



2019 CERN Summer Student Program

Closing Address

Manfred Krammer
Department Head Experimental Physics, CERN

CERN was founded 1954: 12 European States

“Science for Peace”

Today: 23 Member States

~ 2600 staff
~ 1800 other paid personnel
~ 13600 scientific users

Member States: Austria, Belgium, Bulgaria, the Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Israel, Italy, the Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Spain, Sweden, Switzerland and the United Kingdom

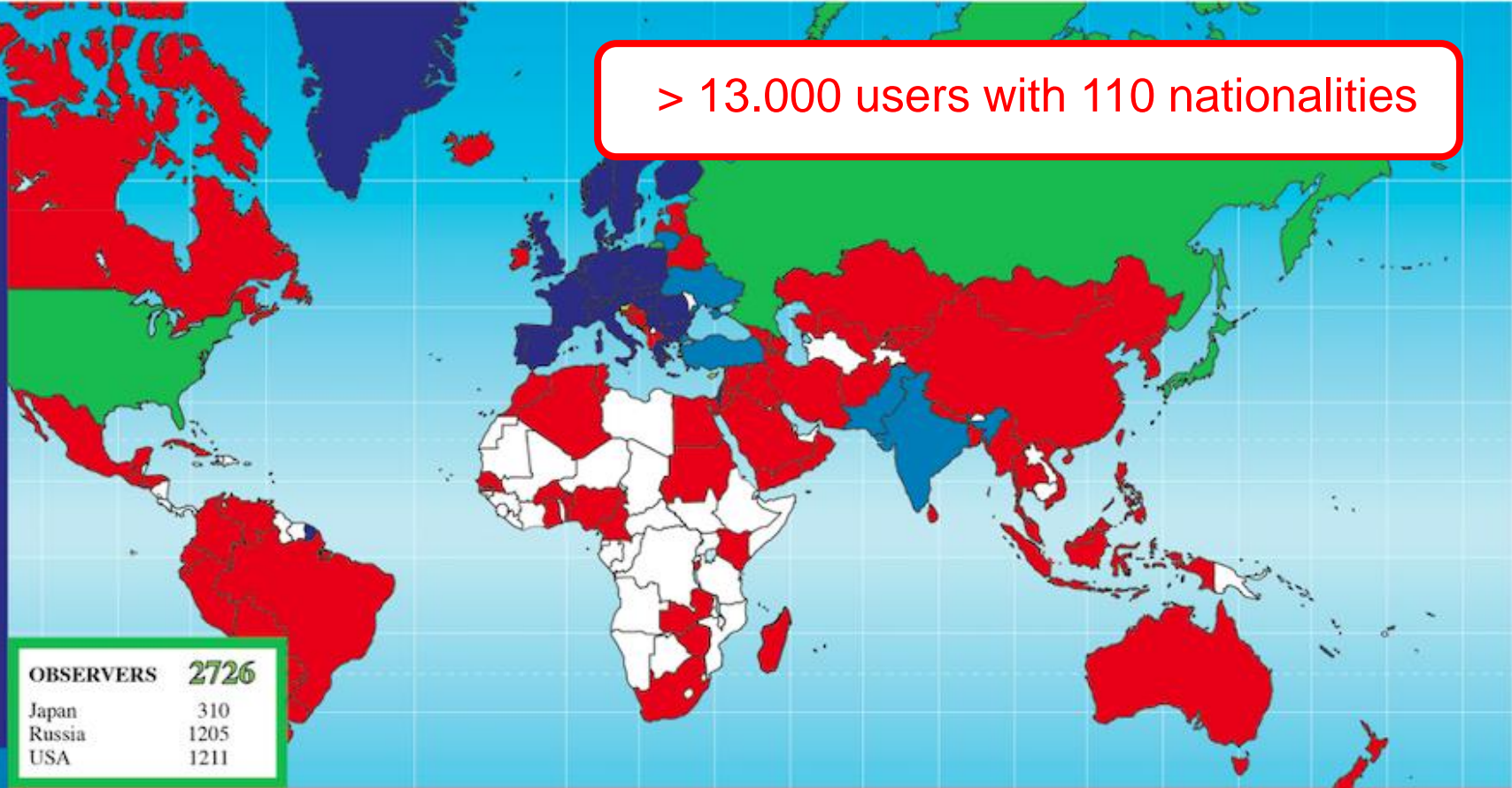
Associate Member: Cyprus, India, Lithuania, Pakistan, Slovenia, Turkey, Ukraine

Applicant States for Membership or Associate Membership:
Brazil, Croatia

Observers to Council: Japan, Russia, United States of America; JINR, European Commission and UNESCO

Distribution of All CERN Users by Nationality on 10 April 2019

> 13.000 users with 110 nationalities



MEMBER STATES **8066**

Austria	119
Belgium	120
Bulgaria	86
Czech Republic	233
Denmark	62
Finland	96
France	864
Germany	1344
Greece	238
Hungary	79
Israel	65
Italy	2105
Netherlands	180
Norway	70
Poland	356
Portugal	121
Romania	137
Serbia	55
Slovakia	137
Spain	472
Sweden	99
Switzerland	229
United Kingdom	799

