



Exhibit development for CERN Science Gateway

Stella Villaro Nolsøe & Josephine Weirup Gram

Our team

Carla Molins Pitarch

Ph.D student in science communication

Design & Technology MFA

Design degree + Bachelor of Arts in Design

Daria Dvorzhitskaia

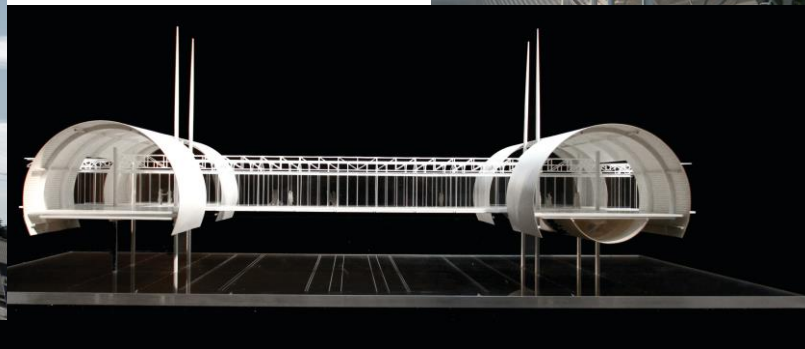
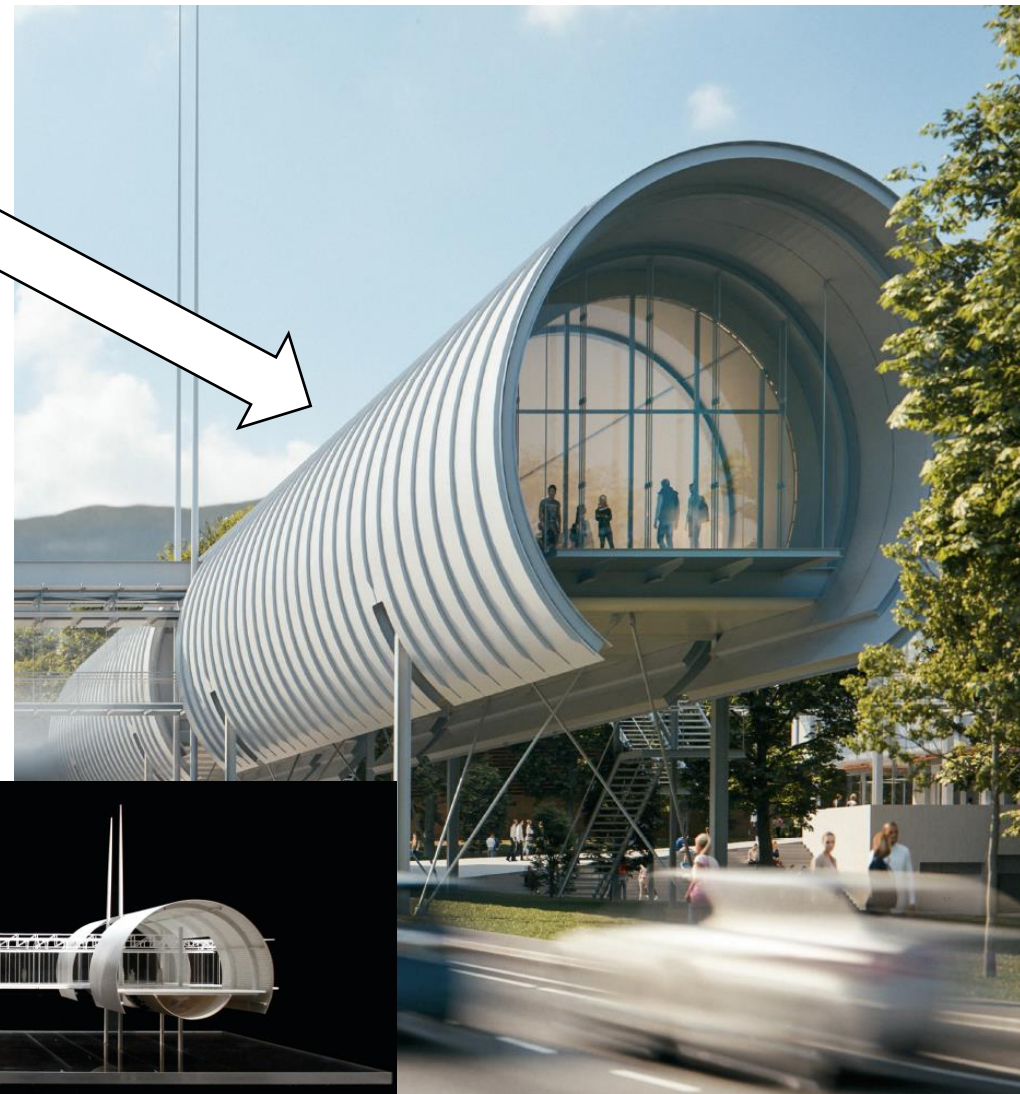
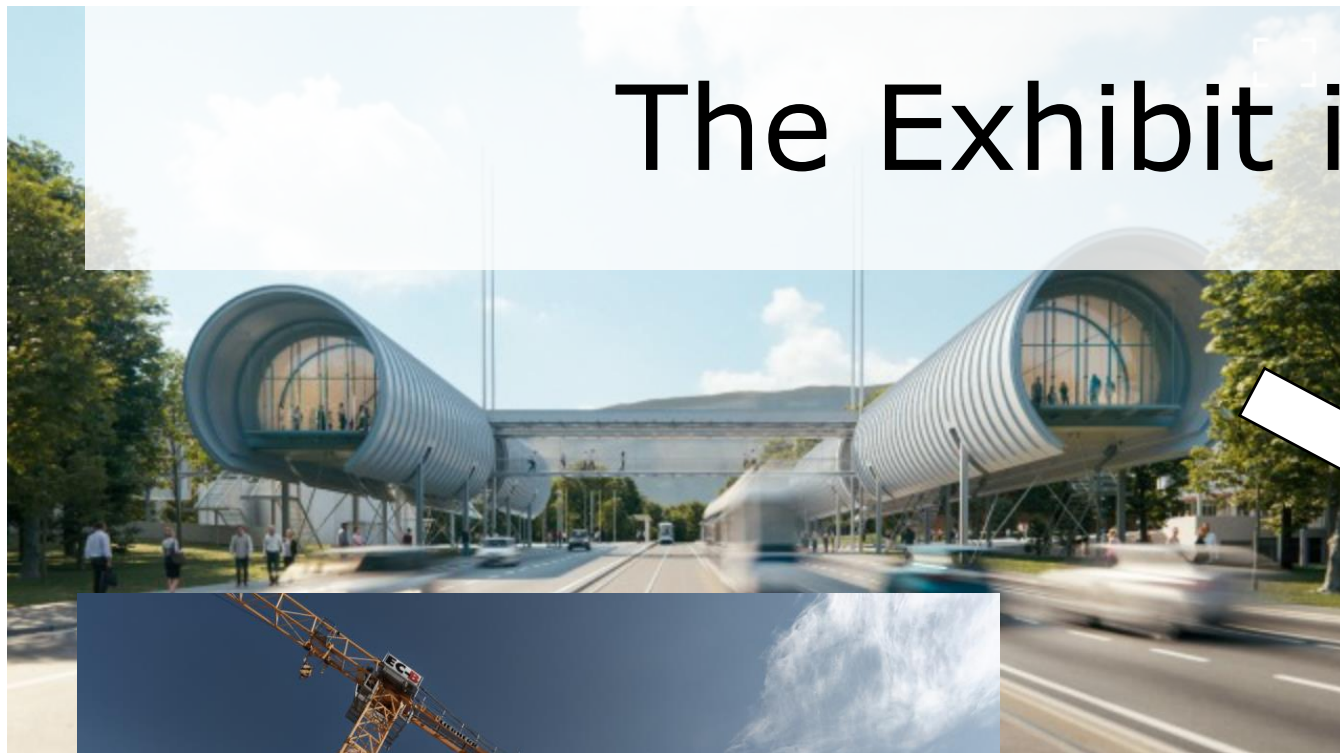
Science Communication Researcher

