERNATIONAL DAY OF GIRLS AND WOMEN IN SCIENCE 2017

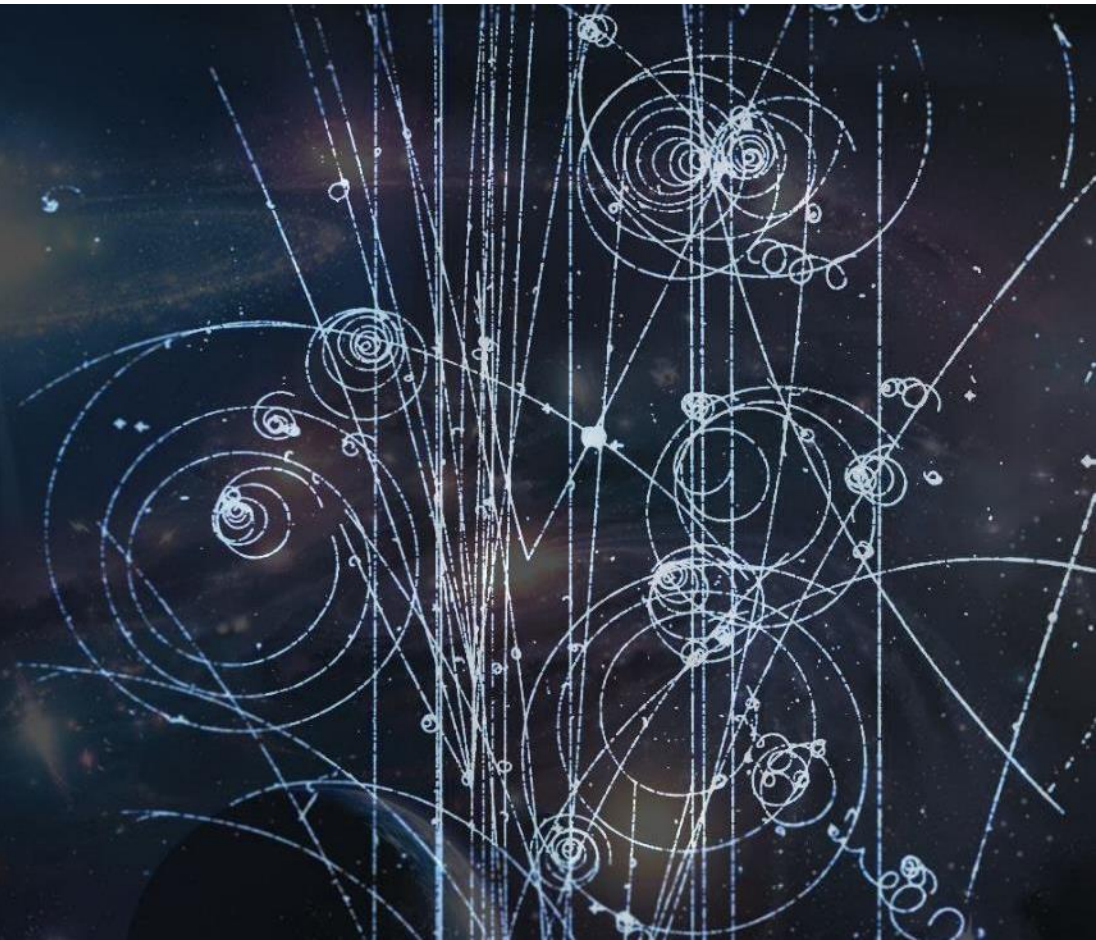
The week 6-10 February 2017 CERN sent women to local schools

- To talk about their job, CERN, LHC, particle physics etc
- To act as role models for girls

36 women (physicists, engineers, computer scientists) went to 42 schools (21 in Switzerland, 21 in France, elementary, collège, lycée)

