

#askCERN

Hangout with CERN and Google Science Fair: Why does antimatter matter?

18 April 2013





Today's trivia question

- If CERN traps 1 atom of antimatter every 15 minutes, how many years would it take to trap a gram of antimatter?



LHCb

ATLAS

CERN Meyrin

CERN Prévessin

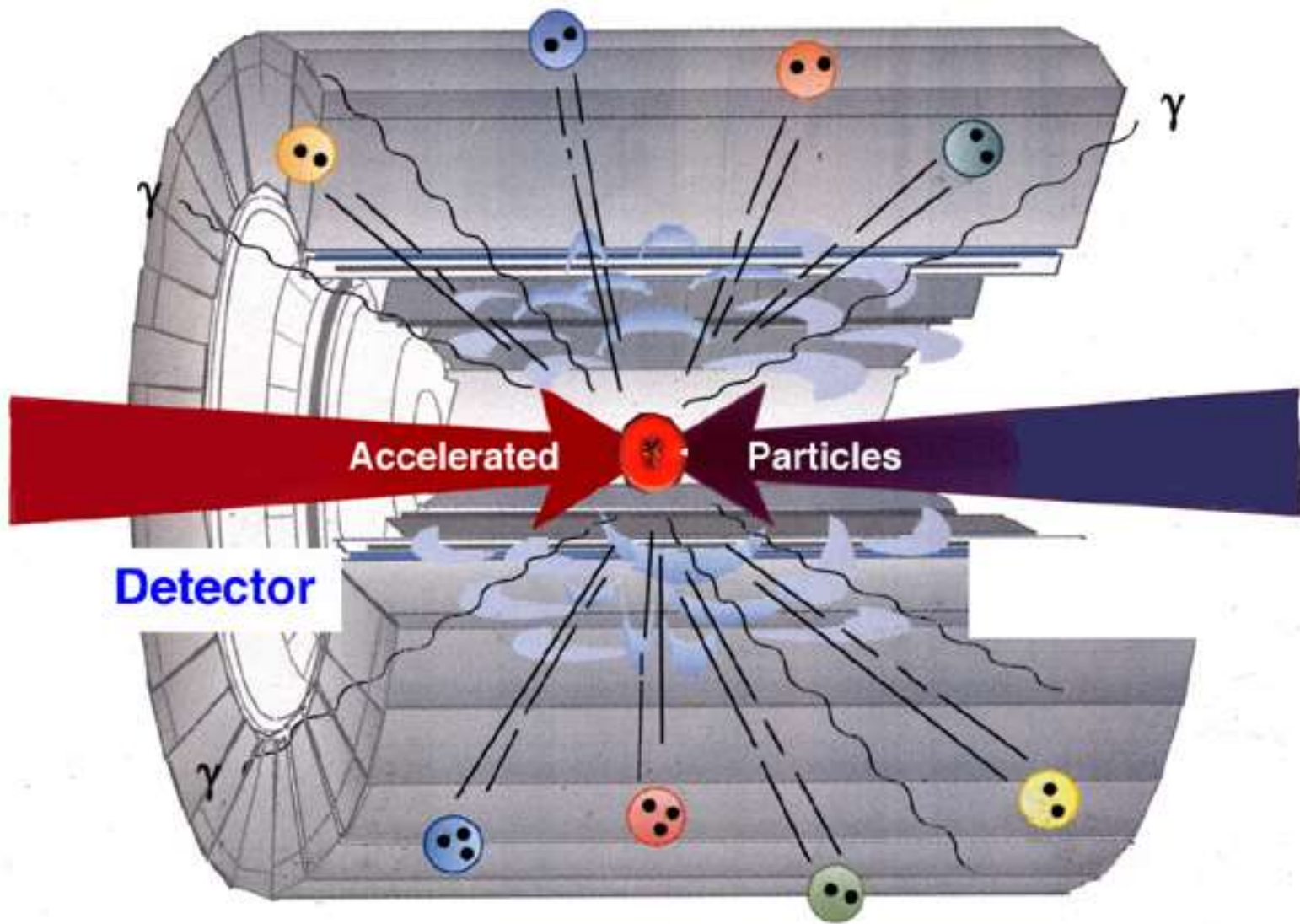
SPS 7 km

ALICE

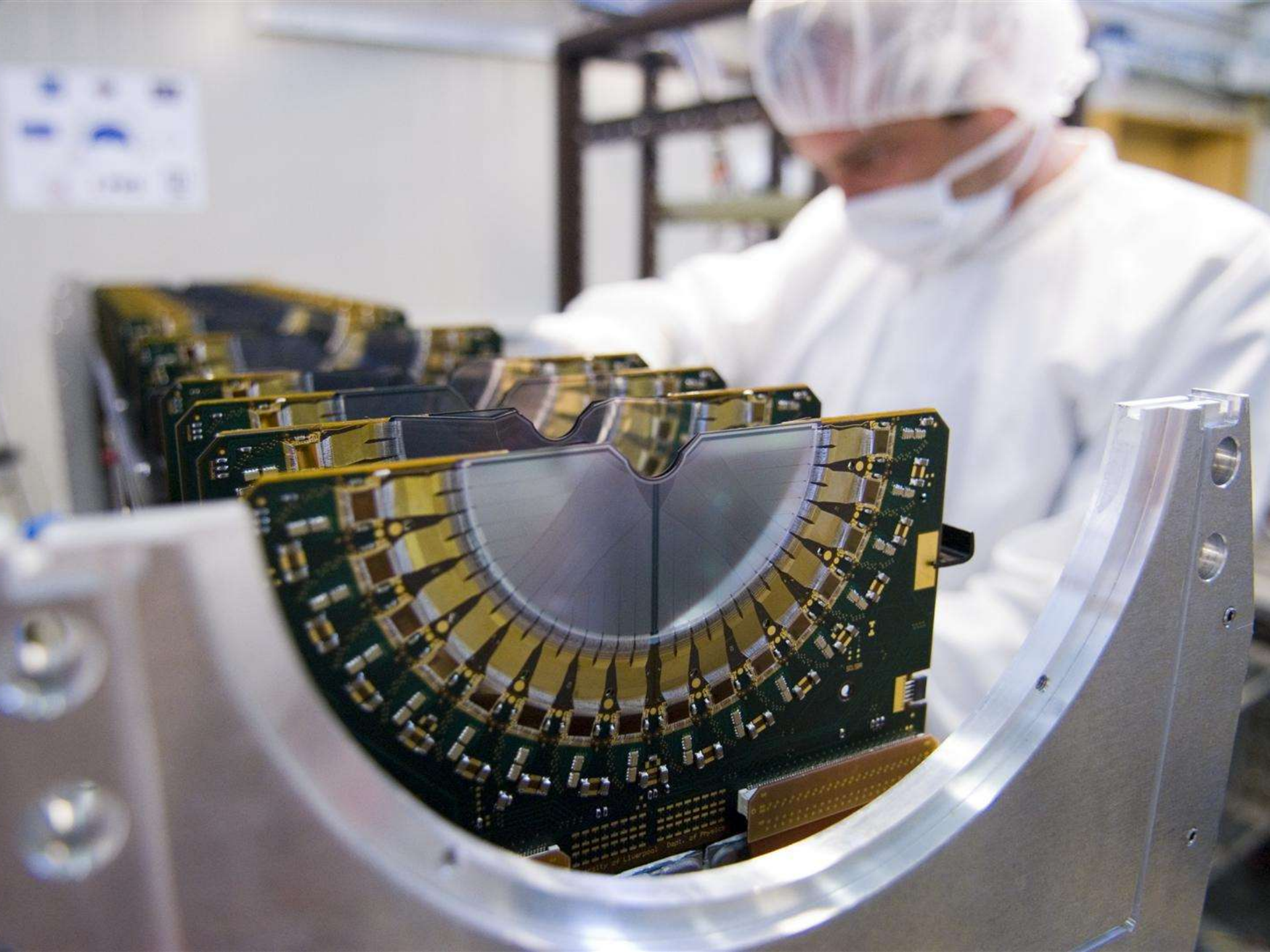
CMS

LHC 27 km