CERN Exhibitions Team

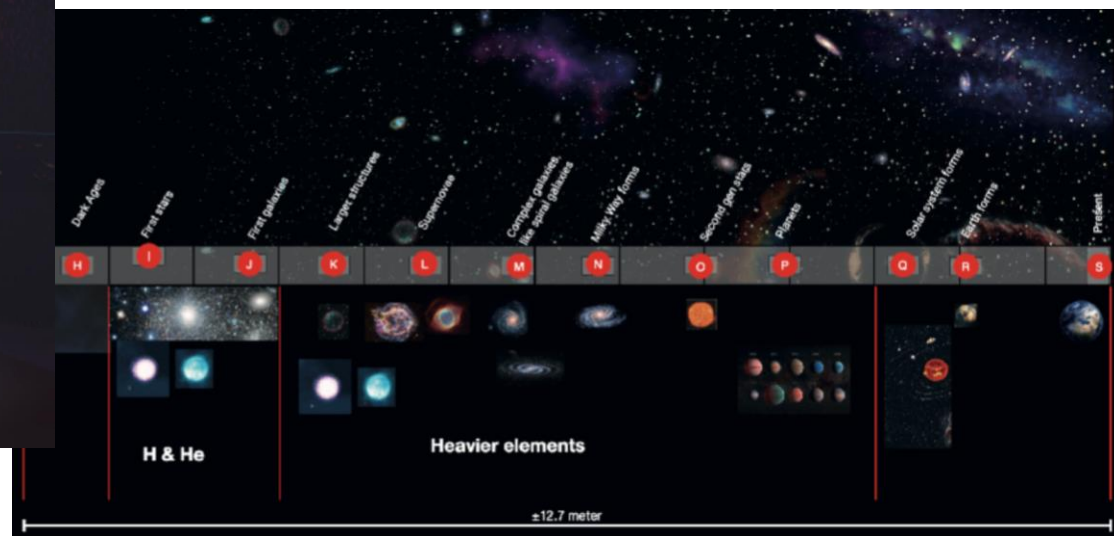
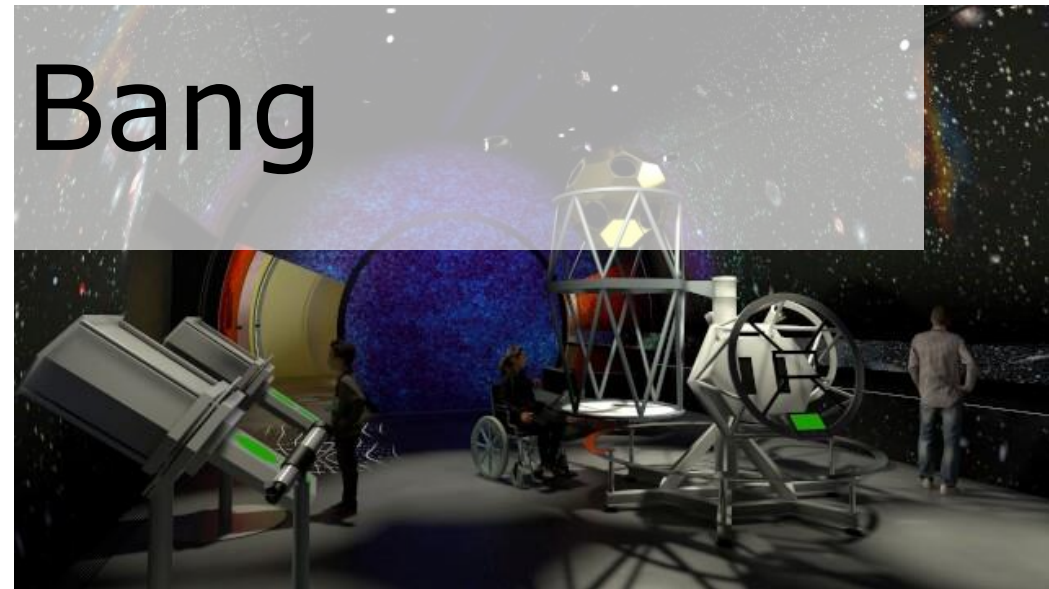
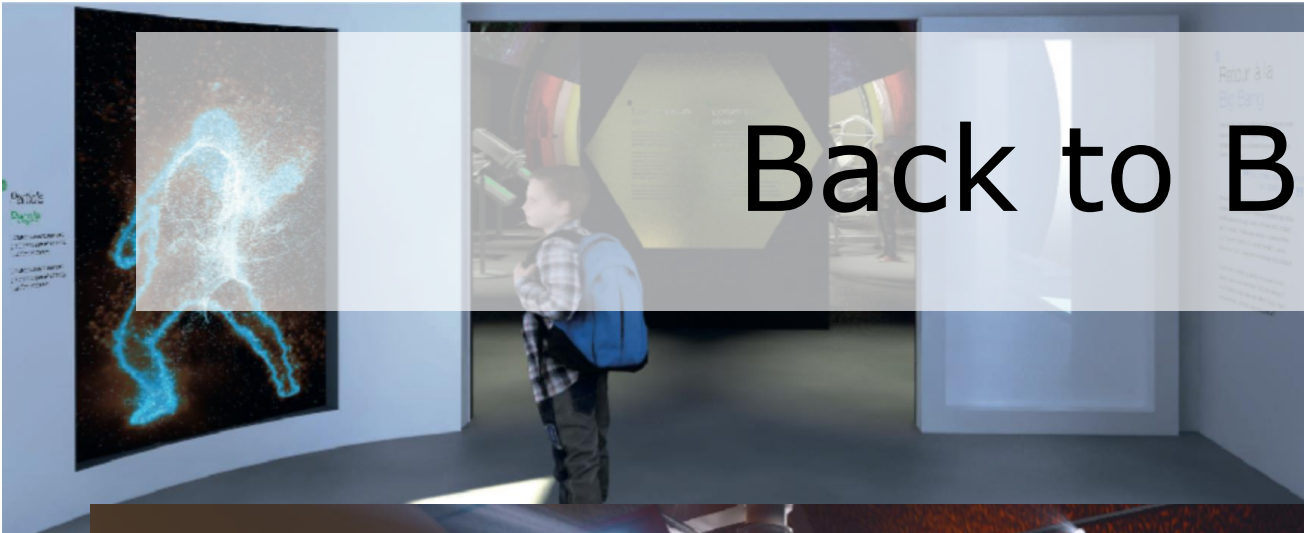
BSc in Science Communication, MRes in Master of Research



