CERN

#askCERN

Hangout with CERN and Google Science Fair: Snapshots of the Invisible

21 February 2013

LHCb
ATLAS
CERN Meyrin
CERN Prévessin
SPS 7 km
SUISSE
FRANCE
CMS
ALICE
LHC 27 km

Global Effort → Global Success
Results today only possible due to extraordinary performance of accelerators – experiments – Grid computing
Observation of a new particle consistent with a Higgs Boson (but which one…?)
Historic Milestone but only the beginning
Global Implications for the future
R-D Heuer
CERN

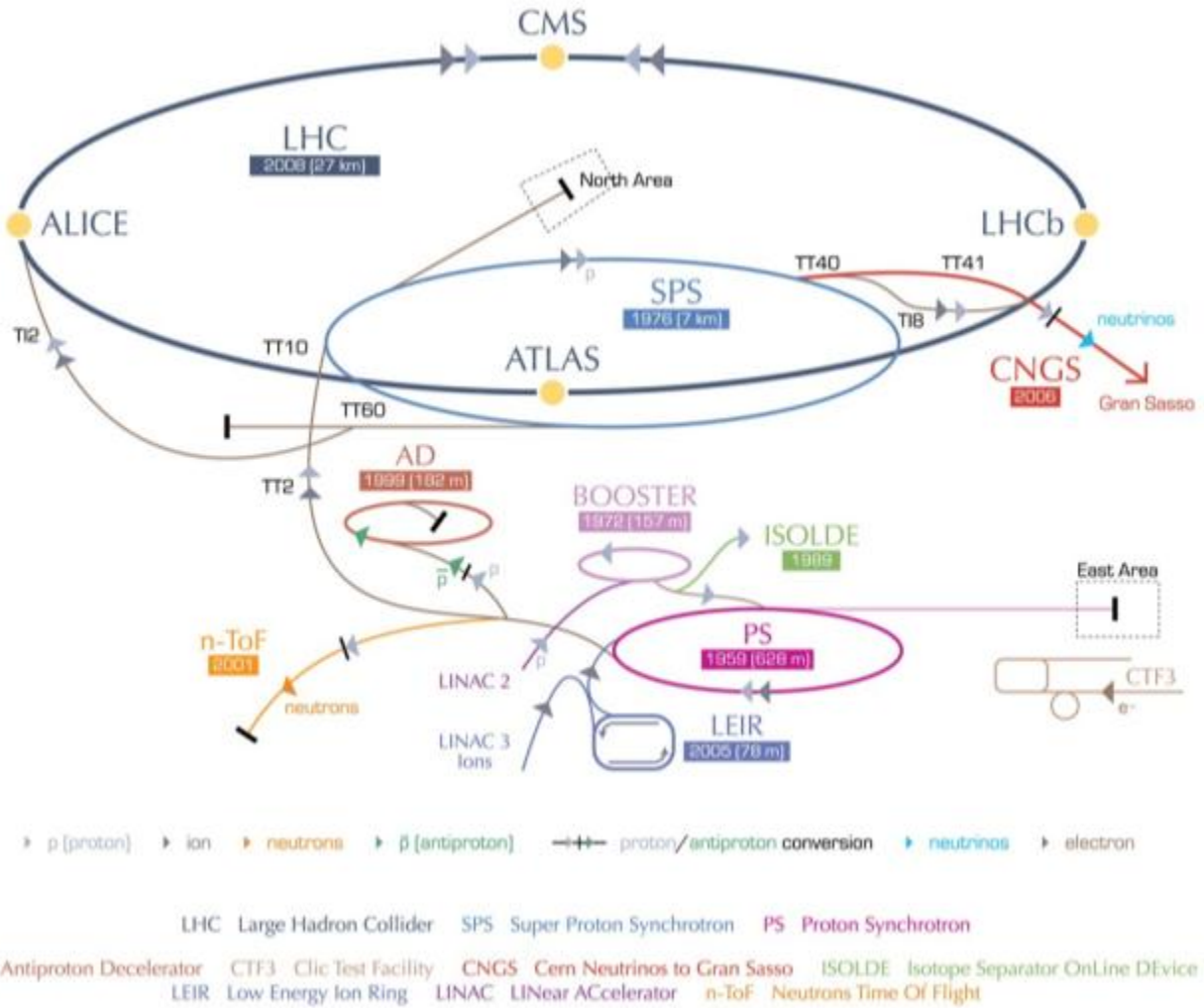
Today's trivia question

- Last 4 July, ATLAS and CMS witnessed about **500 trillion** proton collisions and observed a **few hundred** Higgs candidates (about **1 in 10^{12}**).