OBSERVERS **2726**

Japan	310
Russia	1205
USA	1211

ASSOCIATE MEMBERS **778**

India	387
Lithuania	39
Pakistan	71
Turkey	165
Ukraine	116

ASSOCIATE MEMBERS IN THE PRE-STAGE TO MEMBERSHIP **59**

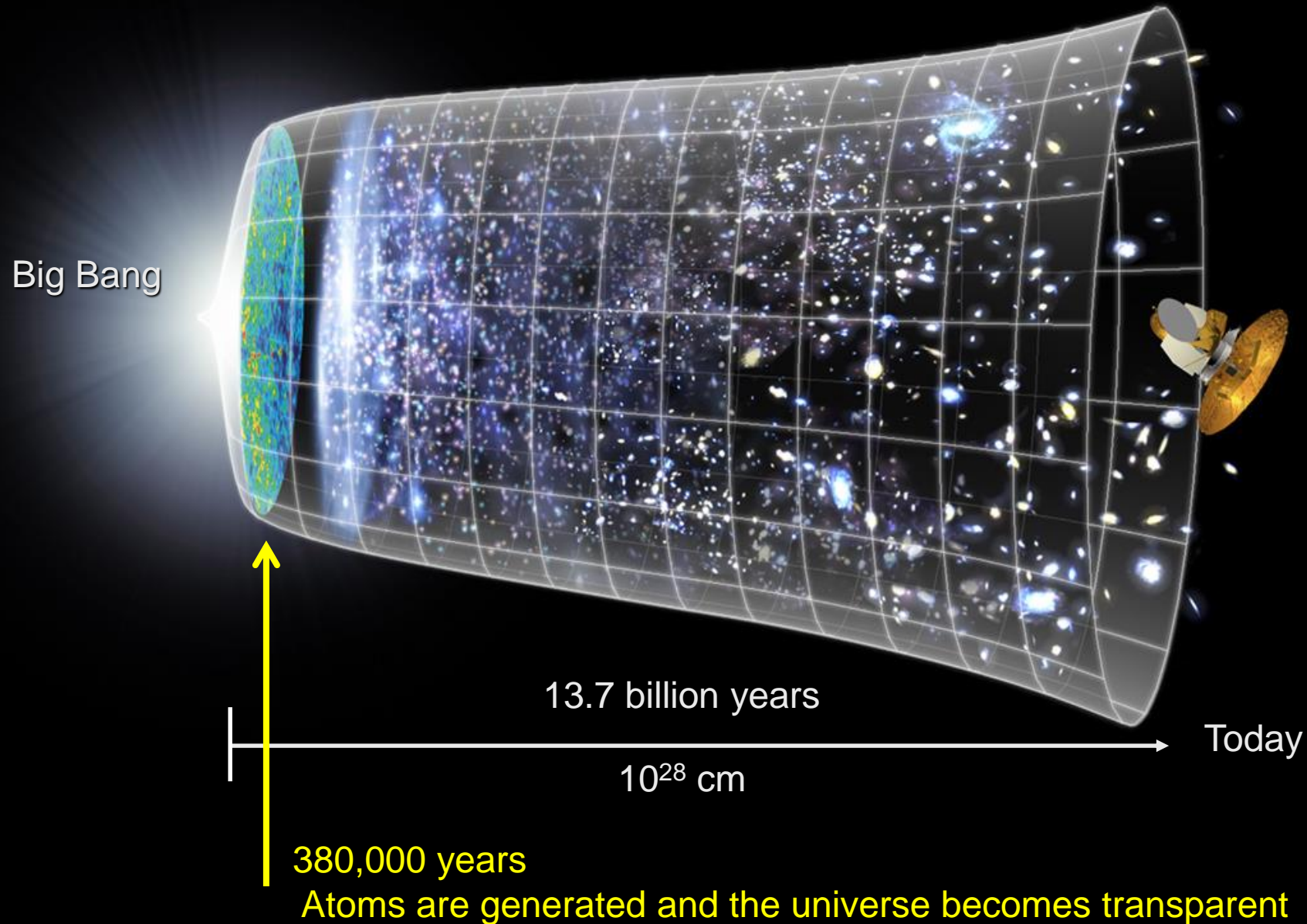
Cyprus	26
Slovenia	33

OTHERS **1999**

Albania	4	Bolivia	3	Ecuador	10	Iraq	1	Malta	9	Palestine	7	Sudan	1
Algeria	14	Bosnia & Herzegovina	3	Egypt	27	Ireland	13	Mexico	85	Paraguay	1	Syria	1
Argentina	26	Brazil	127	El Salvador	1	Jordan	2	Mongolia	2	Peru	6	Taiwan	56
Armenia	22	Burkina Faso	1	Estonia	15	Kazakhstan	10	Montenegro	11	Philippines	3	Thailand	26
Australia	36	Burundi	1	Georgia	51	Kenya	1	Morocco	24	Saint Kitts and Nevis	1	Tunisia	4
Azerbaijan	10	Cameroon	1	Ghana	1	Korea	183	Myanmar	2	San Marino	1	Uruguay	1
Bahrain	1	Canada	170	Guatemala	1	Kyrgyzstan	1	Nepal	7	Saudi Arabia	4	Uzbekistan	3
Bangladesh	8	Chile	21	Hong Kong	1	Latvia	4	New Zealand	5	Senegal	4	Venezuela	9
Belarus	45	China	576	Honduras	1	Lebanon	27	Nigeria	4	Senegal	1	Viet Nam	11
Benin	1	Colombia	44	Iceland	4	Luxembourg	4	North Korea	4	Singapore	5	Zambia	1
		Croatia	50	Indonesia	11	Madagascar	1	North Macedonia	3	South Africa	56	Zimbabwe	2
		Cuba	16	Iran	58	Malaysia	22	Oman	3	Sri Lanka	10		