The Exhibit in 2023

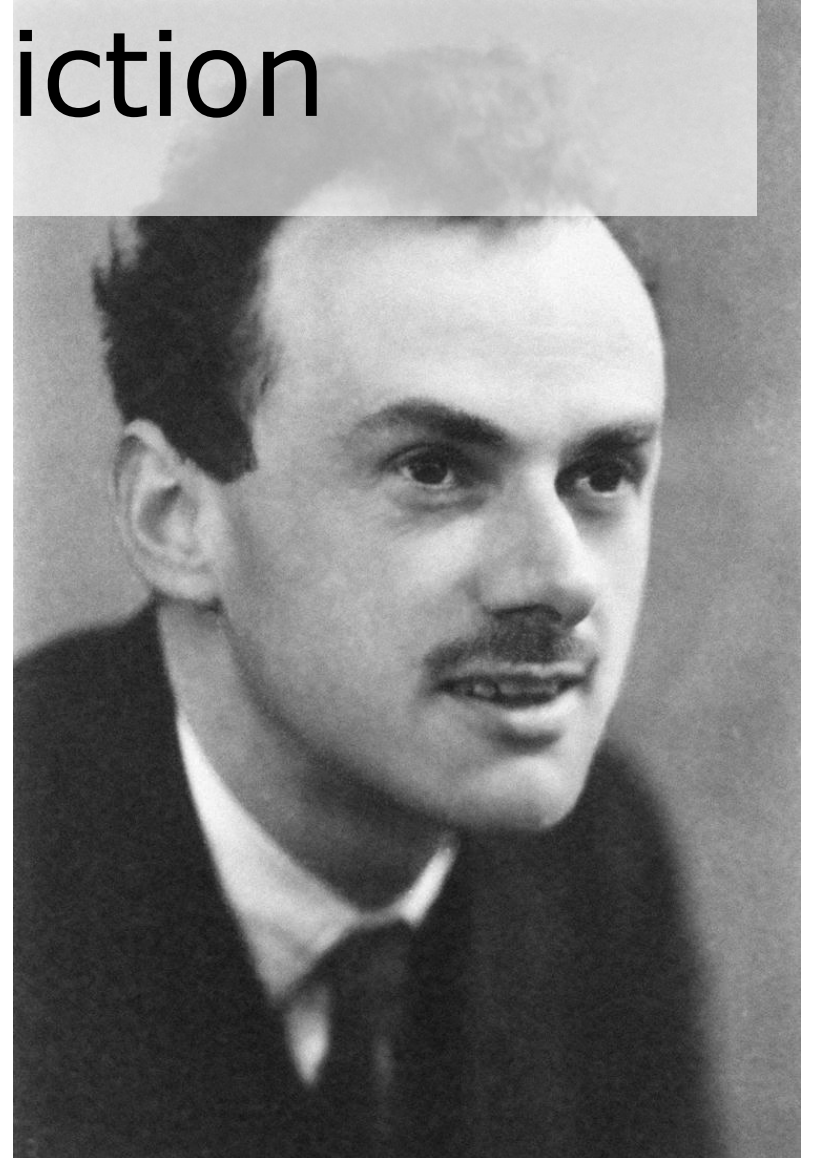


Back to Big Bang



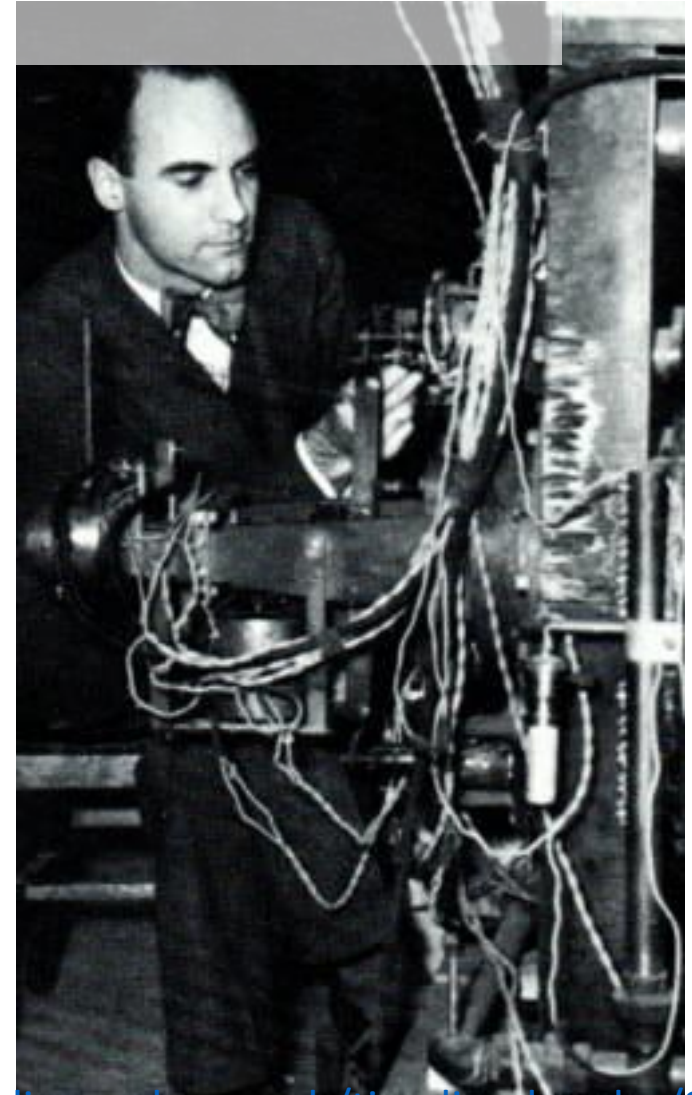
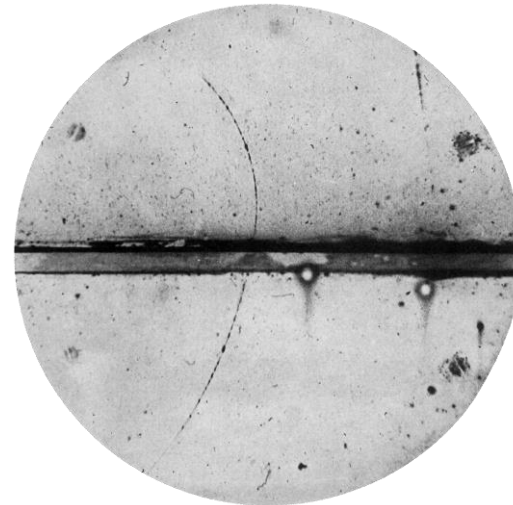
Antimatter - Prediction