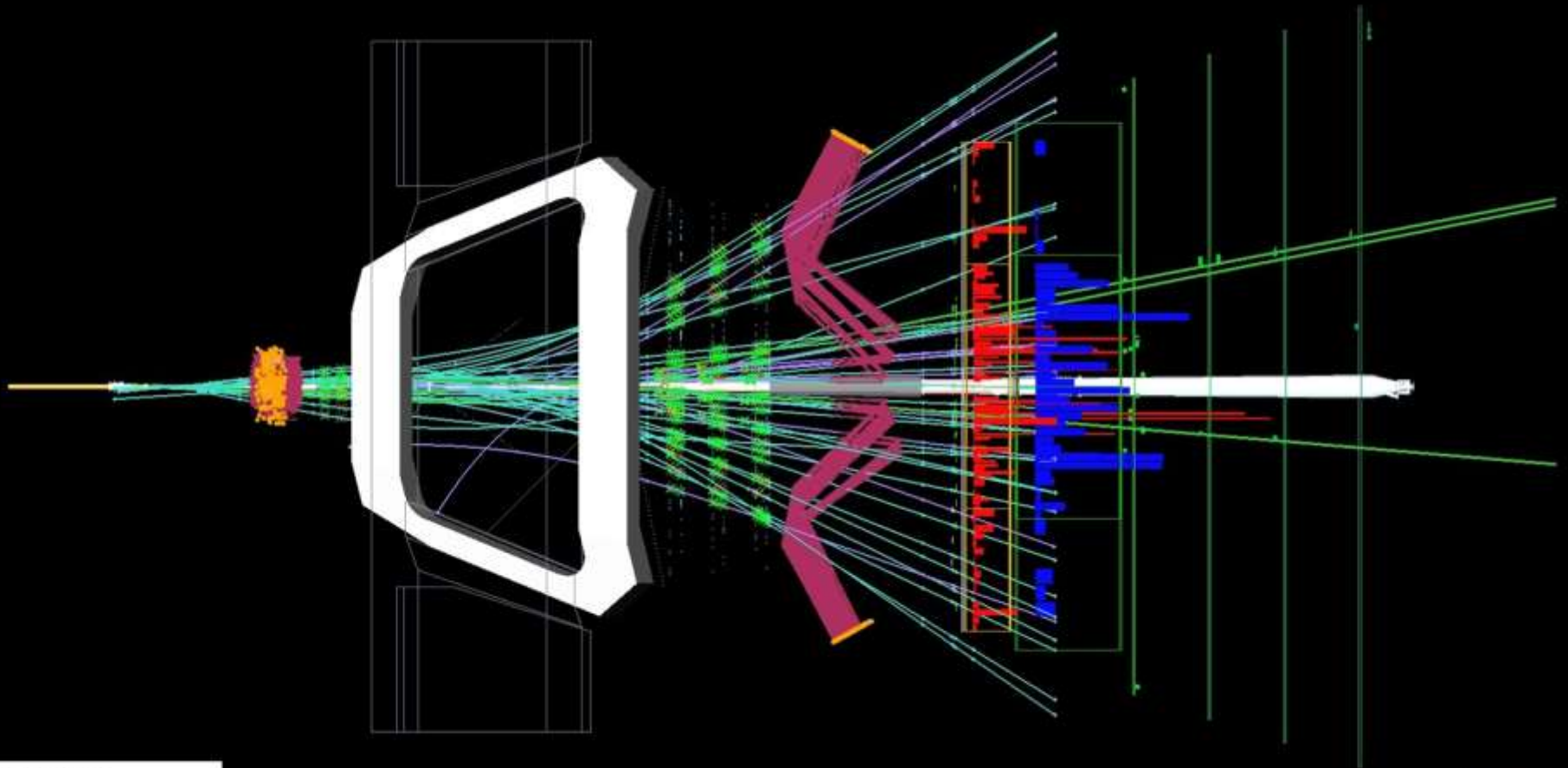
SUISSE
FRANCE







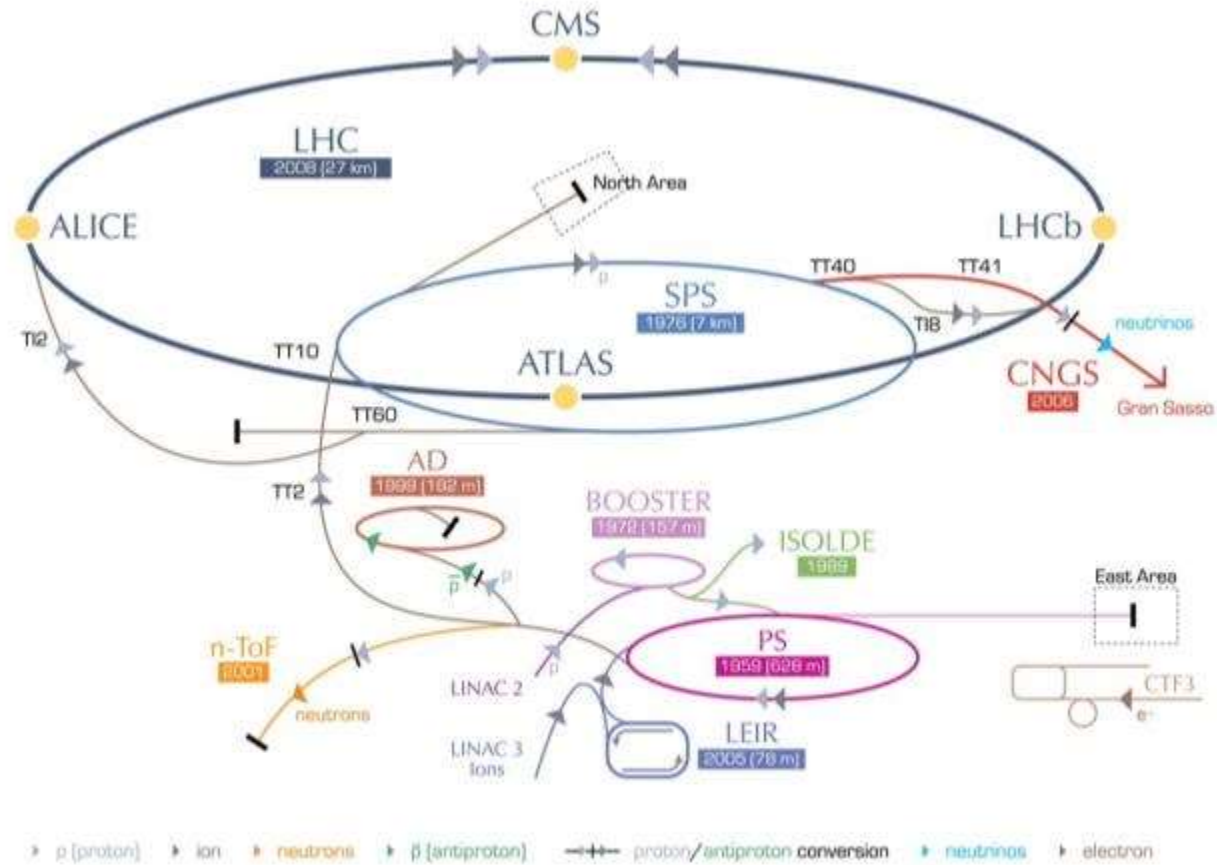
LHCb Event Display



30.3.2010 13:07:11