Physics at CERN: Understanding the Universe



COSMIC MICROWAVE BACKGROUND

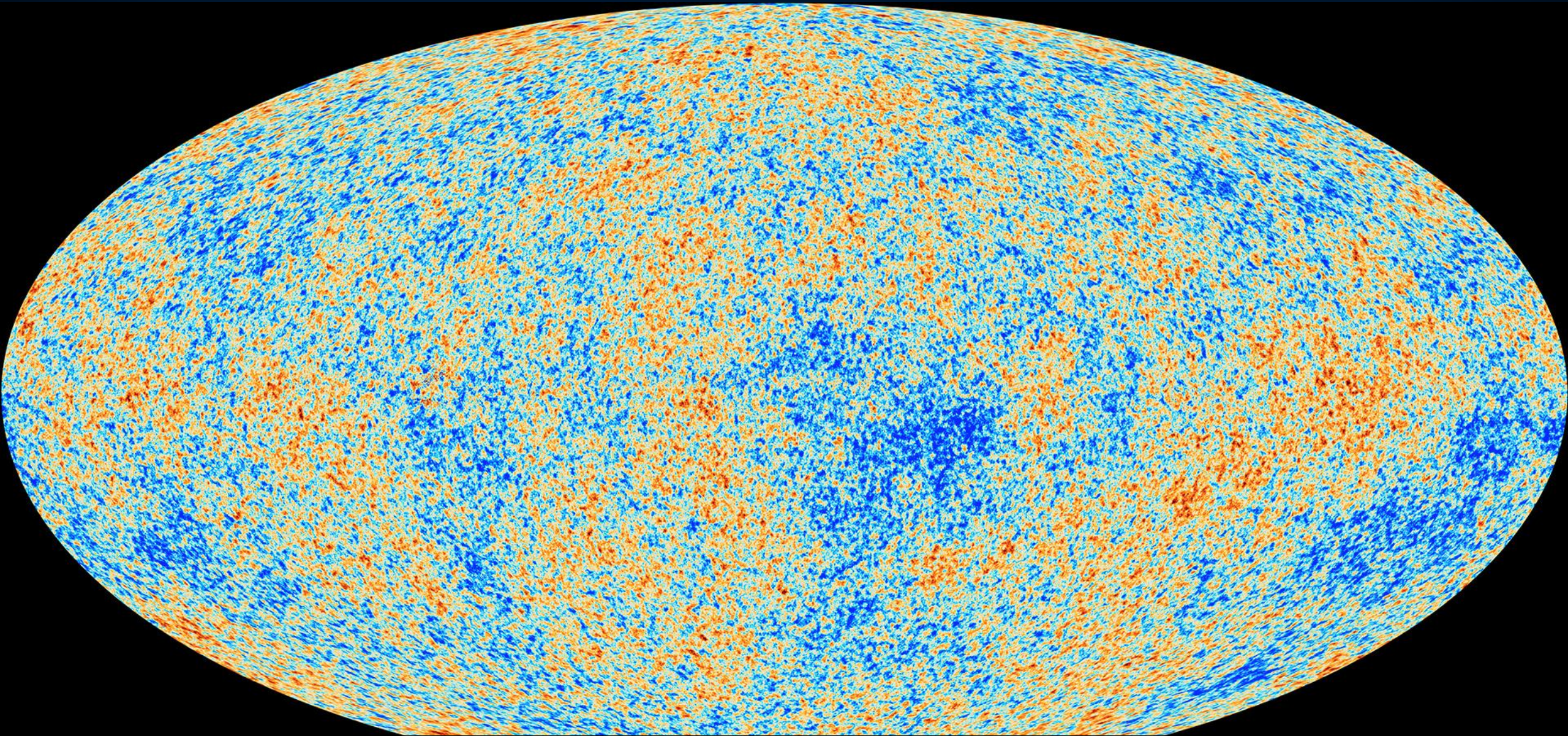
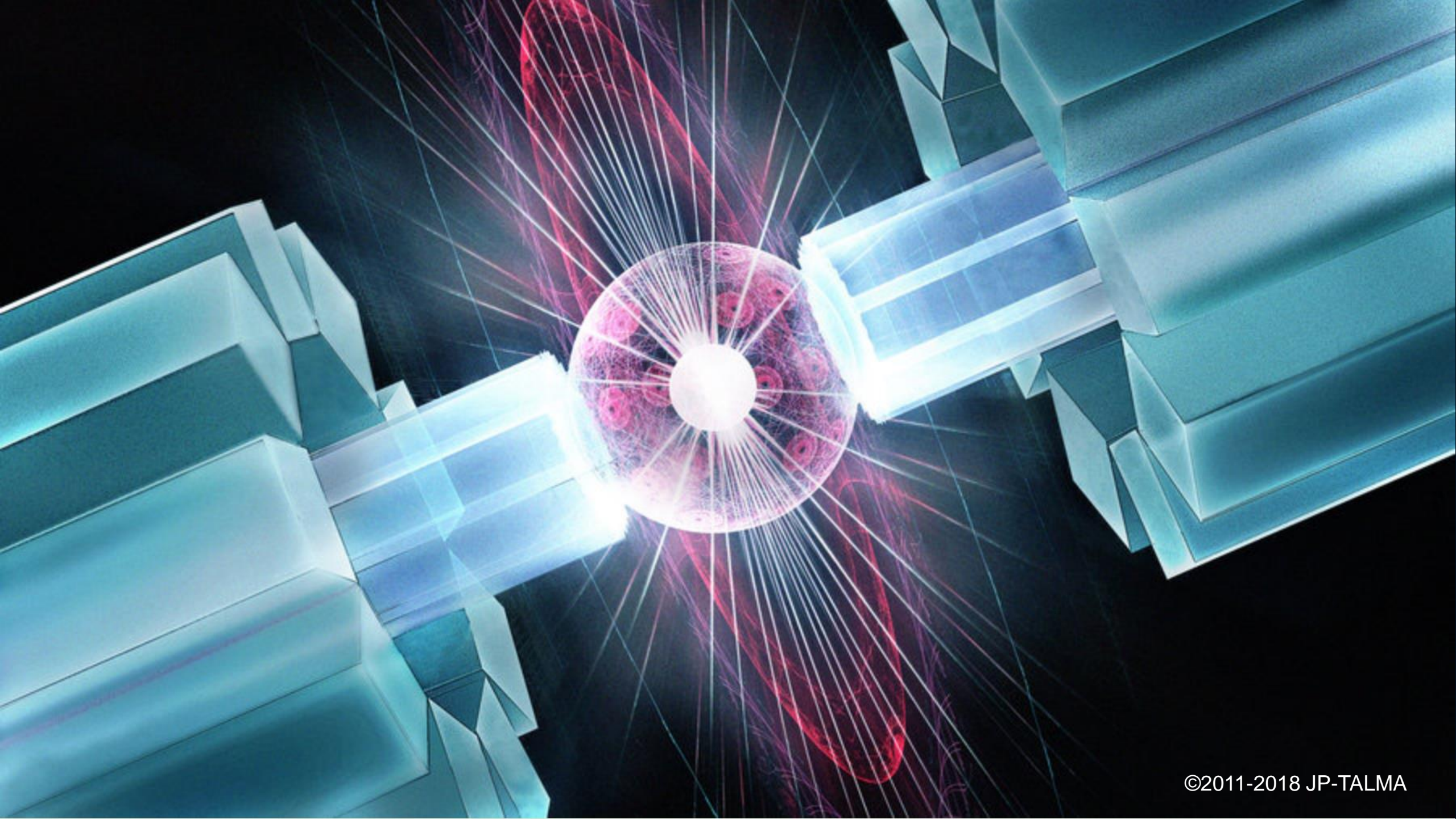
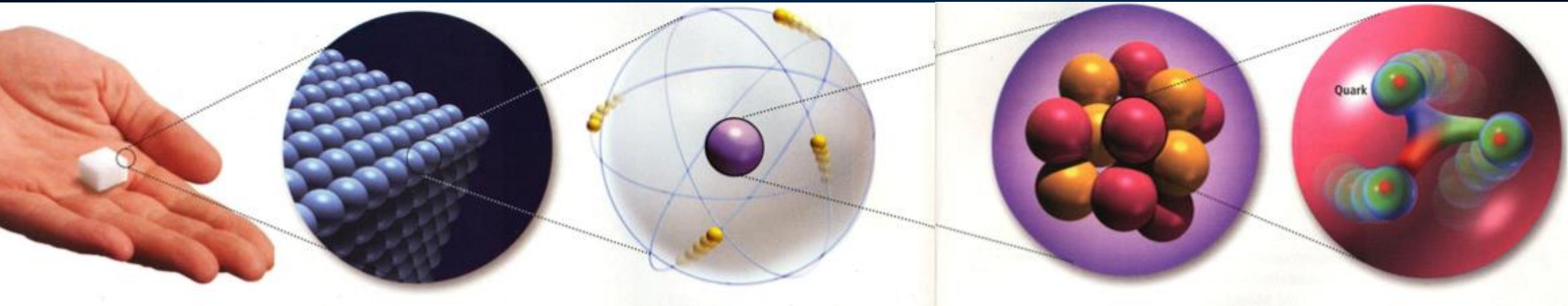