Children asked lots of questions

Event successful  
To be repeated



# ALICE elementary school at Preveessin



Inauguration : Saturday 11 March

2017 <http://alicematters.web.cern.ch/?q=content/node/1019>





Public talks



LHC virtual visit



Cosmic piano



Sound waves

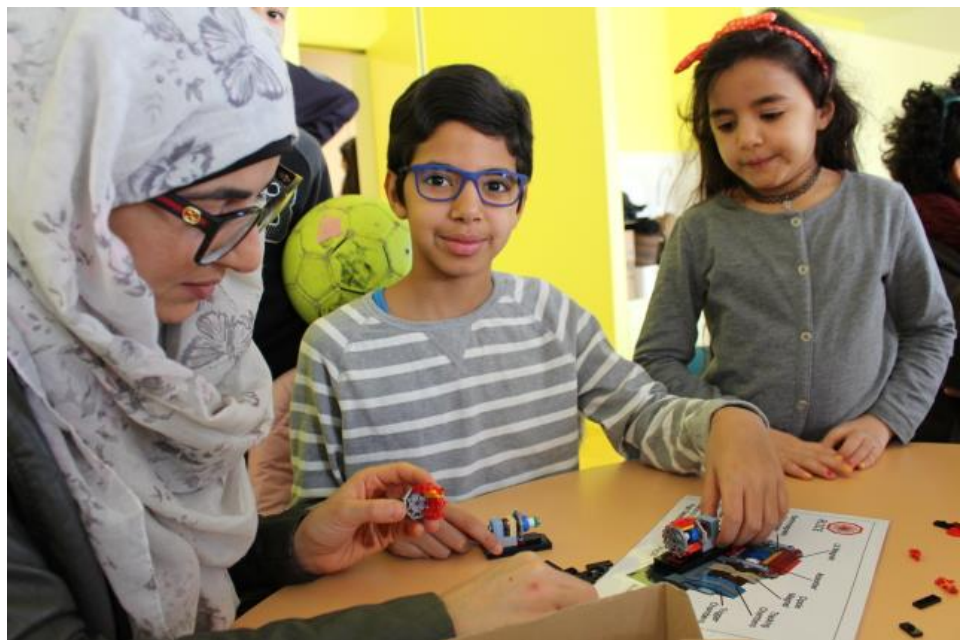


Explaining LHC





Sound waves



Building ALICE out of cardboard (papercraft)



Building ALICE out of Lego blocks



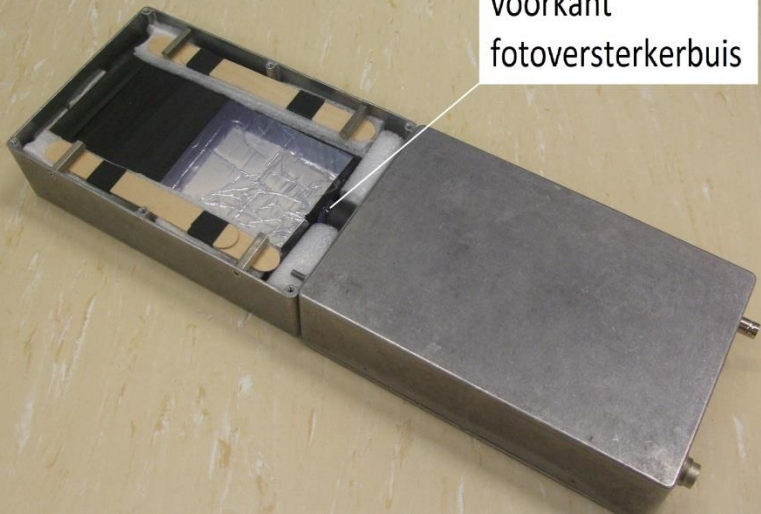
**Charles**



# Cosmic Tepee



voorkant  
fotoversterkerbuis











**Marge**

# Experimenta 2010 Valencia



*Learning from Colleagues*



# Family Open House 2017 Fermilab



*Learning from Colleagues*





# Exhibitions

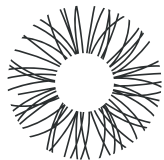
**Angelos**





# Art & Science across Italy

- **What:** engage young people with HEP
- **Who:** students and teachers from science, humanities and art lyceums
- **How:**
  1. Seminars at schools and INFN about HEP and INFN/CERN research
  2. Students **create** artworks with the help of teachers and scientists
  3. Students **report** about how and why artworks were realized
  4. Students and teachers provide two-wave quantitative feedback
- **Best artworks will be awarded and exposed at the “I colori del bosone di Higgs” exhibition.**
  - Students will **act as guides** during the exhibitions.
- **Winners will be invited to visit CERN!**



**art@CMS**  
art of science  
beauty in creation



Istituto Nazionale  
di Fisica Nucleare



**CREATIONS**  
Developing an Engaging  
Science Classroom



# I colori del Bosone di Higgs

Percorsi tra arte e scienza



Art & Science across Italy  
Aprile 2017 - Aprile 2018

**Milano** + Venezia + Padova + Firenze + Napoli

11 aprile / 1 maggio 2017

Museo Nazionale della Scienza  
e della Tecnologia Leonardo da Vinci  
Via San Vittore, 21

informazioni  
info@museoscienza.it, + 39 02 485551  
www.museoscienza.org  
<https://web.infn.it/artandscience/>  
facebook.com/artandscienceacrossitaly/



con il patrocinio di  
MUSEO NAZIONALE  
SCIENZA  
E TECNOLOGIA  
LEONARDO  
DA VINCI