- Antimatter = matter composed of antiparticles
- Reversed charge
- Was first predicted in 1928 by Paul Dirac
- Combined quantum theory and Einstein's special relativity



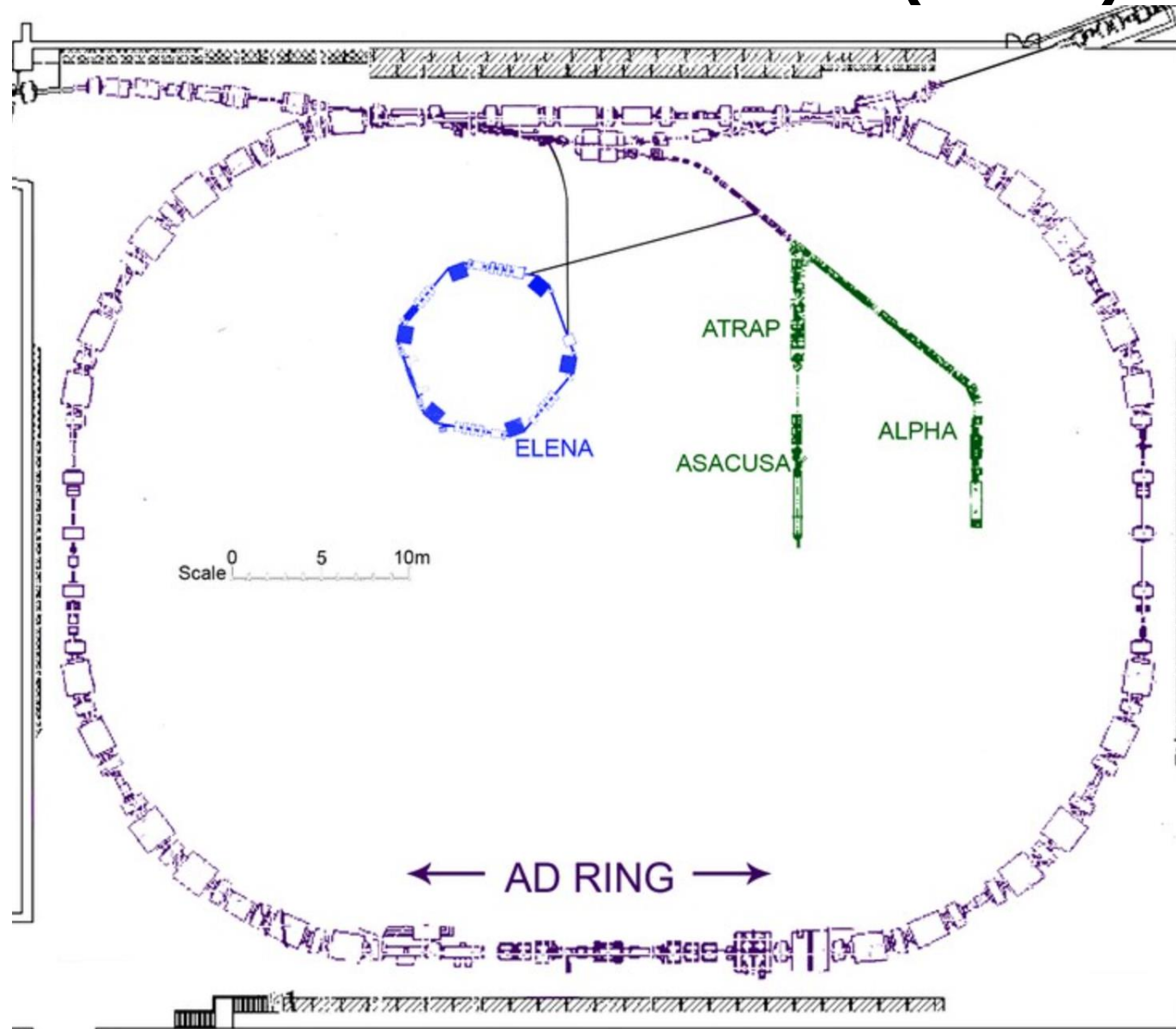
Antimatter - Discovery

- 1932 - Carl Anderson discovered the first antiparticle
- Studied showers of cosmic particles in cloud chamber
- Saw a track left by "something positively charged, and with the same mass as an electron"
- He called them "positrons" for it's positive charge