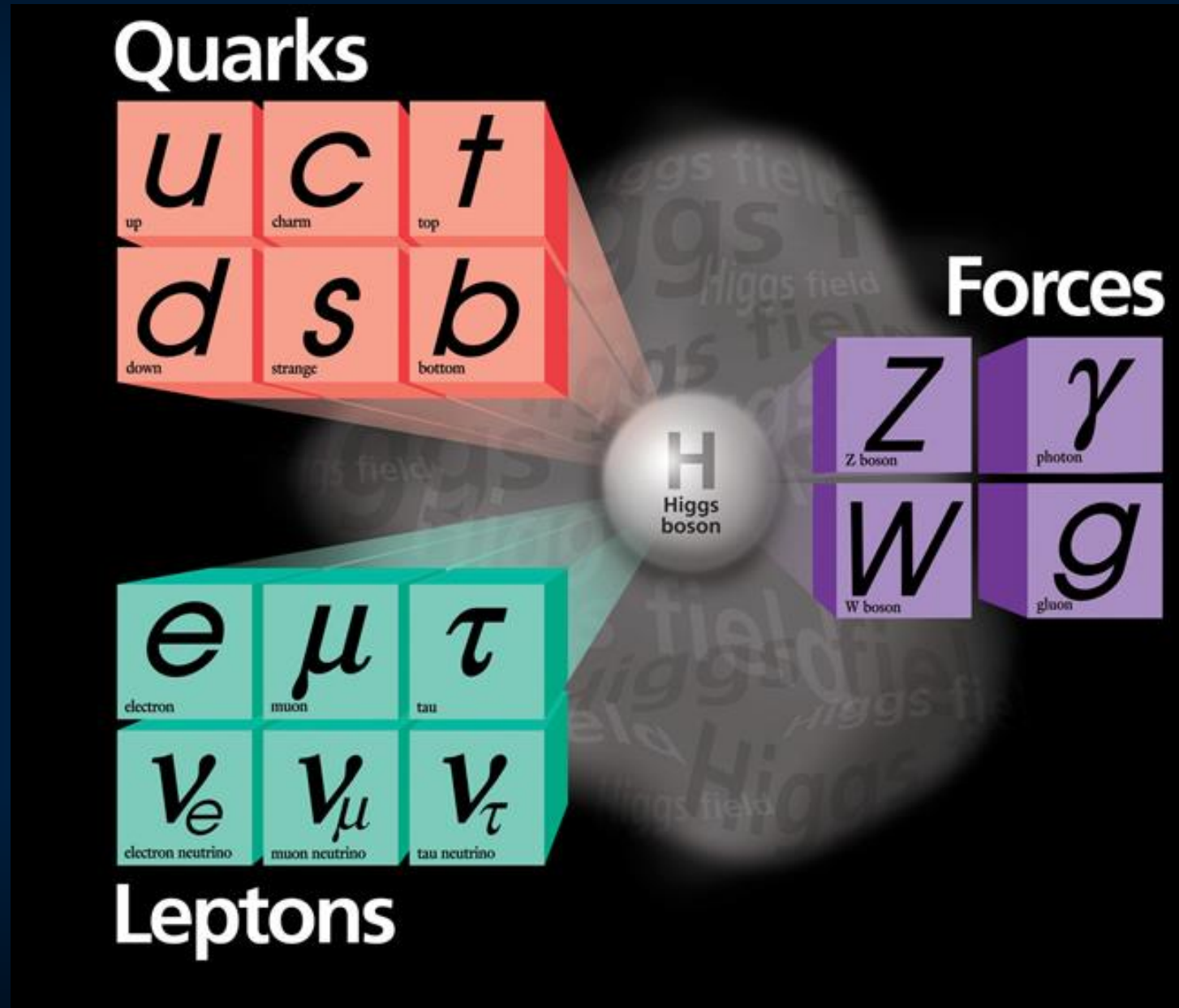
Photo: ESA/PLANCK

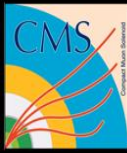


Composition of Matter



