

# Material DIY for the Communication of the Cosmos in the digital era

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In the era of new technologies, in the Department of Public Outreach of the Instituto de Física de Cantabria we have added to our more purely digital catalog various materials and activities from the “manual” era, for which IFCA staff have developed their better DIY skills.

From a planetary system to a (dis) mountable black hole, through a cloud chamber or a gravitational table, never forgetting the infallible ©LEGO, the manual materials have surprisingly aroused the interest of our public and visitors of all ages encouraging, in addition, the interdisciplinarity and team work of the members of the different IFCA research groups.

From the IFCA PO department we have been able to verify how these types of materials have a great acceptance and are frequently required because they provide a complementary, more classical vision of the physical phenomena that we show in our activities.

This presentation takes a tour of the materials that we have developed at IFCA, from the manufacturing process to their use and enjoyment, and will try to convince the audience of the therapeutic nature of building and, that an image is worth a thousand words but it is worth more than two thousand words if you have a gadget next to it.



# The context



Open  
days

11 Feb  
Girls/Women  
Science

Researchers  
at schools

IFCA carries out multiple Public Outreach activities mainly supported by digital resources:

VR glasses, computers, smartphones,  
videos, slide shows, animations...

**OBJECTIVE:** innovate using manual gadgets

Master class  
Particle  
physics

European  
Researcher's  
Night

Science  
Week

Scientific  
Coffee

Digital resources



# Work: develop PO materials

## IFCA Team-level collaboration to build:

- ★ Papier-mache and clay Solar System
- ★<sup>®</sup>LEGO Apollo Saturn V rocket
- ★ Water rocket
- ★ 3D mock-up of Athena Satellite
- ★ Black Hole detachable mock-up
- ★ Athena mission Photocall frame
- ★ Astronomical coloring sheets for kids
- ★ Gravitational table

★ Dark matter puppets

★ Fog chamber for muon detection





# Results (I)



Solar System



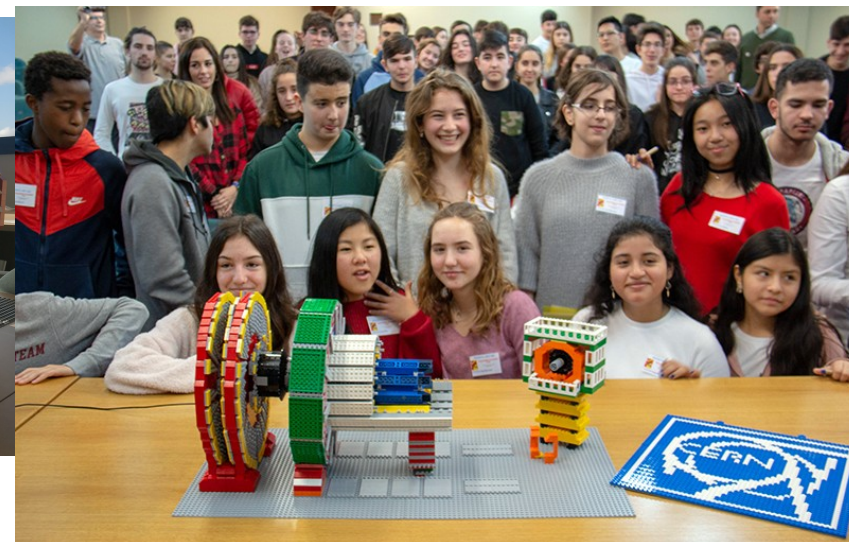
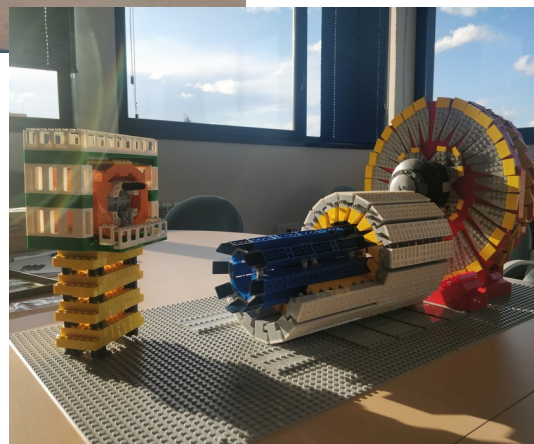
Models built of  
®LEGO bricks



Water rocket



DM puppets





# Results (II)



Gravitational table

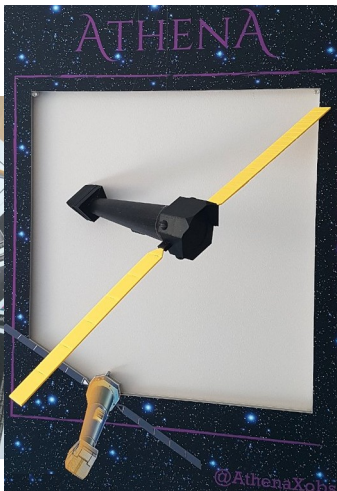


Particle  
 accelerator



Fog chamber

Black hole



# Impact and prospects for the future

Manual DIY resources very well accepted by public (kids, teachers, general public)

Astronomy/Physics can be explained with many very simple gadgets

The combination of digital + manual is the best option

Difficult to have the expertise and the tools/materials to build them

IFCA now increasing the catalog of gadgets – stay tuned!



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