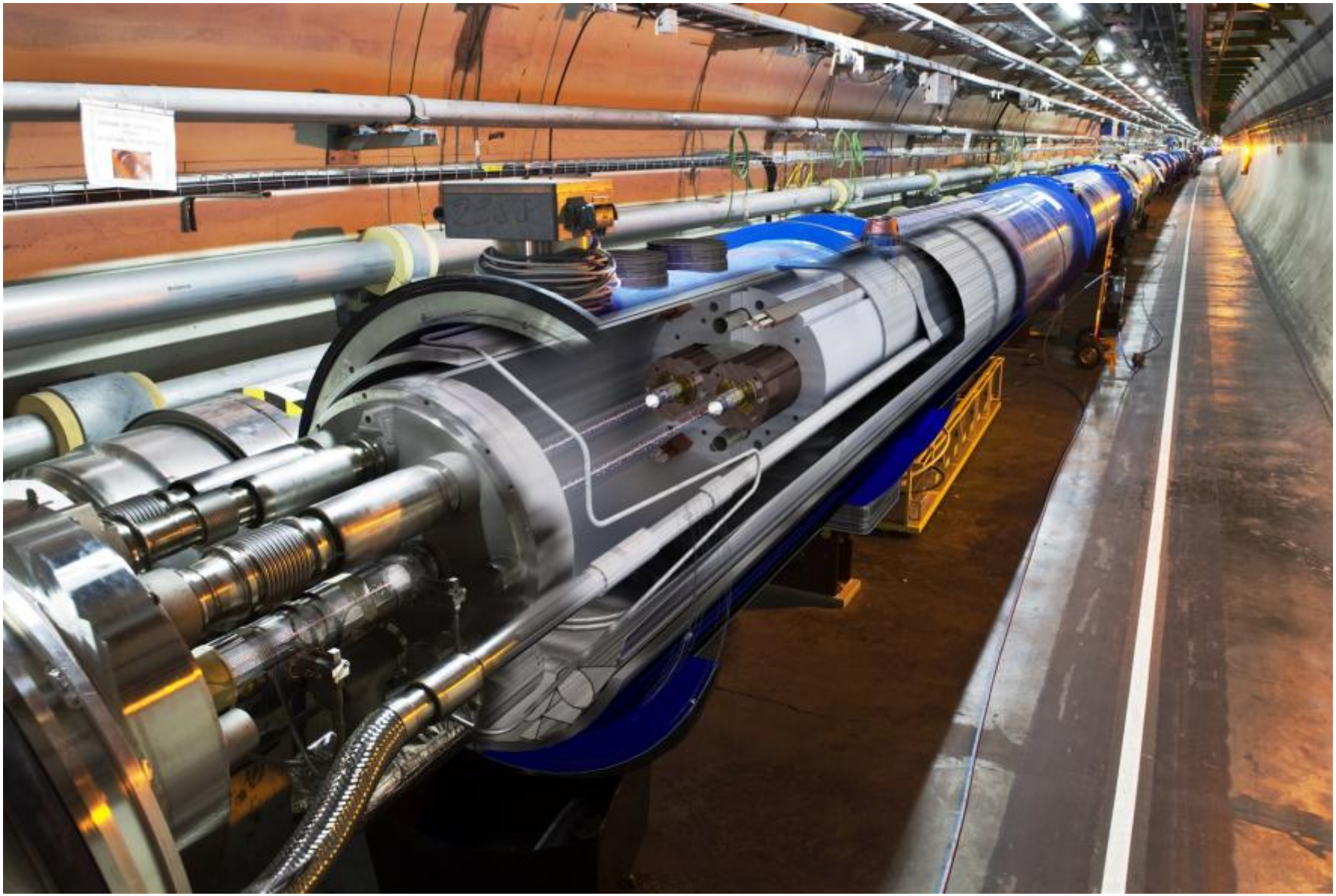
- If the LHC had produced **1 Googol** of proton collisions and the experiments had maintained the same efficiency, how many Higgs candidates would they have gathered?

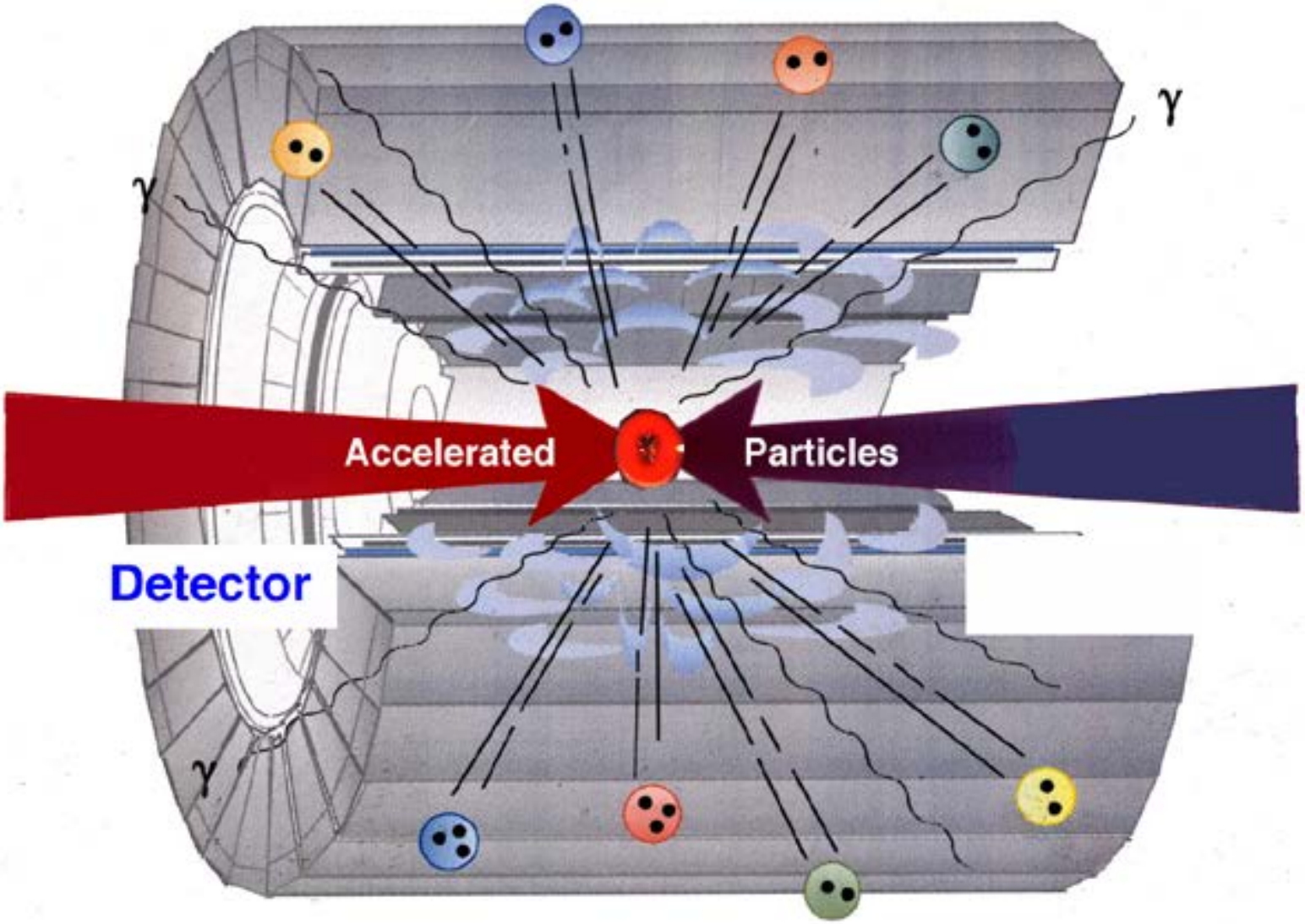
- For extra credit, how many **tonnes** of Higgs would they have collected?