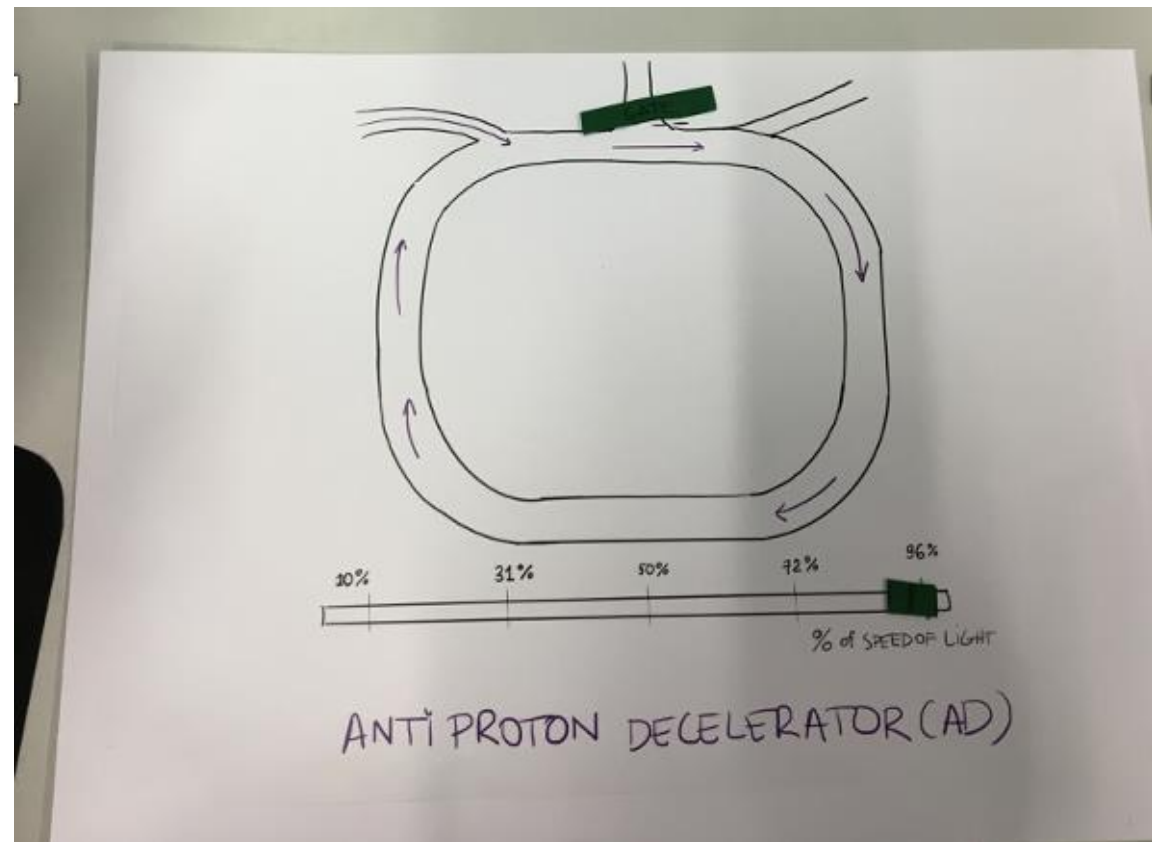
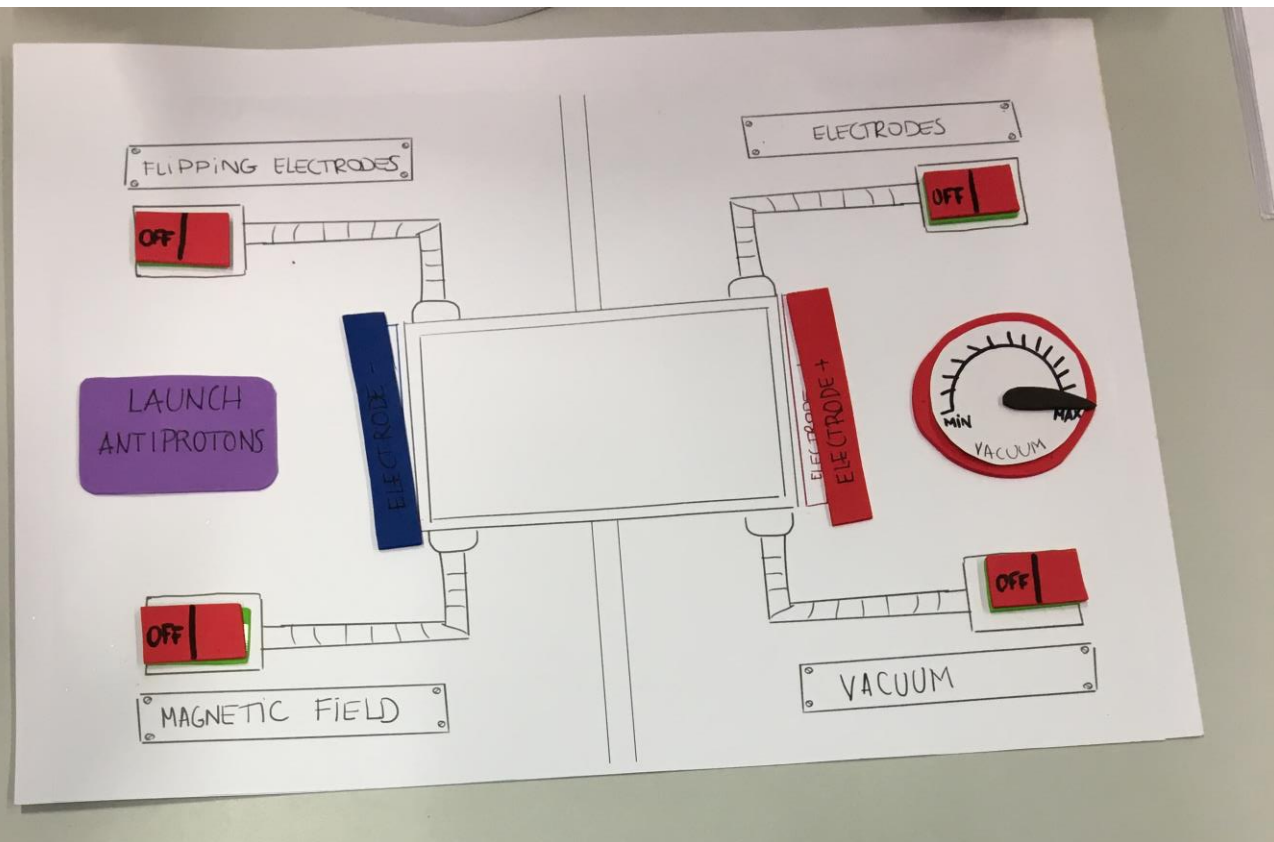
Antiproton Decelerator (AD) - CERN