CAMERA DI  
COMMERCIO  
MILANO



Città  
metropolitana  
di Milano

CREATIONS  
Developing an Engaging  
Science Classroom



art@CMS  
art of science  
beauty in creation

## **Art & Science across Italy**

**Web:** <https://web.infn.it/artandscience/index.php/en/>

Facebook: @artandscienceacrossitaly

## **Milano artworks catalogue**

<https://dariomenasce.wixsite.com/artandscience>

### **Coordination Committee**

A. Alexopoulos (CERN)

D. Fedi (INFN, Florence)

M. Hoch (HEPHY/CERN)

D. Menasce (INFN, Milano Bicocca)

M. Michelotto (INFN, Padova)

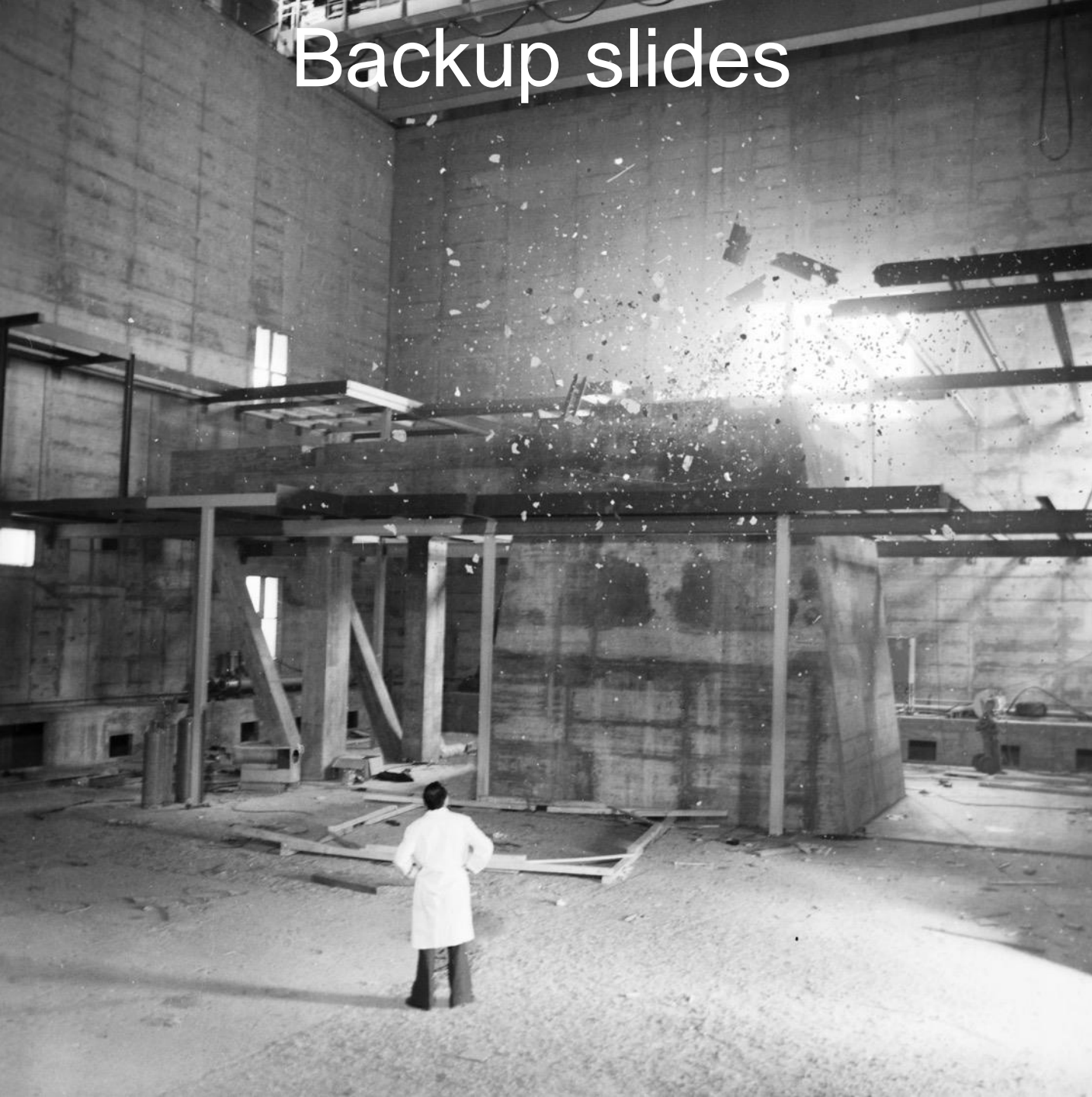
V. Napolano (INFN, Communications Office)