The Standard Model of Particle Physics



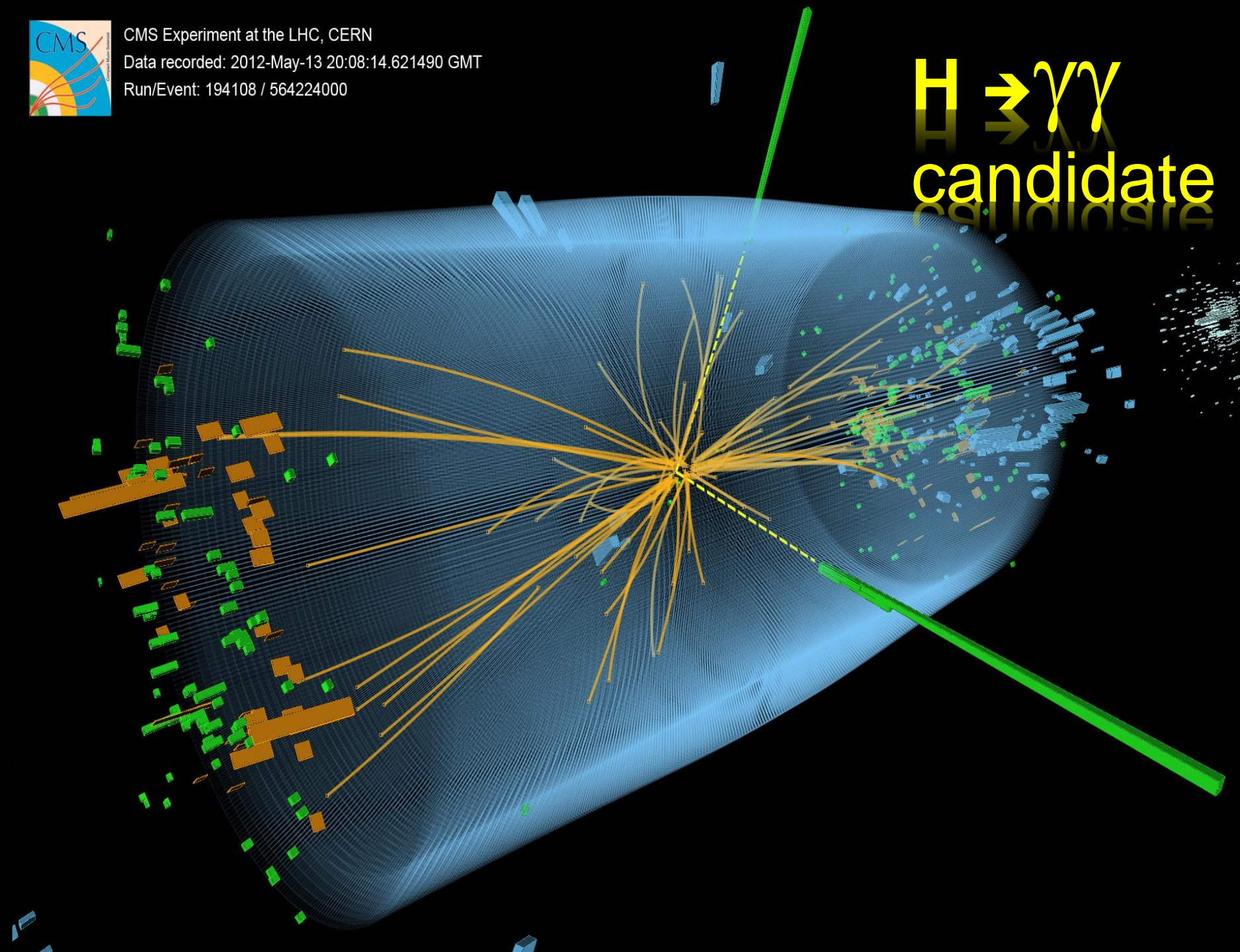


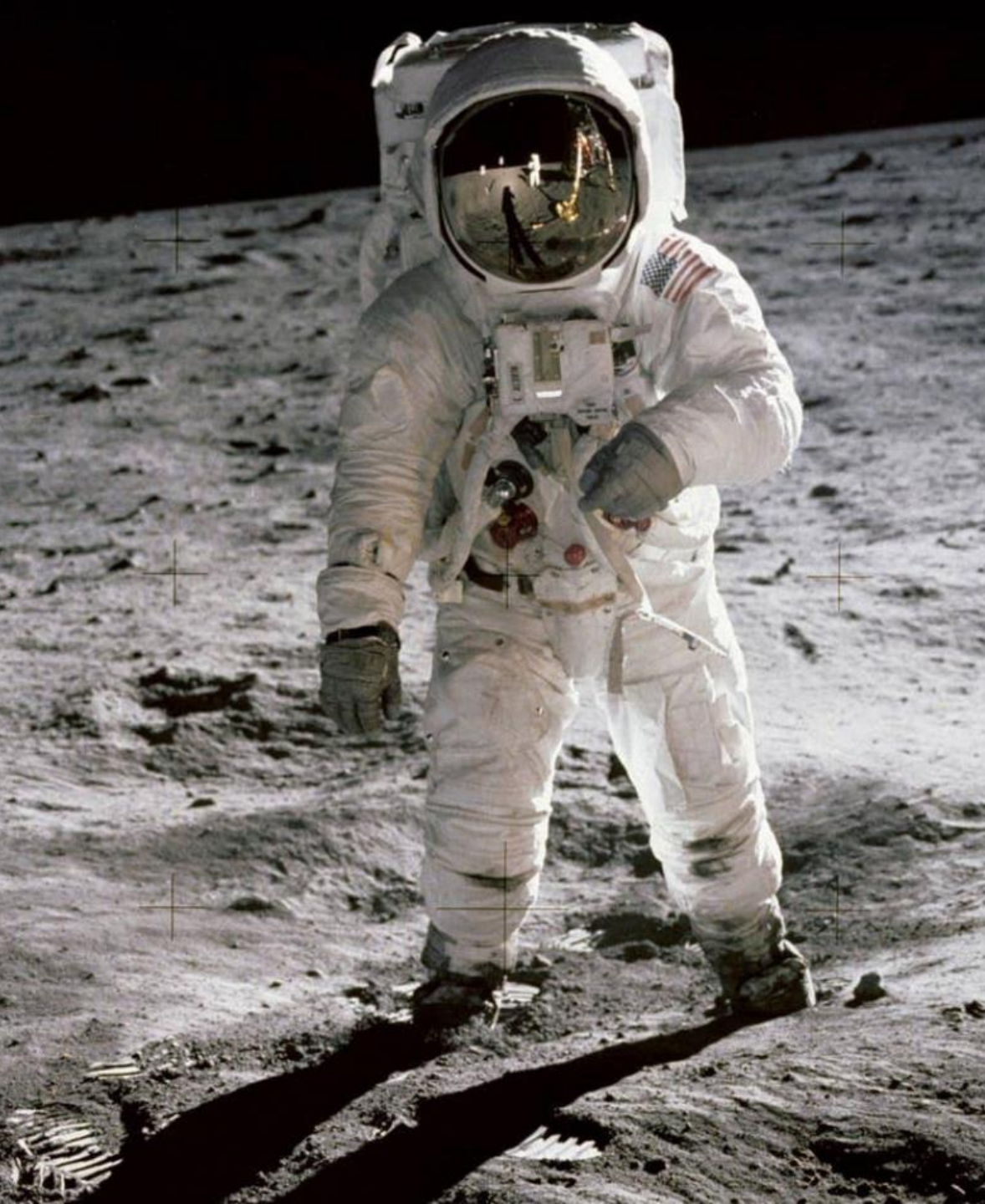