Run 69236 Event 88490 bld 1786

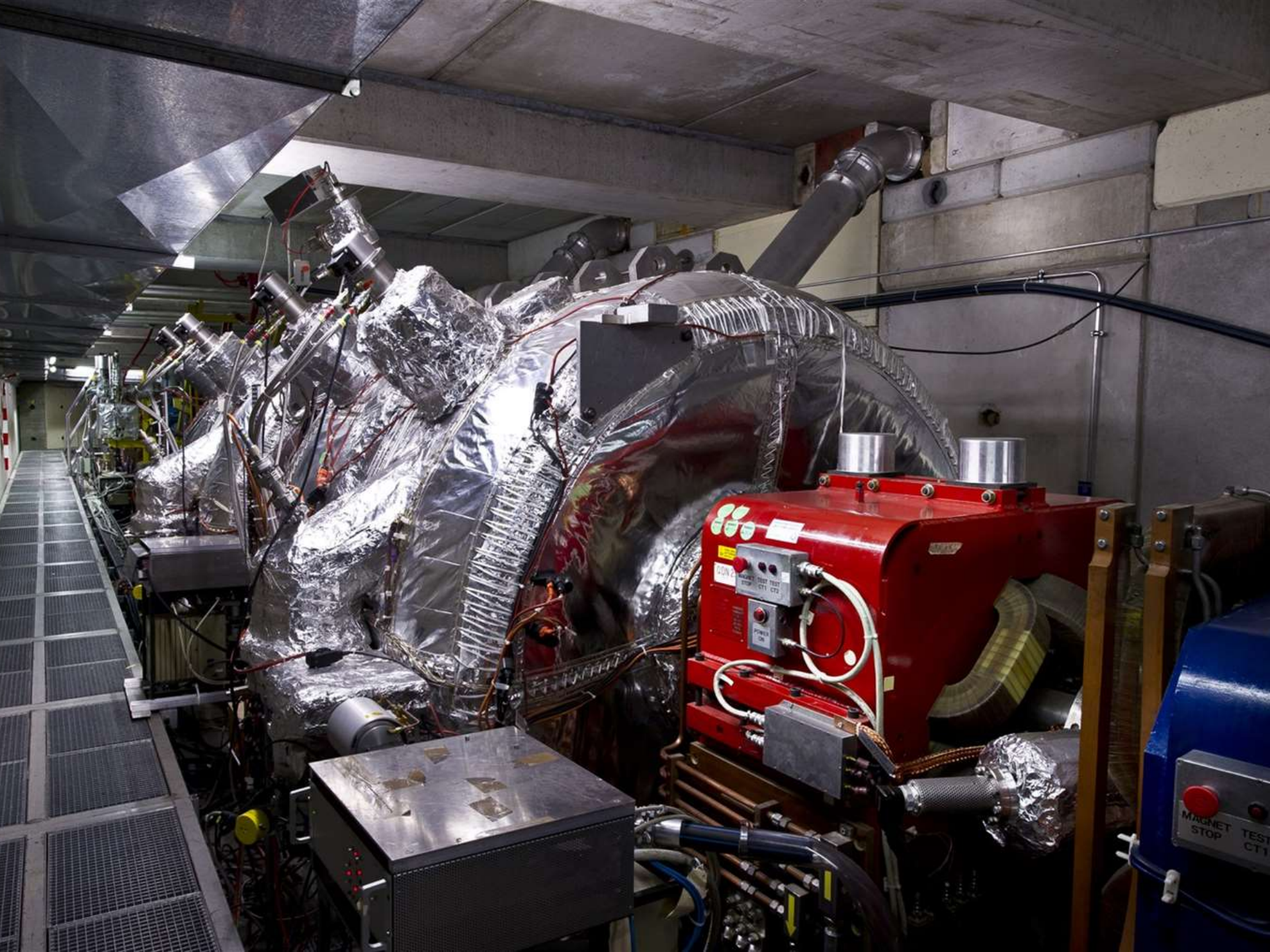


CERN's Accelerator complex

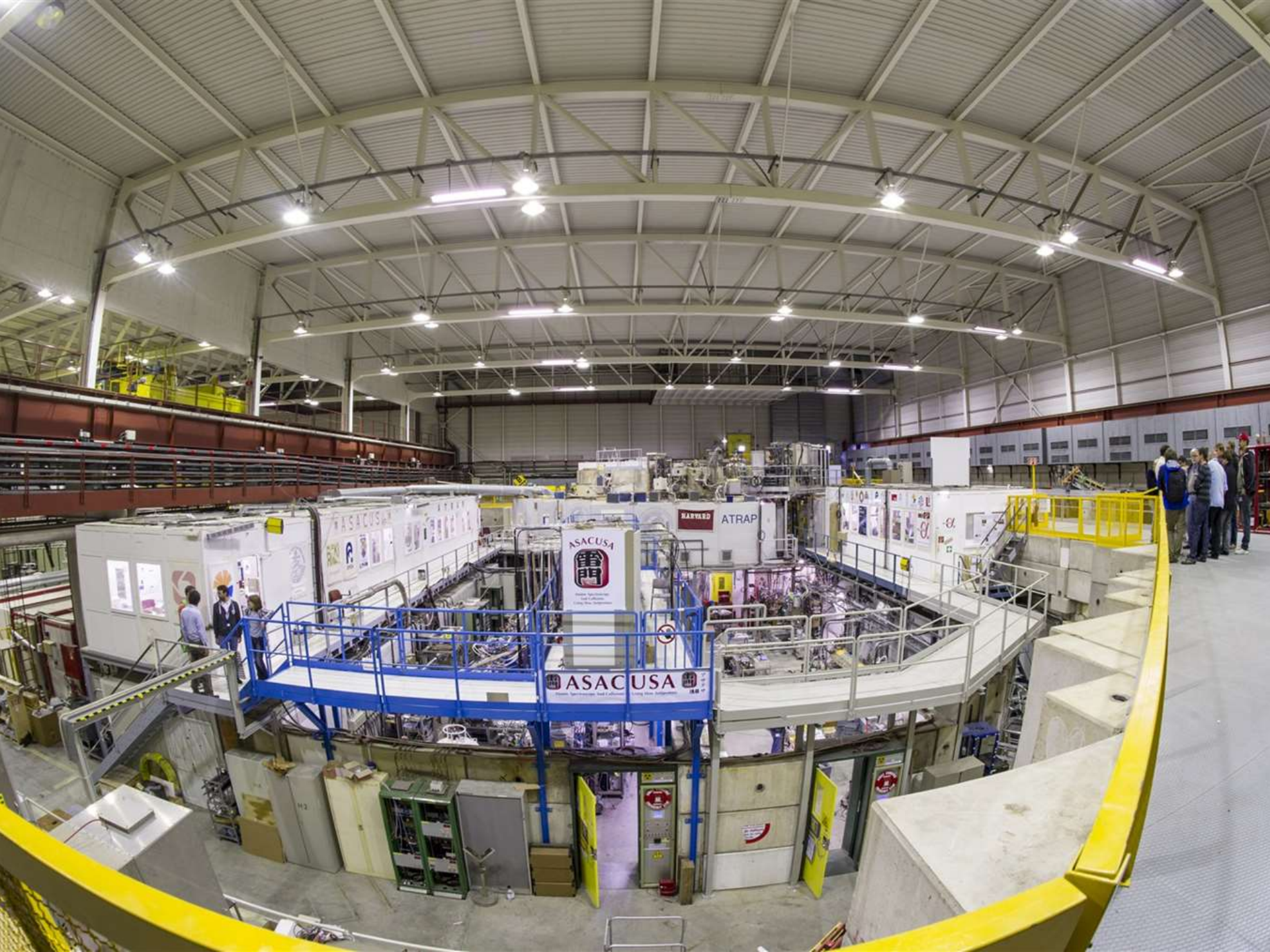