S. Paoletti (INFN, Florence)

P. Paolucci (INFN, Naples)

E. Vannuccini (INFN, Florence)

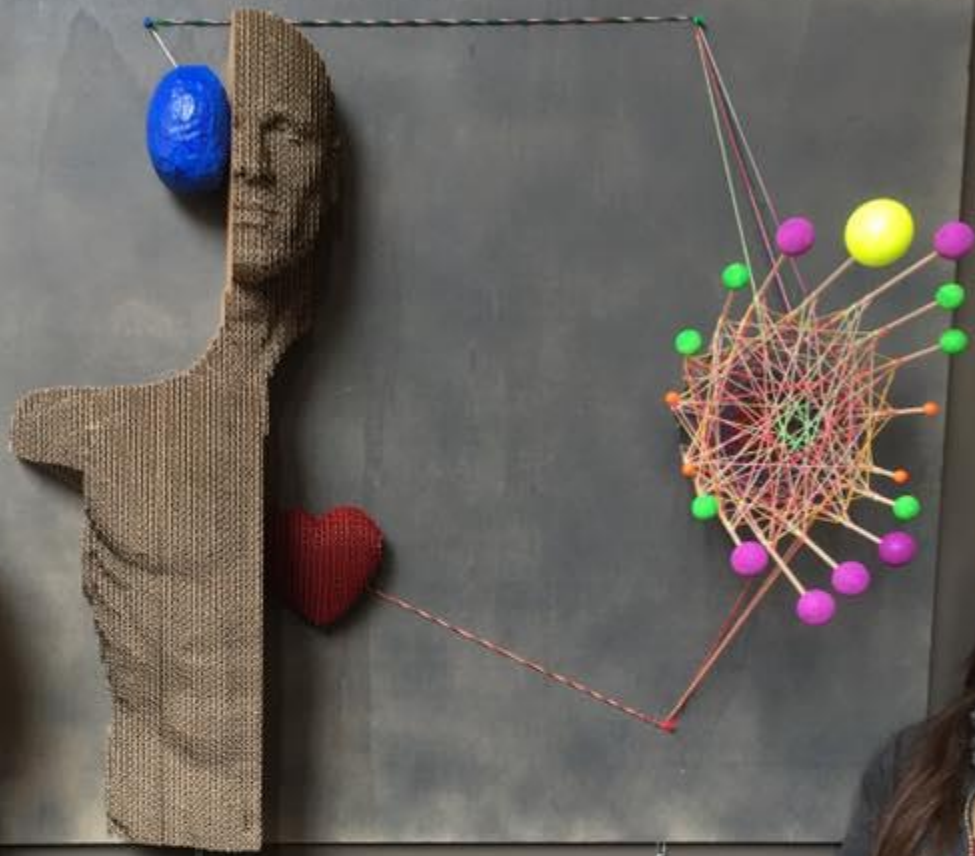
# Backup slides



WOLFGANG

WOLFGANG







# I colori del Bosone di Higgs

Percorsi tra arte e scienza

Art & Science across Italy  
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Milano + Venezia + Padova + Firenze + Napoli

**INFN**  
Istituto Nazionale  
di Fisica Nucleare

**CERN**

Progetto "Art & Science across Italy" è  
un'iniziativa promossa dalla INFN  
in collaborazione con il Ministero  
della Cultura, l'Università di Padova e il  
Consorzio Nazionale Interuniversitario  
per lo Studio dei Sistemi di  
Accelerazione di Particelle (CNSA/INFN).

**Comitato coordinamento**  
A. Alessandria, CERN  
M. Fedi, INFN sezione di Firenze  
M. Inghirami, CERN/Venezia  
D. Mariani, INFN sezione di Firenze  
M. Michelotto, INFN sezione di Milano Bicocca  
V. Napolitano, INFN sezione di Padova  
S. Paoletti, INFN Ufficio Comunicazione  
P. Paoletti, INFN sezione di Firenze  
C. Vannucchi, INFN sezione di Firenze

<https://web.infn.it/artandscience/>  
<https://www.facebook.com/artandsciencecrossitaly/>

**CREATIONS**  
CMS  
art@CMS





# Bos0n skin



The Wired logo, featuring a stylized grid icon to the left of the word "WIRED" in a bold, sans-serif font, all contained within an orange rectangular box.

## Science Education Is Woefully Uncreative. That Has to Change

Is science a creative endeavor? Yes! However, most people don't think so, so our science classes are typically deficient in creativity.

WIRED.COM | BY RHETT ALLAIN

## Arts Critical to STEM Learning Says Acting Secretary of Education

John M. Eger Van Deerlin Endowed Chair of Communications and Public Policy at San Diego State University (SDSU), was principal adviser to the President for...

STEAMCONNECT.ORG

Scientific knowledge is the product of creative thinking (Osborne et al. 2003)

Art is an excellent tool to help students learn science (Ashley, 2011; Merten, 2011)



# STEAM

is about

expanding STEM education

through

arts integration

Students who are involved in the arts are:

**4** times more likely to participate in a math & science fair

**3** times more likely to win an award for school attendance

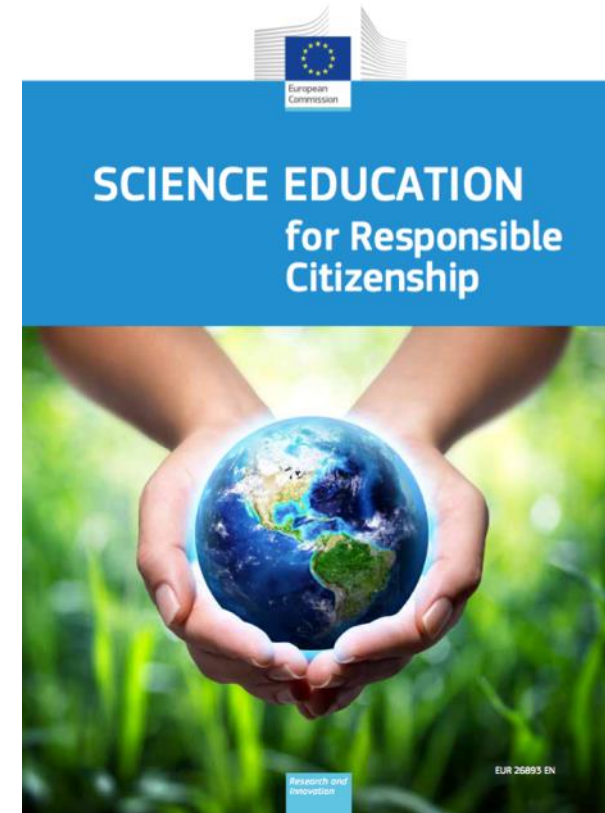
**4** times more likely to be recognized for academic achievement