CMS Experiment at the LHC, CERN

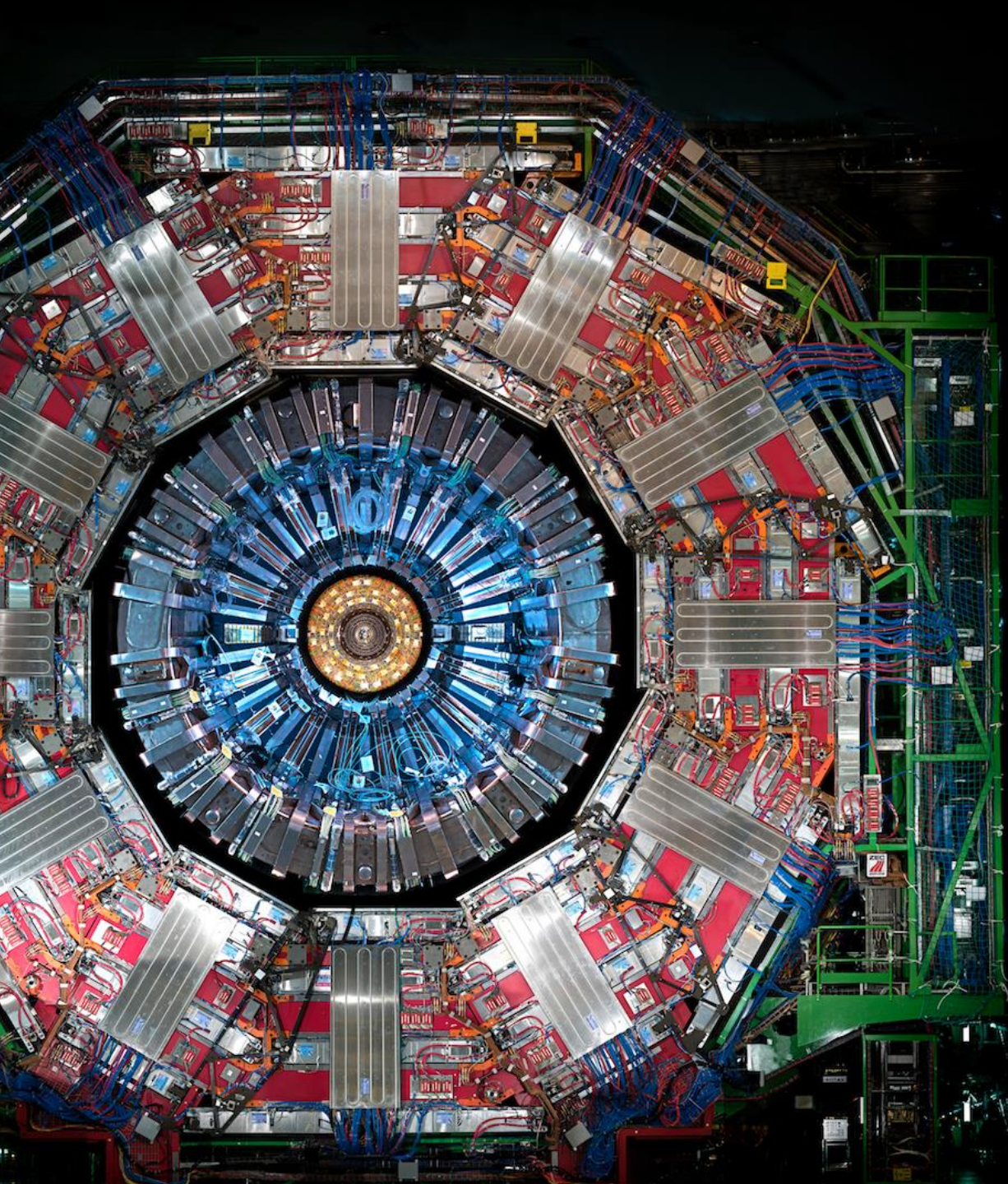
Data recorded: 2012-May-13 20:08:14.621490 GMT