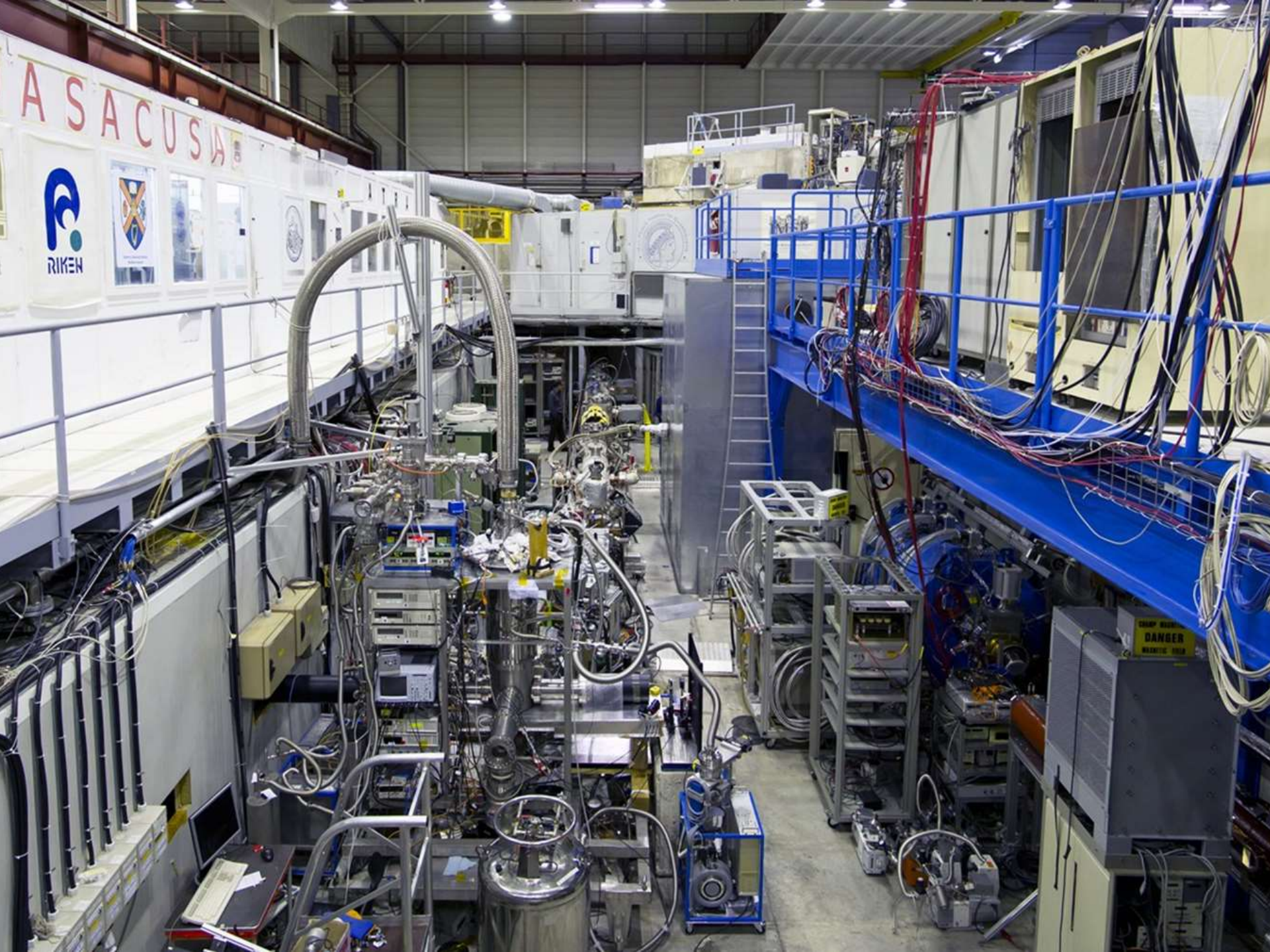
LHC Large Hadron Collider SPS Super Proton Synchrotron PS Proton Synchrotron