# What is STEAM

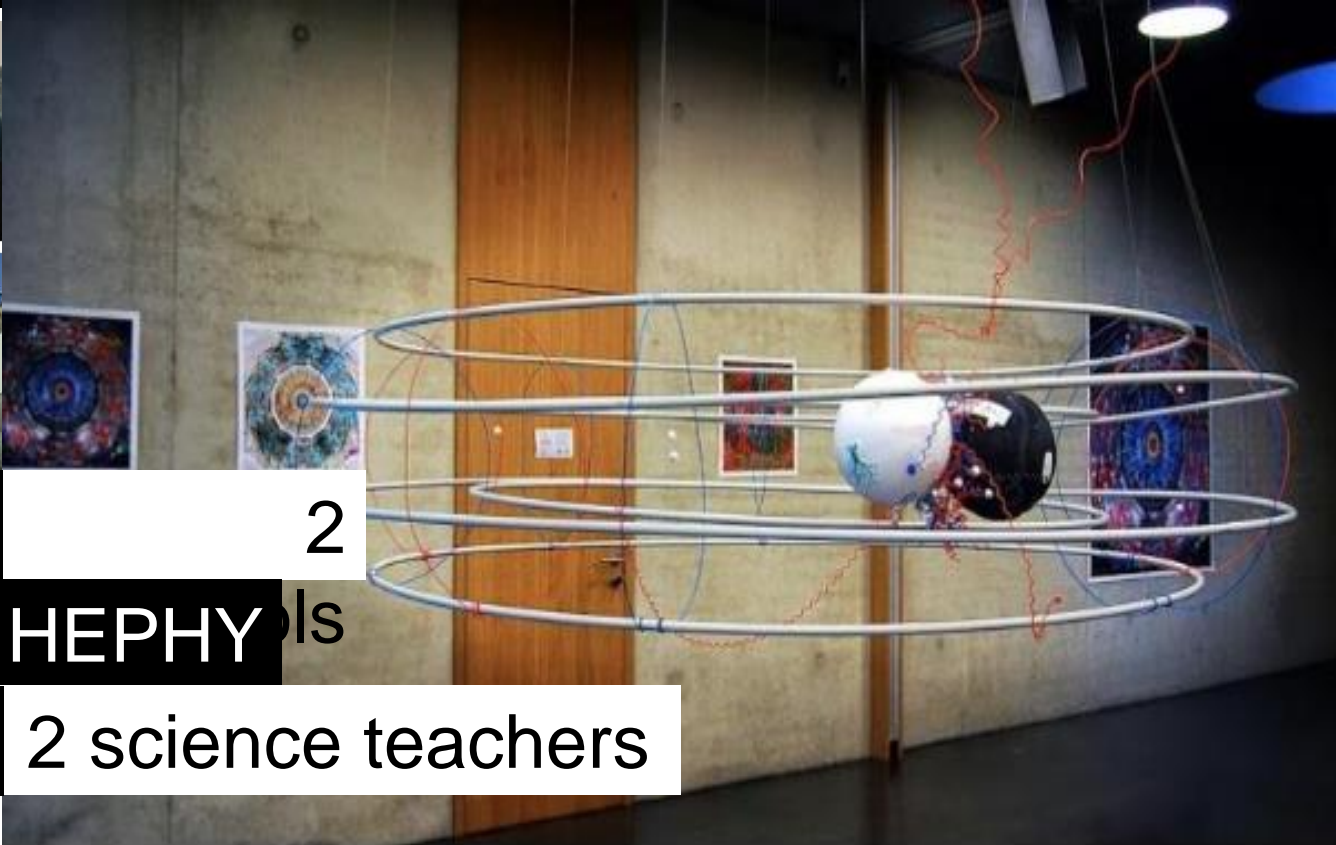
STEAM is an educational and innovation framework bringing science, technology and engineering together with the arts/other disciplines and types of learners with the goal of being more engaging, creative and naturally successful for all members of any educational system.

Programme  
for Science  
Education  
Research

**4.2** Science education should focus on competences with an emphasis on learning through science and shifting from STEM to STEAM by linking science with other subjects and disciplines.