Run/Event: 194108 / 564224000

$H \rightarrow \gamma\gamma$
candidate







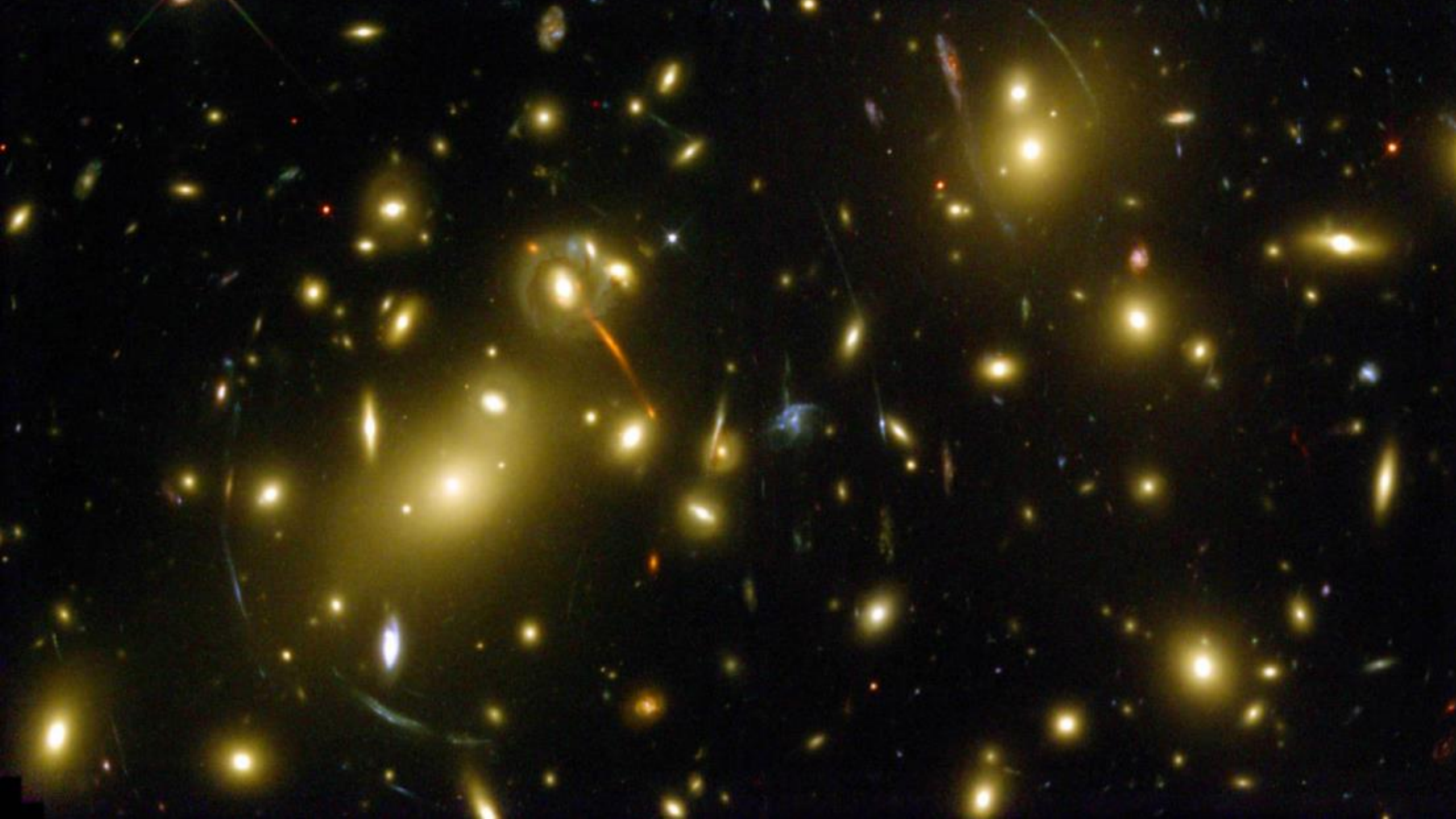


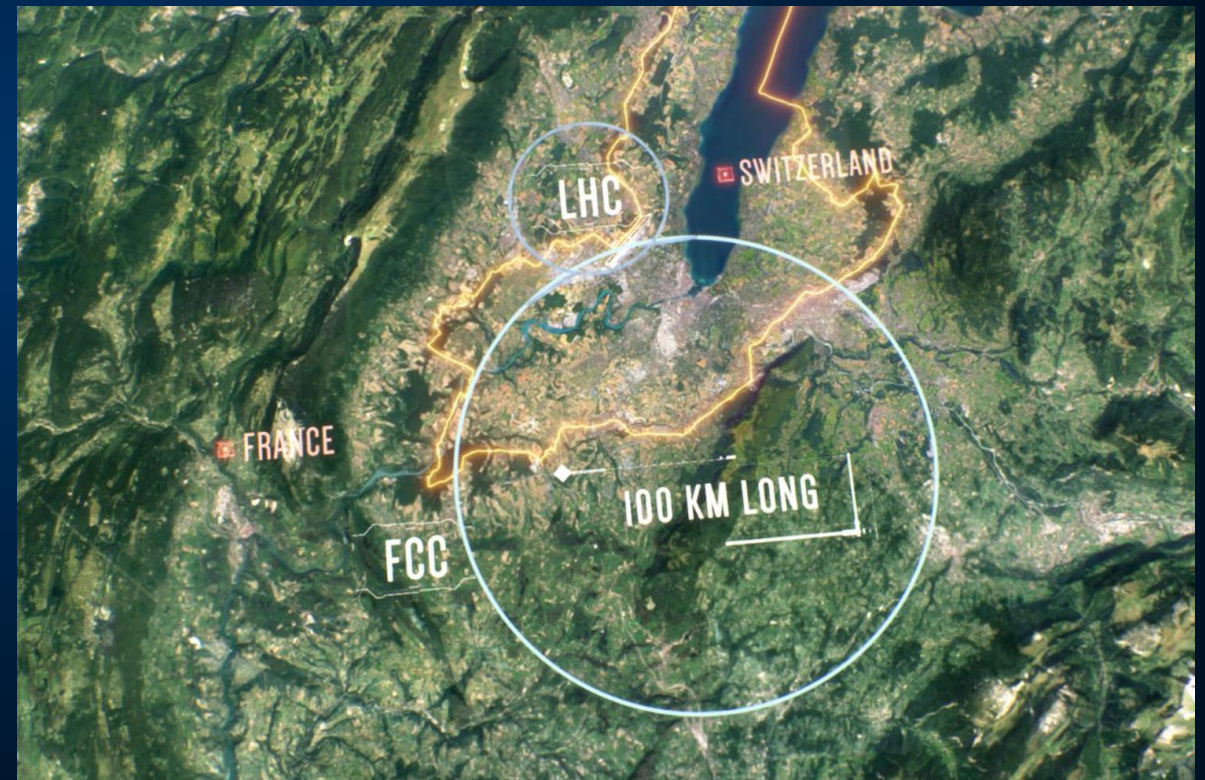
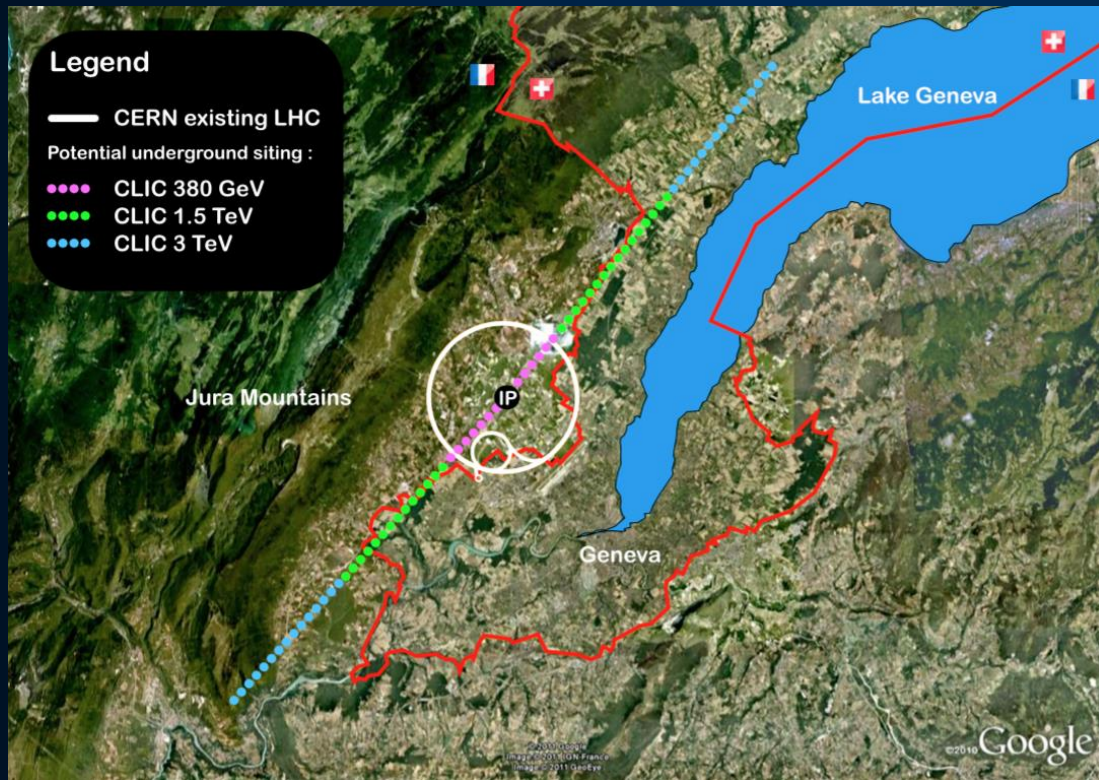


Illustration by Sandbox Studio, Chicago

Towards the next CERN Flagship Project

- **CLIC – Compact Linear Collider**
Study of the design for a possible future e^+e^- linear collider.
Energies: 380/1500/3000 GeV

- **FCC – Future Circular Collider**
Study of a 100 km circumference machine for pp collisions at 100 TeV, possible preceded by an e^+e^- collider with energies 90/160/240/365 GeV





Thank you for your attention !