AD Antiproton Decelerator CTF3 Clic Test Facility CNGS Cern Neutrinos to Gran Sasso ISOLDE Isotope Separator OnLine Device
 LEIR Low Energy Ion Ring LINAC LINear ACcelerator n-ToF Neutrons Time Of Flight









ASACUSA



KEEP HANDS
AWAY FROM
DANGER
RADIATION AREA



mcteur

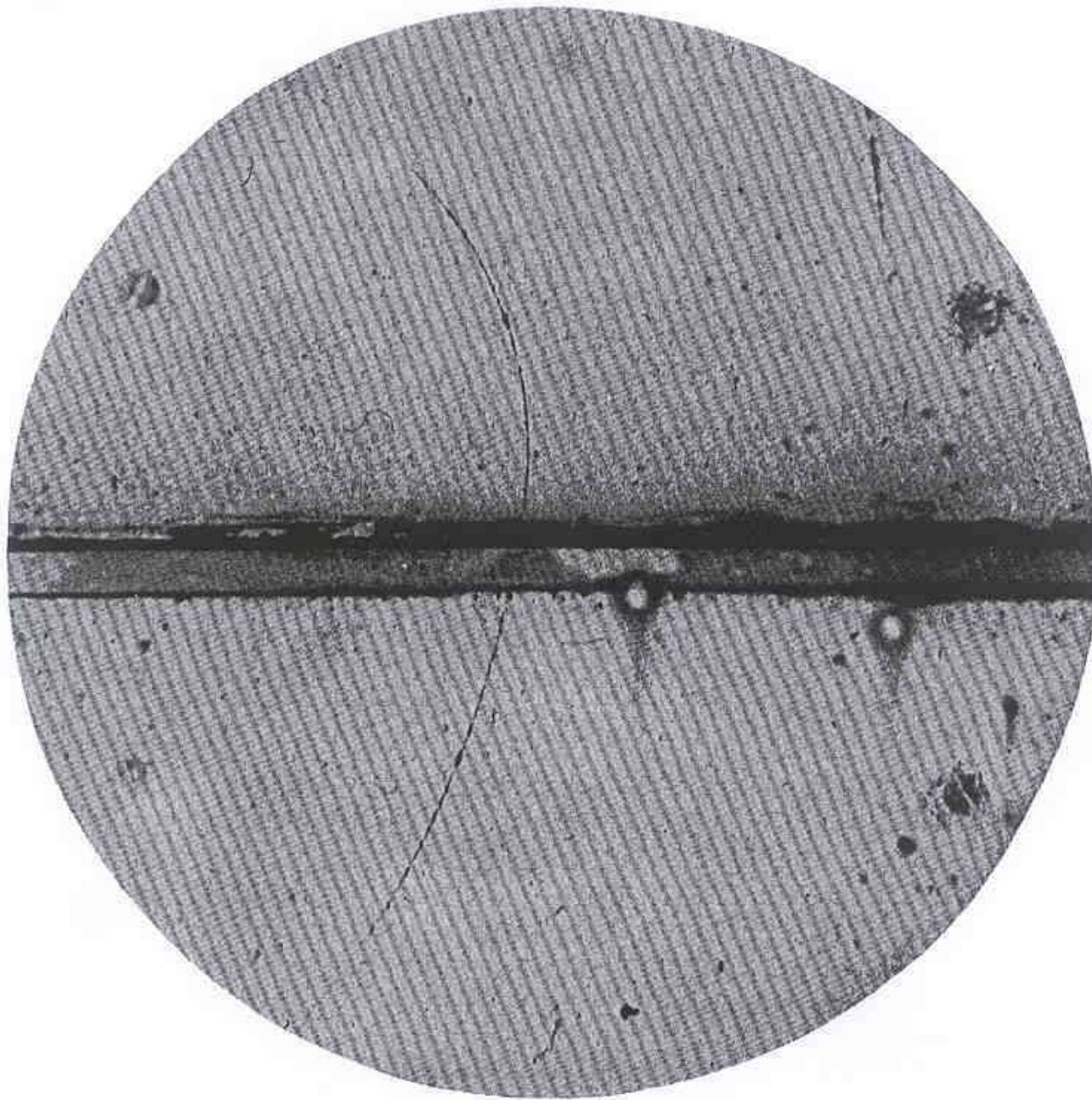
MAGUSA
(AD3)
Installed for
2010
MAGUSA
(AD3)
Installed for
2011