5-7 Jun 2013 1<sup>st</sup> sciart workshop | Graz, Austria



62 students

2

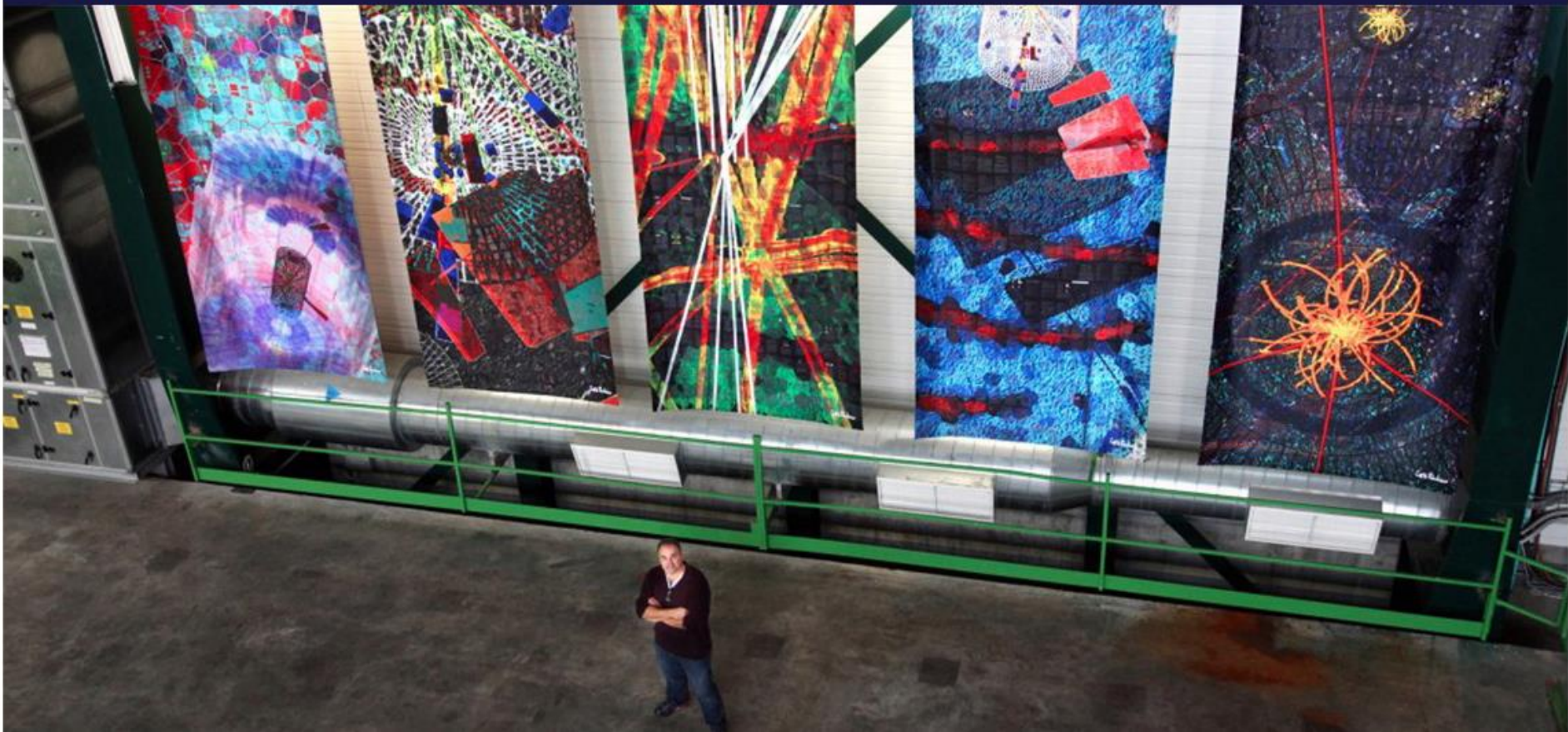
4 HEPHYls

2 art teachers

2 science teachers

*The Incredible Science-Art Collider by students In Graz, Austria (Image: Michael Hoch)*







**Pete**



# Large Hadron Collider roadshow UK



STFC's Large Hadron Collider roadshow aka LHC supports the UK particle physics community, in partnership with the Institute of Physics, celebrating the UK's involvement in the world's biggest scientific experiment – the Large Hadron Collider at CERN.



<http://www.stfc.ac.uk/news-events-and-publications/events/stfc-events/large-hadron-collider-roadshow/>

# LHC on Tour

Travelling more than 4,244 miles and wowing 600,000 people, STFC and the UK particle physics community have been touring the country with our life-size model of the Large Hadron Collider. To celebrate the UK's involvement in the world's biggest scientific experiment the exhibit has been showcased in 17 venues since it began its tour in March 2012 – becoming especially popular since the announcement of the discovery of the Higgs Boson at CERN last July.

The exhibit featured a life-size replica of the LHC tunnel, so that visitors could get a sense of the immense size of the LHC. PhD students and post-doctoral researchers from UK universities, usually with experience at CERN, accompanied the exhibit to explain to visitors about the science they study and why this is so important. Hands on exhibits helped to explain how the LHC works, such as an “old” cathode ray television to demonstrate the basics of particle accelerators. Alongside the exhibit itself STFC also ran events at the venues such as the Café Scientific at the Scottish Parliament and ‘An Audience with Peter Higgs’ at Queen’s University Belfast.