The BASE collaboration is developing a transportable antiproton trap to make higher-precision measurements of the properties of antimatter



Penning-trap (tiny accelerators): a system, which will feature a first trap to receive and release the antiprotons produced at the AD, and a second trap to store the antiprotons.

The Antimatter Trap Game prototype



The Antimatter Trap Game prototype process

Pretesting

ANTIMATTER TRAP GAME

Welcome to the Antimatter Trap Game!
Please select a language

-Option
-Option
-Option

In this game you're going to make some antiparticles!
Are you ready to start?

Yes NO

This is The Antimatter Trap, but before you can use it, we need an antiparticle.
Do you know what an antiparticle is?

New No

(if no)
Explanation on what an antiparticle is

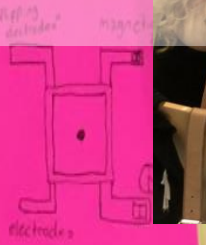
(if yes)
There are many different ways to get an antiparticle, you can for example get one from a banana. It's called a positron.
lets try that

You caught a positron, but it's too light for the trap.

Let's create some antiprotons instead (positron vs antiproton)



You have created some antiprotons, which works perfect for the Antimatter Trap.
Put them in the trap



(explanation) pop up menu
The average banana produces a positron every 75 minutes...

(How to create them?)

ANNIHILATION

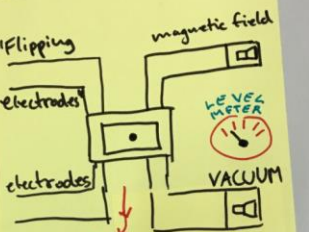
(Deceleration?)



ANTIMATTER GAME - The trap

Welcome! Choose a language
French English

Scientists desperately want to store antimatter. But to do that they must prevent it from annihilating. Therefore, they created a such thing called the Antimatter trap



Do you want to know how the trap works?
yes No

Great! lets get started!

Storing antiprotons:

We'll store the antiprotons inside the Trap!

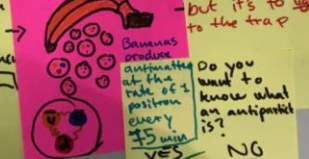


Section of the trap

Let's create antiprotons!