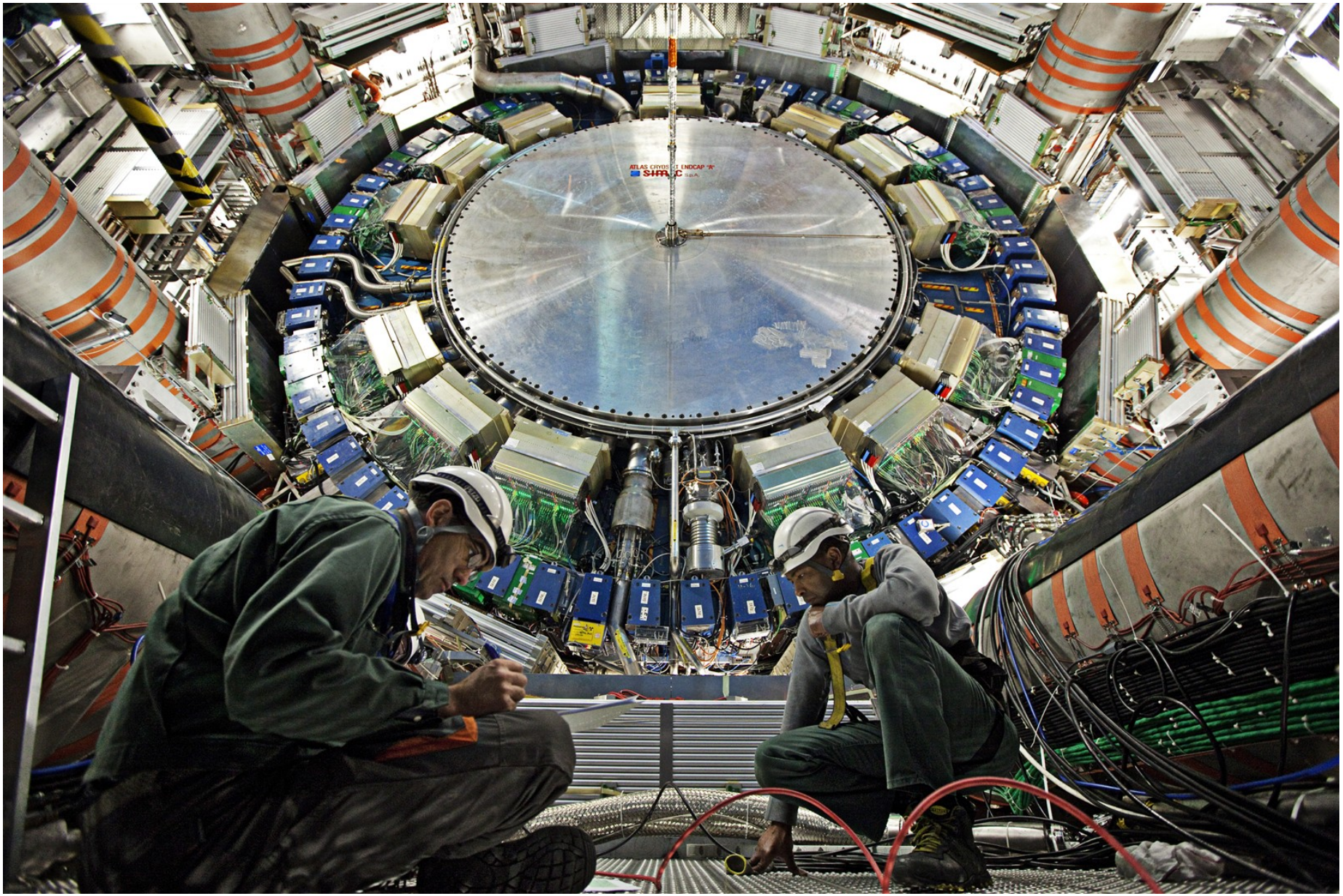
CERN's Accelerator complex

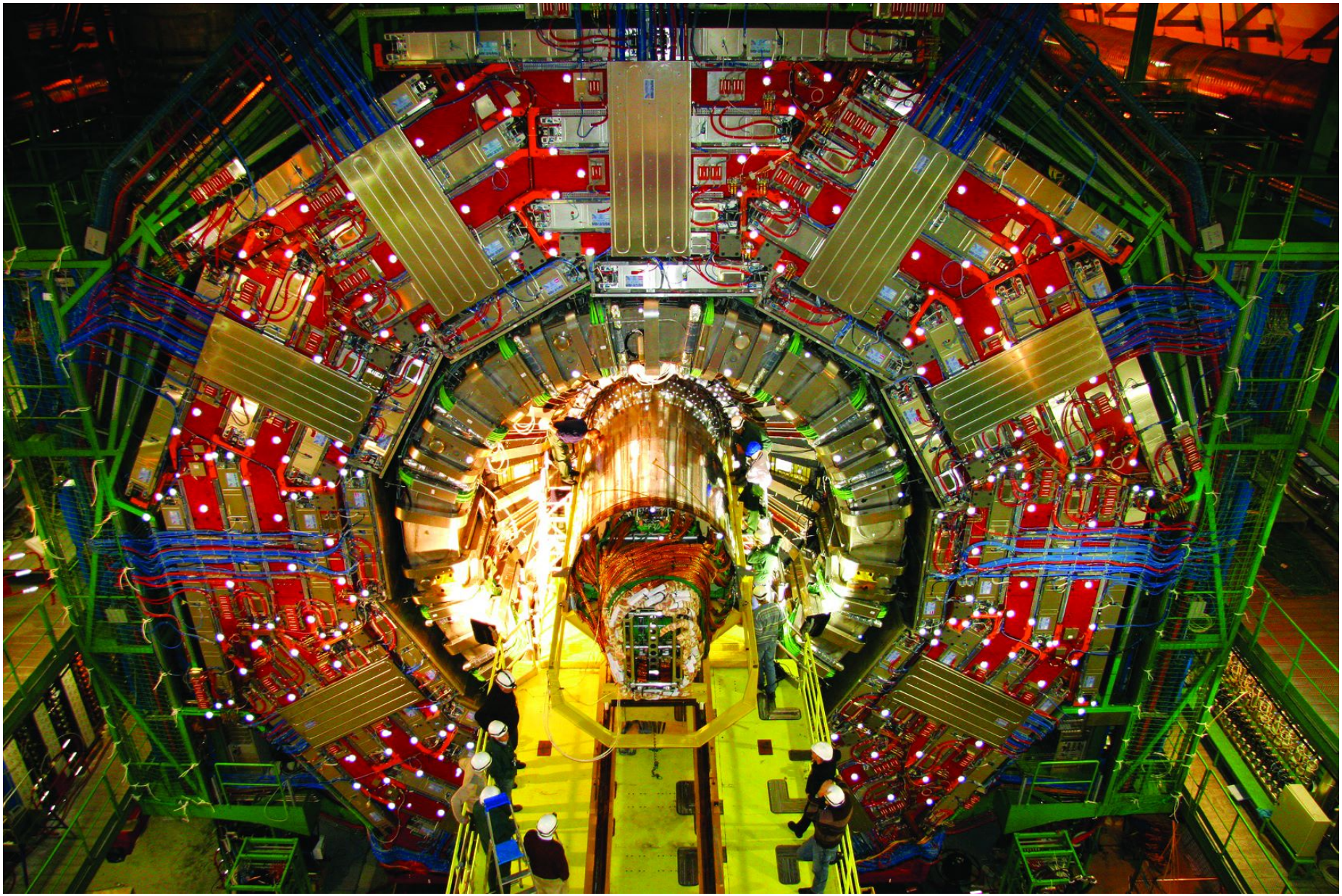