The exhibition has been incredibly successful, inspiring thousands of people during its year on tour. The tunnel will now reside at Daresbury Laboratory and will provide a base for particle physics workshops for A-Level Students. STFC's new touring exhibit “Seeing the Universe In All Its Light”, about astronomy and the world's big telescopes, took over at Jodrell Bank Live (6-7 July) and it clearly has a lot to live up to.

<http://www.stfc.ac.uk/news-events-and-publications/events/stfc-events/lhc-on-tour/>



## Further information and technical specifications

A mock-up of the Large Hadron Collider tunnel at CERN.

- This 6m long x 3.5m high x 3.8m wide 'walk through' exhibit demonstrates the size of the LHC and the cavern itself. On the external walls will be information regarding the next phase of scientific discovery and inside a number of WOW facts relating the science back to everyday life.
- Accelerator model includes a cutaway section that features LED lights illustrating the track of the particles.
- Power requirements
  - 2 x 13amp sockets
- *Set up time 5 people 3½ - 4 hours*





**Celso Martinez**



# Spain highlights 2016-2017

Celso Martínez Rivero. IFCA. Santander. April 2017





# European Researchers' night 2016



Celso Martínez Rivero. IFCA. Santander. April 2017



## Scientific Coffee



## Santander

Celso Martínez Rivero. IFCA. Santander. April 2017



## Masterclasses 2017 :

Barcelona, Granada, Madrid,  
Santander, Santiago, Valencia,  
Zaragoza,...



Celso Martínez Rivero. IFCA. Santander. April 2017





## The largest instrument never built: a CERN exposition



Science Week 2015

Celso Martínez Rivero. IFCA. Santander. April 2017





# Physics in our lives

- Orihuela: May 2015
- Madrid: April 2015
- Barcelona: March 2015
- Granada: January 2015
- Sevilla: November 2014
- Huelva: October 2014
- Santander: September 2014
- Gijón: August 2014
- Valencia: July 2014



LA FÍSICA EN NUESTRAS VIDAS

FÍSICA DE PARTÍCULAS, ASTROPARTÍCULAS Y FÍSICA NUCLEAR en la sociedad del siglo XXI



ENTRADA LIBRE  
Del 22 de agosto al 8 de septiembre

## Santander

Jardines del Palacio de la Magdalena

Organiza



Patrocinadores



Con la colaboración de

[www.i-cpan.es/ExpoAplicaciones](http://www.i-cpan.es/ExpoAplicaciones)



49



- Gamma Hunters in IFAE (Barcelona) using MAGIC telescope data.
- Web application for high energy astrophysics
- Addressed to secondary school students which combines physics and computing.

<http://www.cazadoresderayosgamma.com>



**Catia**



# Exhibitions in Italy

Catia Peduto, INFN

# “Extreme”

Museo della Scienza e Tecnologia  
“Leonardo Da Vinci”, Milan

*July 2016 – permanent exhibition*

- - produced by the Museum in partnership with CERN and INFN

- <http://www.museoscienza.org/english/extreme/>



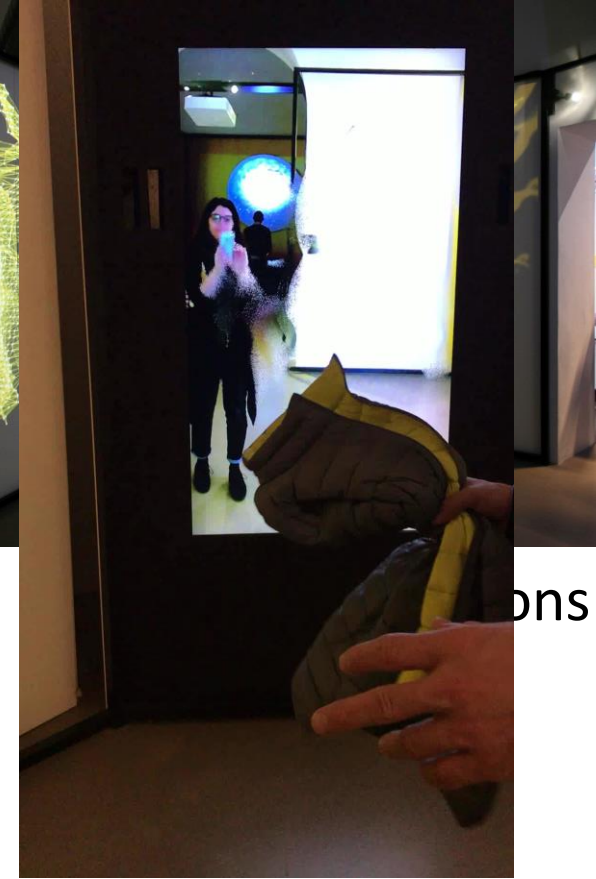
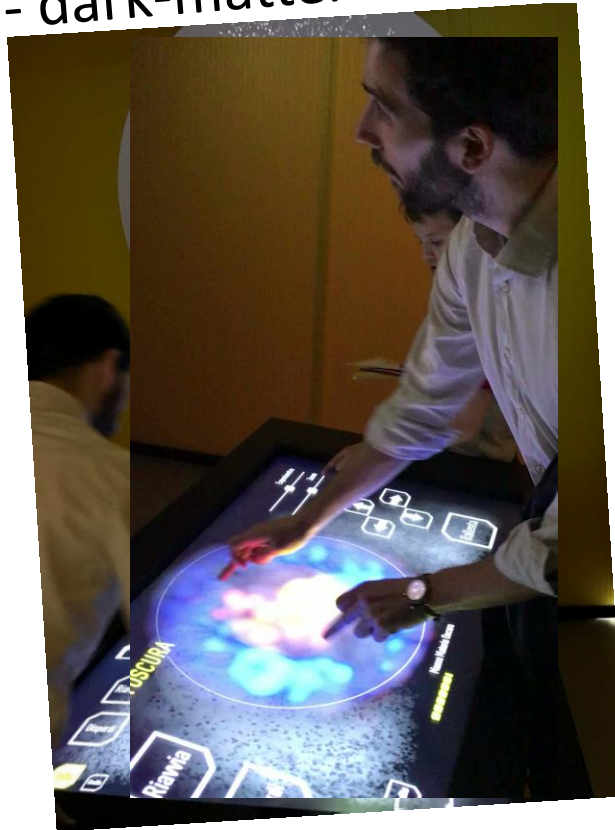
Catia Peduto, INFN