We need an antiparticle!
Do you want to get this?
yes No

you caught the positron but it's too light to the tra p



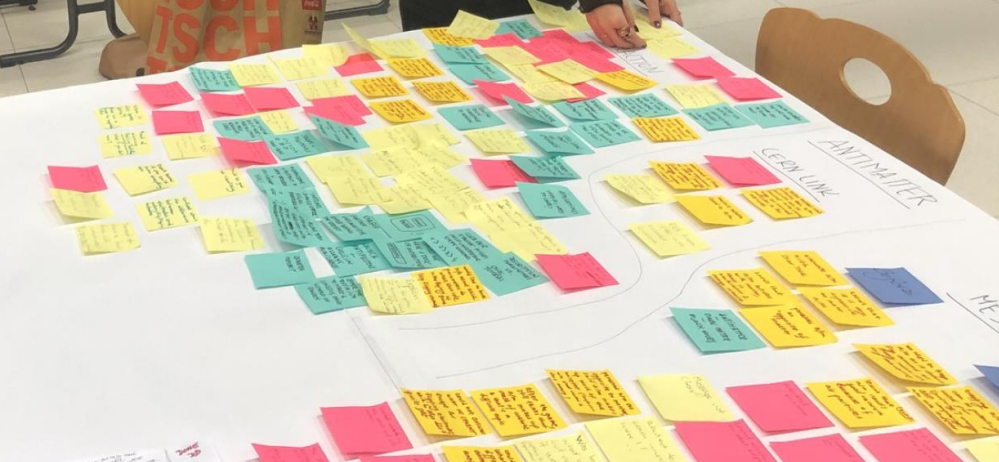
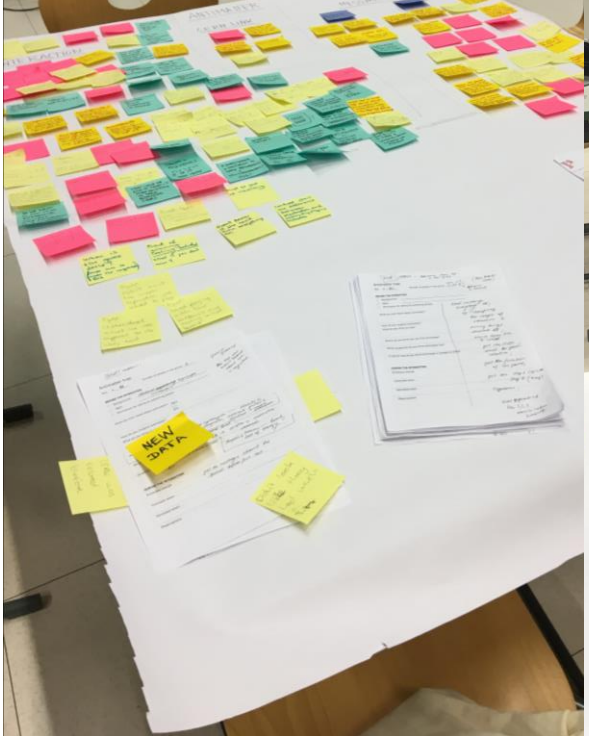
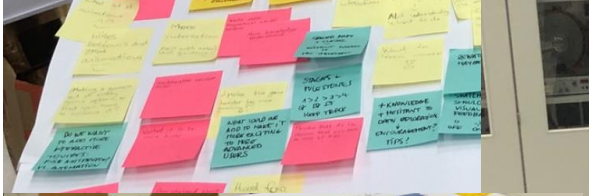
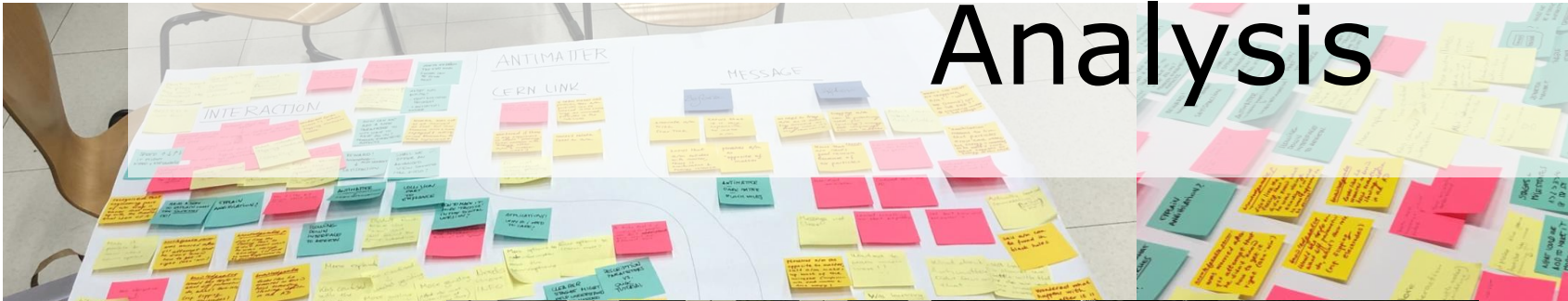
Do you want to know what an antiparticle is?
yes NO



Testing prototype



Analysis



What have we learned?