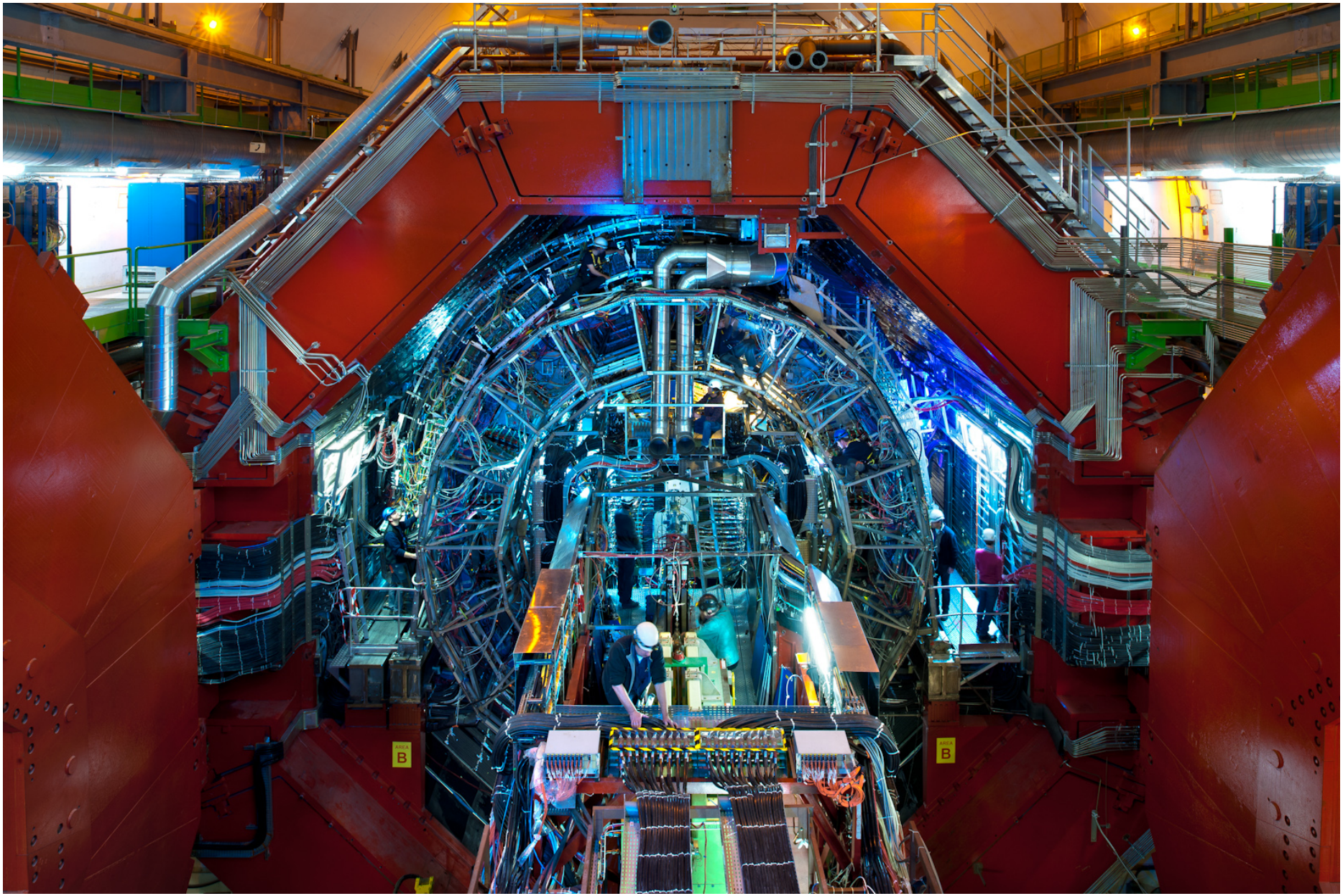
PREINJECTEUR
LINAC 2
HAUTE
HIGH
100 KV
H2
A PROTON SOURCE
Flammable gas - Gaz inflammable