# Highlight on 3 exhibits:

- particle juke-box



- dark-matter



- interactive
- immersive

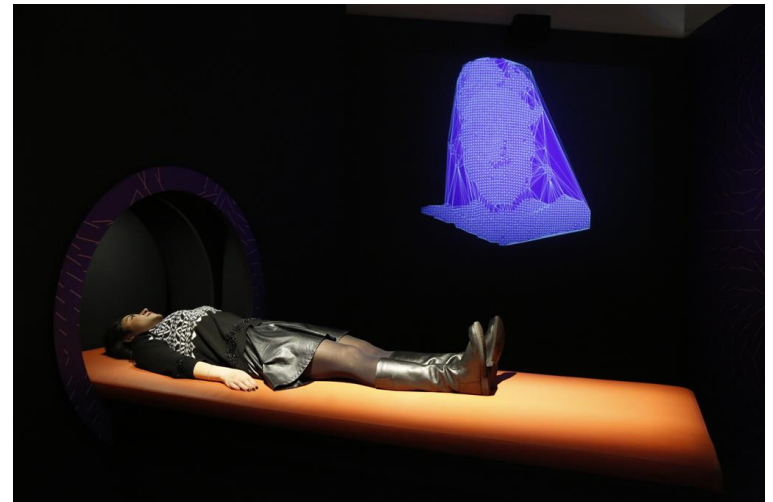


# “Uomo virtuale” (“Virtual man”)

Palazzo Blu, Pisa  
22 March – 2 July 2017



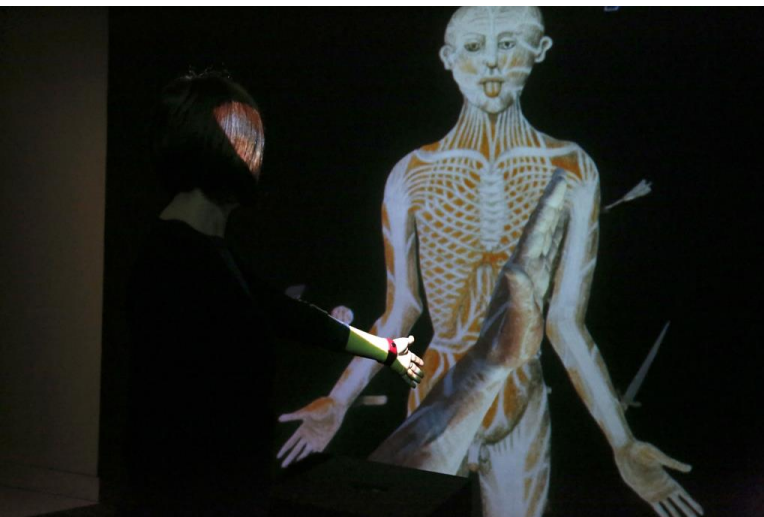
- dedicated to the exploration of the human body and the technologies that, born from fundamental physics research, have allowed to change forever medicine, becoming essential for treatment and diagnosis (like Pet, CT, hadrontherapy etc.)





# Exhibits:

- ancient instruments
- Touchscreens
- interactive exhibits
- videos
- 3D viewer
- artistic and immersive projections



# Panel conclusions:

**What if we establish a WORKING GROUP on EXHIBITS?**

difference between exhibition and exhibit

- Next 6 months: understand if it makes sense
- Questionnaire: Catia sends email