MS Pump Controller V1.1

MS Pump Controller V1.1

MS Pump Controller V1.1



...TER IS REAL!
...IÈRE EXISTE!

THE RECIPE FOR
LA RECETTE DE L'

... mais automatique, que nous n'... Pour faire de l'antimatière, nous avons besoin...

$E = mc^2$



NE PAS TOUCHER
DON'T TOUCH

Today's trivia answer

1 atom every 15 minutes

Avogadro's number = 6.022×10^{23} atoms in a gram

1 gram = 15 minutes \times 6.022×10^{23} atoms / 60 minutes/hour / 24 hours/day / 365 days/year

1 gram = 1.7186×10^{19} years

= about 10 000 000 000 000 000 000 000 years

= about 10 quintillion years (short scale)

= about 10 trillion years (long scale)

www.google-science-fair.com

The screenshot shows the homepage of the Google Science Fair 2013 website. At the top, there is a navigation bar with the Google Science Fair 2013 logo on the left and three menu items: 'Start Your Project' (highlighted in green), 'The Competition', and 'Get Inspired'. Below the navigation bar is a large hero section with a background image of a person looking out over a city at sunset. The text 'It's your turn to change the world' is prominently displayed on the left, with a large play button icon in the center. Below this, there are logos for partners: Google, IBM, LEGO, NATIONAL GEOGRAPHIC, and SCIENTIFIC AMERICAN. A paragraph of text describes the competition as an online science competition for students aged 13-18, looking for ideas that will change the world. At the bottom, a green section titled 'Start your project' features a three-step process: 01 Enter, 02 Experiment, and 03 Change the world.

Google Science Fair 2013

Start Your Project The Competition Get Inspired

It's your turn to change the world

In partnership with Google IBM LEGO NATIONAL GEOGRAPHIC SCIENTIFIC AMERICAN

The Google Science Fair is an online science competition open to students ages 13-18 from around the globe. We're looking for ideas that will change the world. To get started, all you'll need is a Google account.

Start your project

- 01 Enter
- 02 Experiment
- 03 Change the world

Upcoming Hangouts with CERN

- Thursday 25 April, same time 17:00 CEST
 - **Extra dimensions**, with special guests Lisa Randall and Raman Sundrum
- Thursday 2 May, same time 17:00 CEST
 - **Multiplying dimensions**, with special guests from TEDxCERN (<http://tedxcern.ch/>)



TED^xCERN
x = independently organized TED event

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Participants

Tara Shears, University of Liverpool, LHCb Experiment

Niels Madsen, University of Swansea, ALPHA Experiment

Rolf Landua, Education group, CERN

Samantha Lam, Google Student Ambassador

Credits

Shree Bose — Google Science Fair host

Heidi Kleinmaus & Gary Bolles – GSF Production

Kate Kahle & Kelly Izlar — CERN Production

Thank you for watching!



www.cern.ch