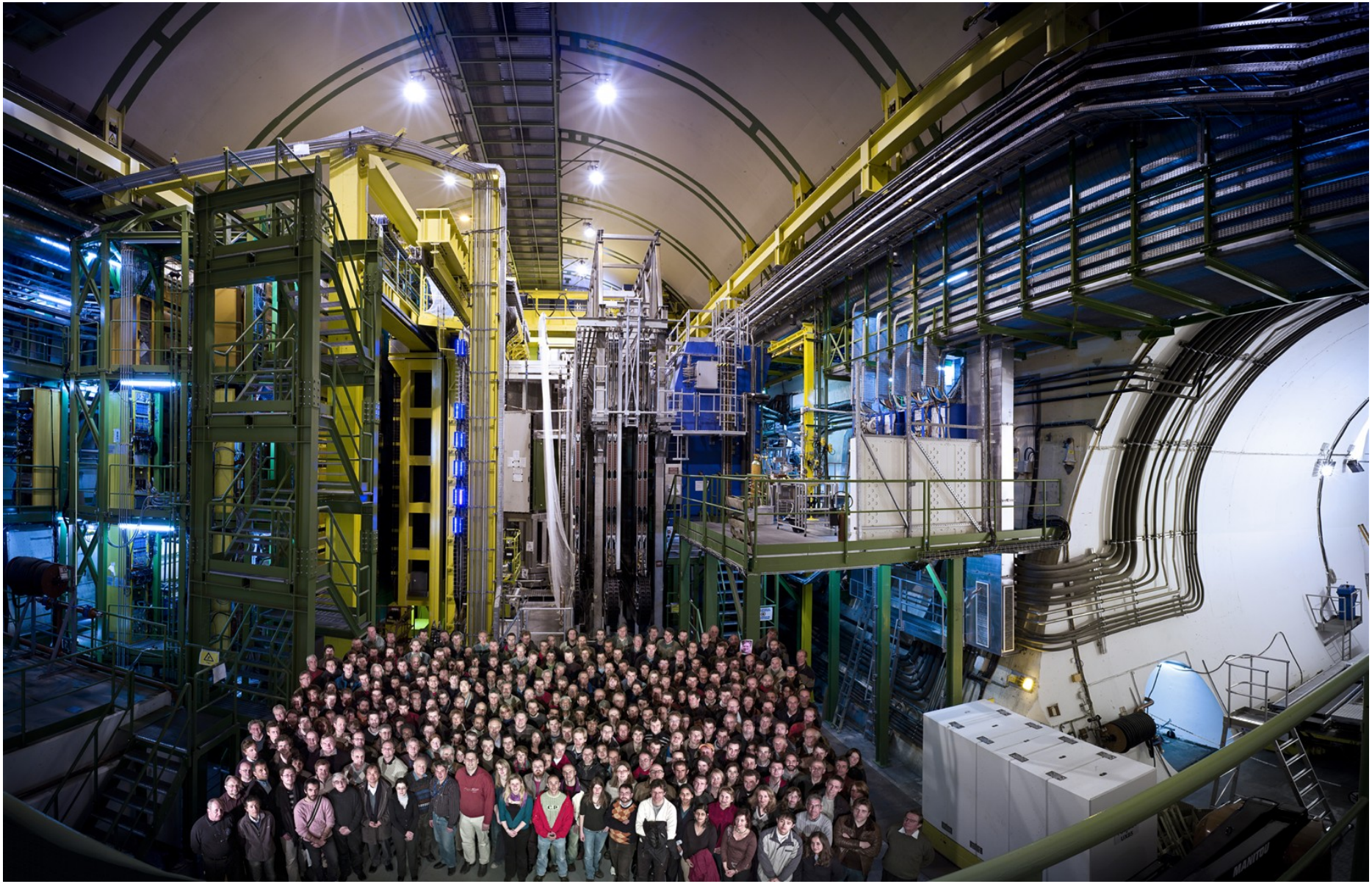


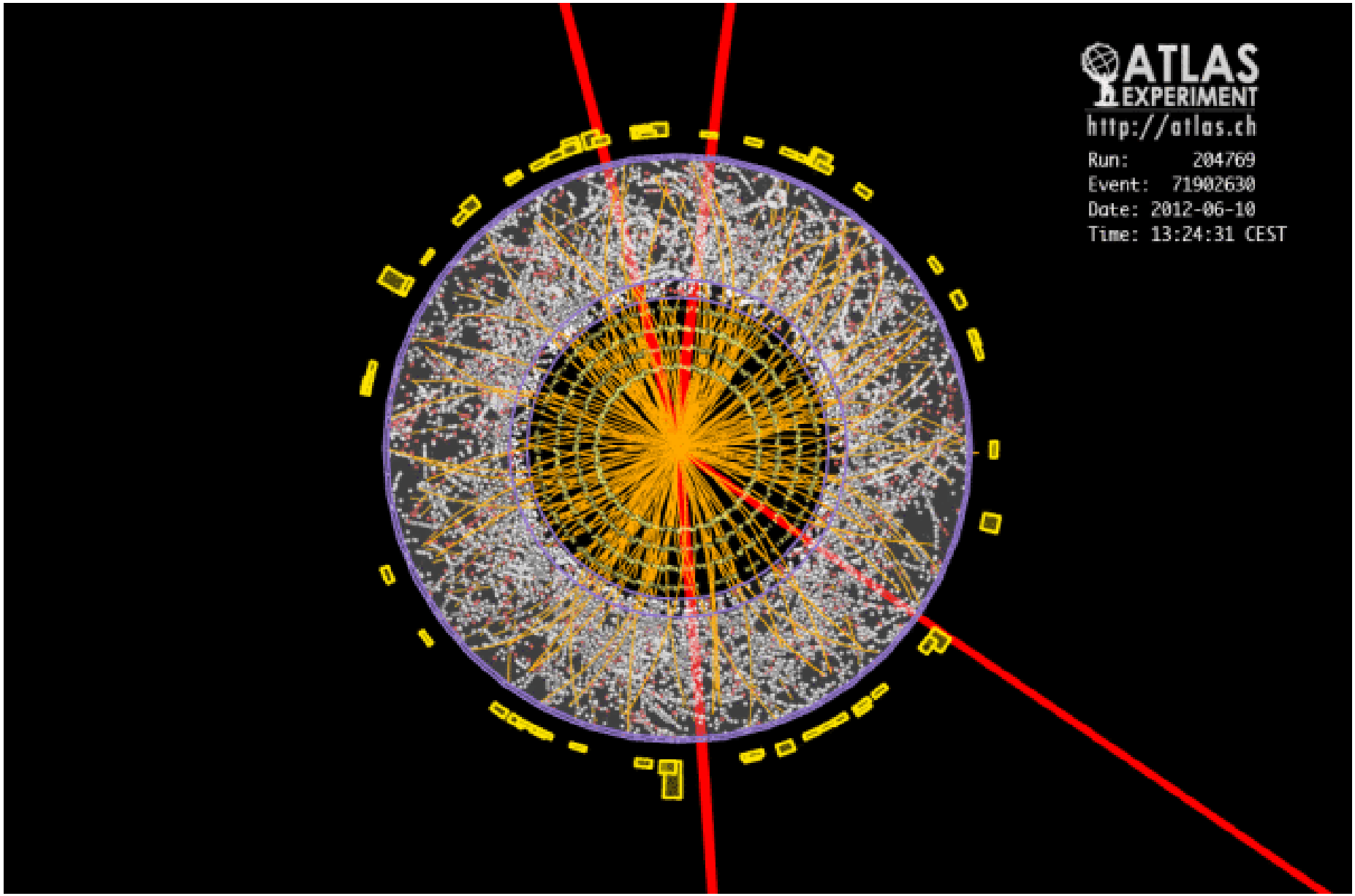

γ
γ
γ
Accelerated
Particles
Detector

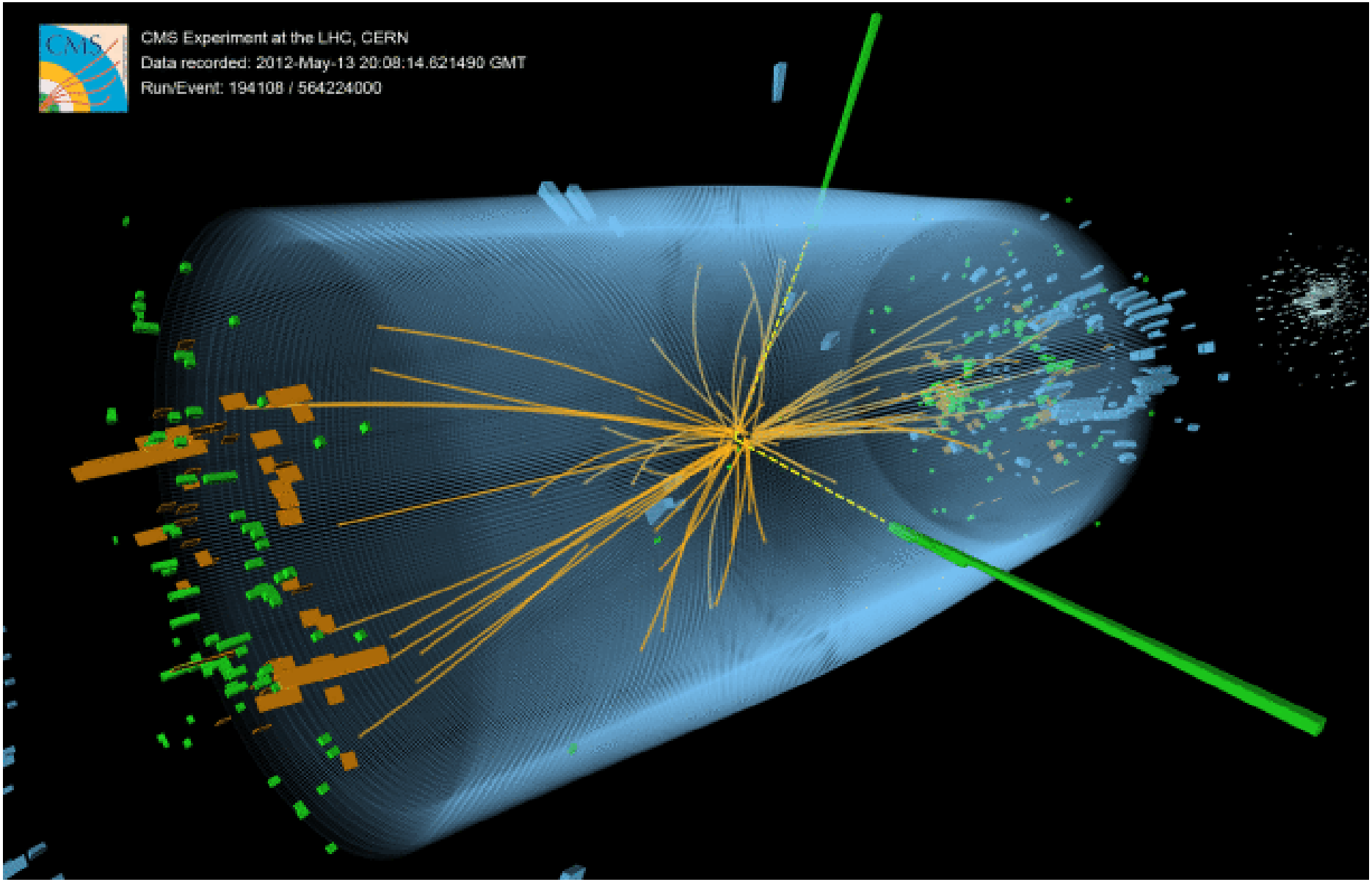

ATLAS CRYOSTAT ENDCAP "A"
SHAC




B
B




ATLAS
EXPERIMENT
http://atlas.ch
Run: 204769
Event: 71902630
Date: 2012-06-10
Time: 13:24:31 CEST


CMS Experiment at the LHC, CERN
Data recorded: 2012-May-13 20:08:14.821490 GMT
Run/Event: 194108 / 564224000

Today's trivia answer

10^{100} Collisions * 10^{-12} Higgs/Collision

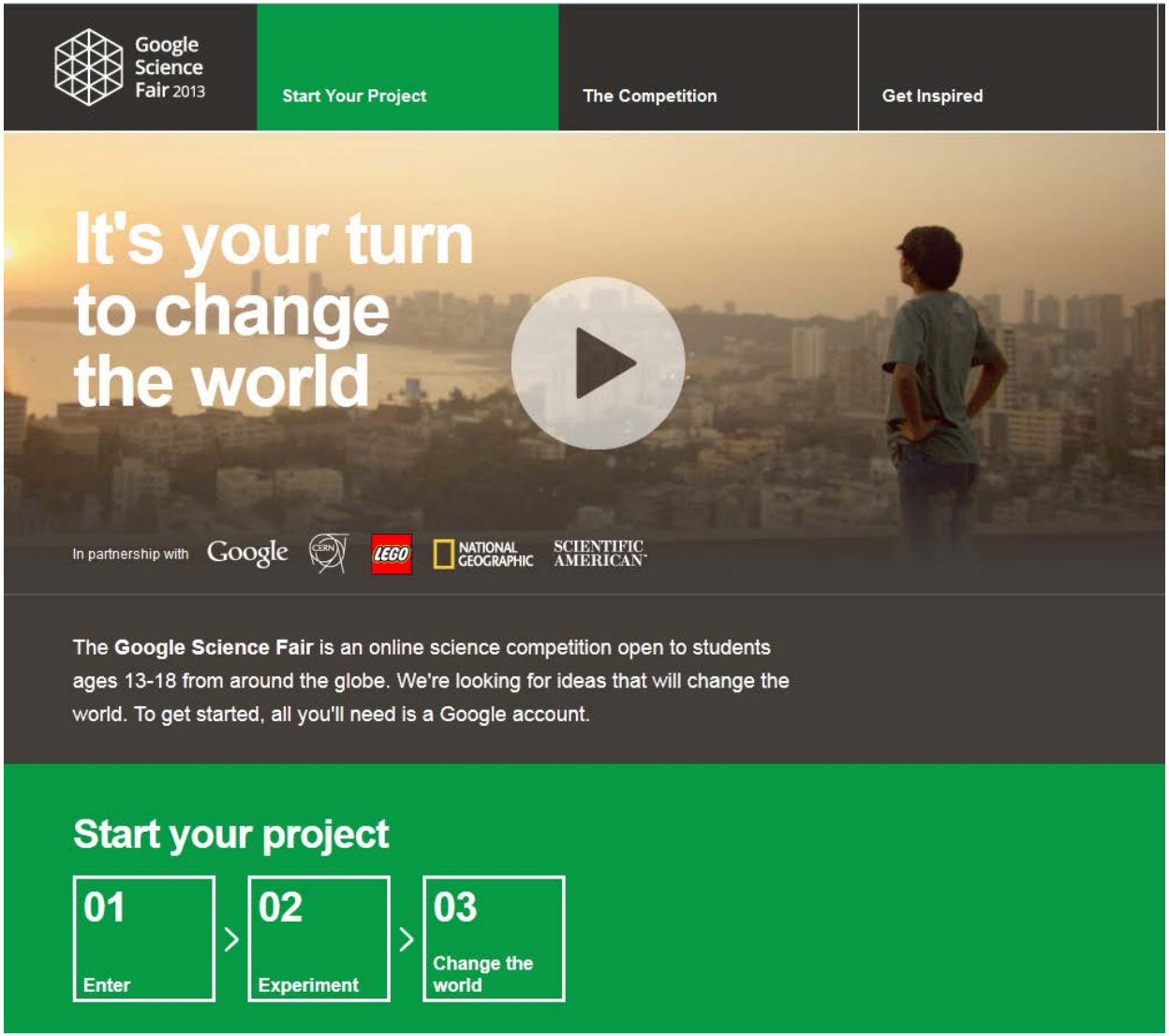
= 10^{88} Higgs

Extra:

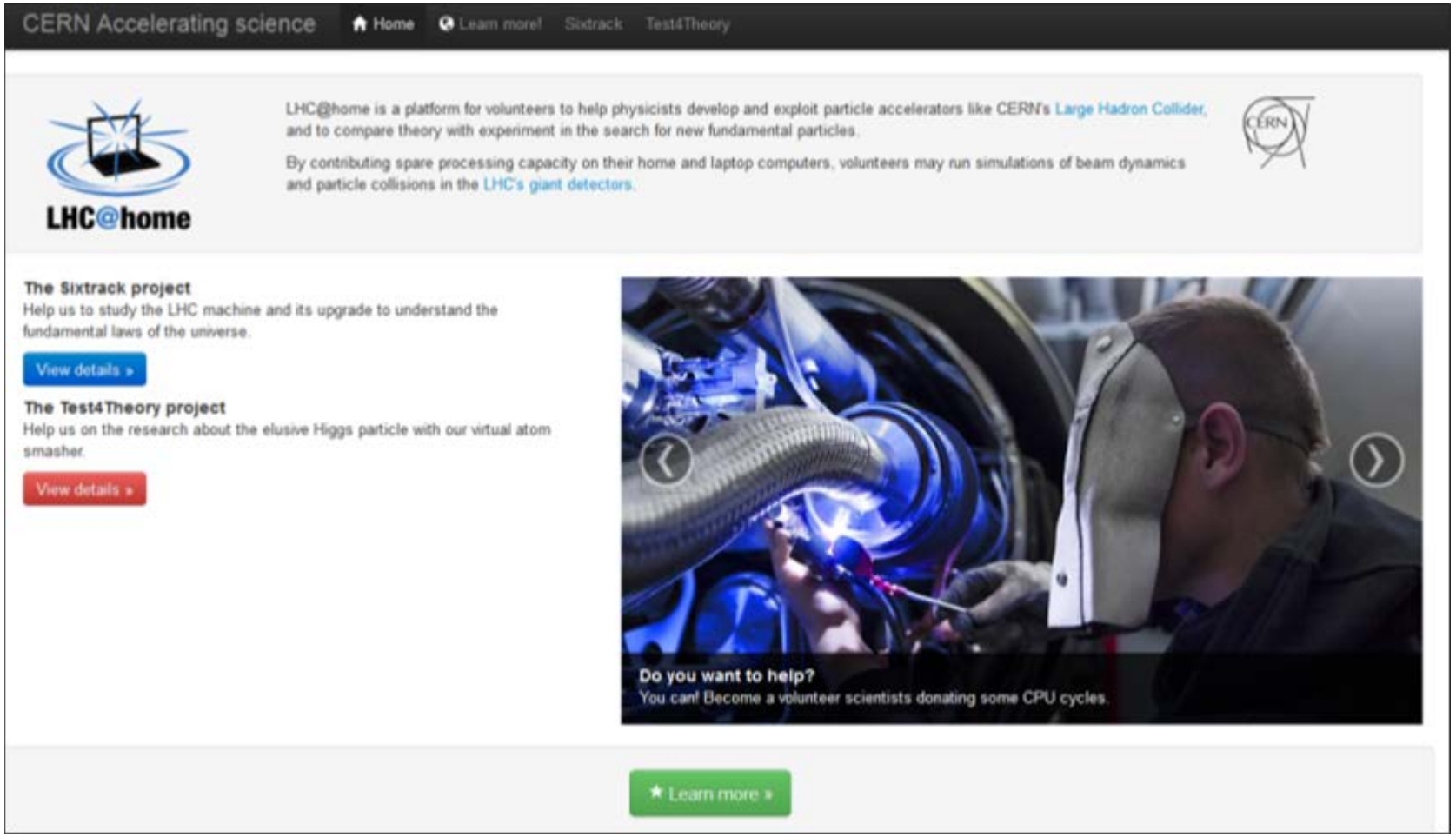
10^{88} Higgs * 10^{2} GeV/Higgs
* 10^{-24} g/GeV * 10^{-6} tonnes/g

= 10^{60} tonnes

www.googlesciencefair.com



cern.ch/LHCathome



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Participants

Fabiola Gianotti, ATLAS Experiment

Joe Incandela, CMS Experiment

Shiri Dori-Hacohen, Google Student Ambassador

Ahmed Shamy, Google Student Ambassador

Prof.Dr. Sami M. AL-Jaber and students, An-Najah National University, Palestine

Sofoklis Sotiriou and students, Ellinogermaniki Agogi, Greece

Credits

Gavin Ovsak — Google Science Fair host

Steven Goldfarb — Hangout with CERN fan

Heidi Kleinmaus & Gary Bolles – GSF Production

Kate Kahle & Achintya Rao — CERN Production

Thank you for watching!

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