

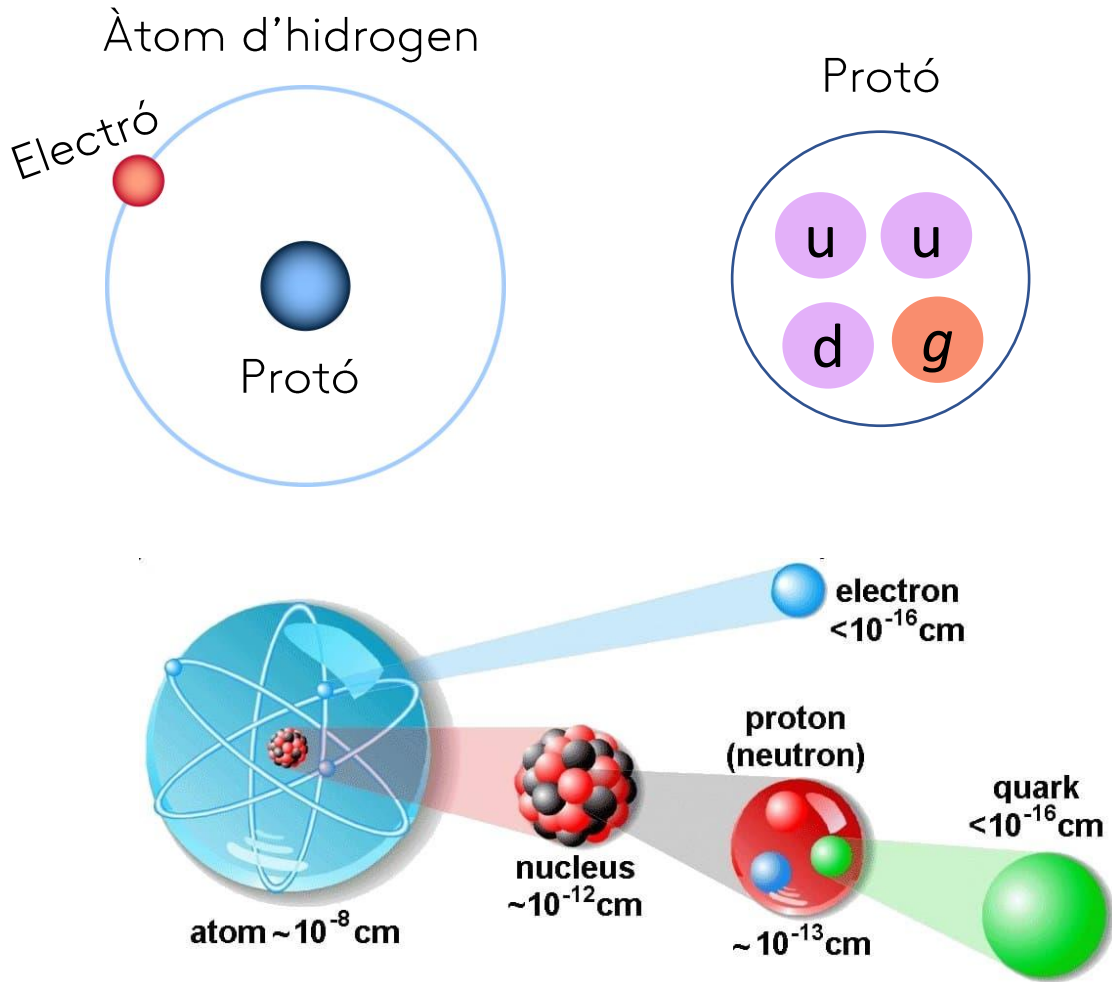
Què es fa al CERN?

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Maig 2022

MANGO

Model estàndard (teòria)



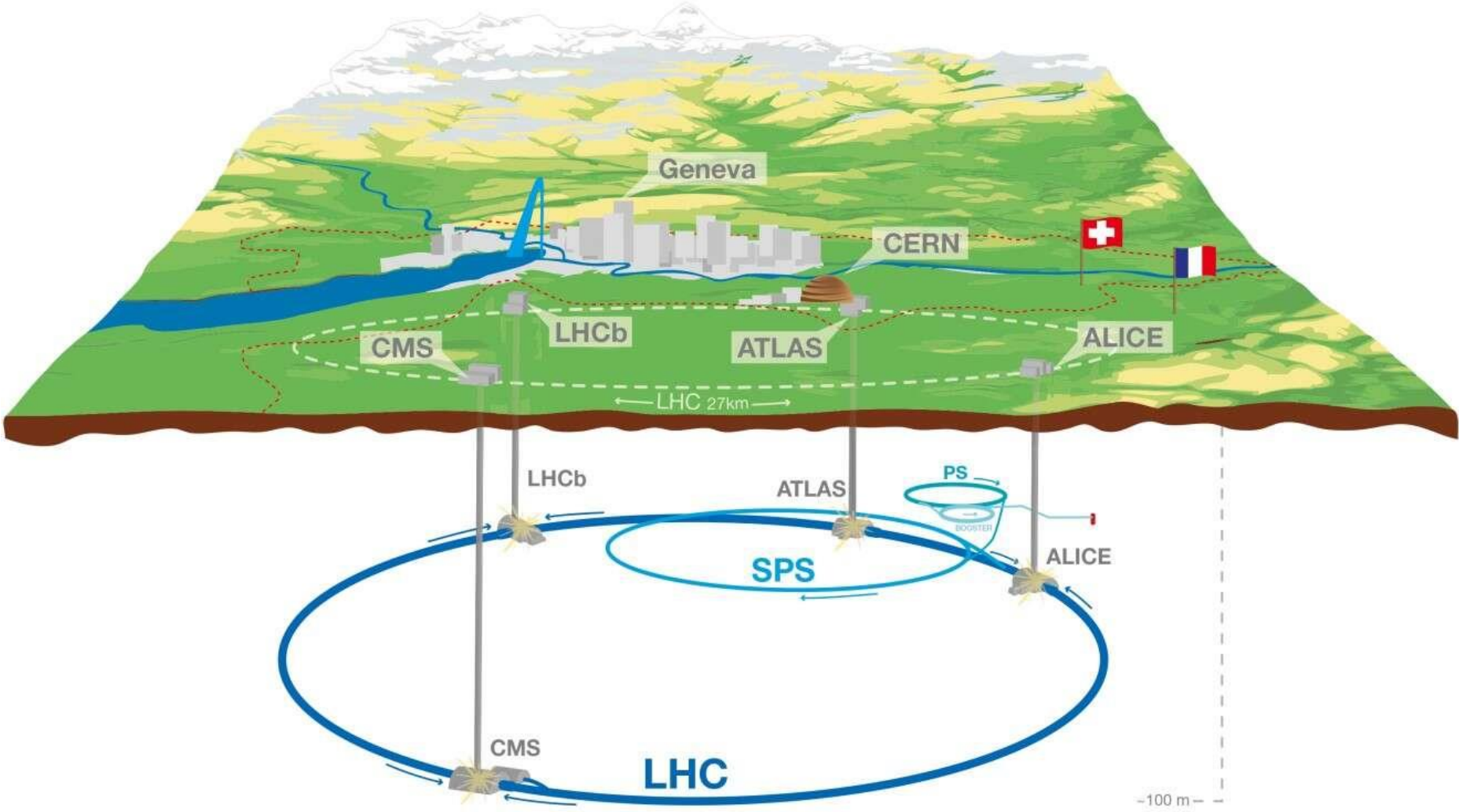
8 ordres de magnitud!
(1 m vs el radi del sol)

Standard Model of Elementary Particles

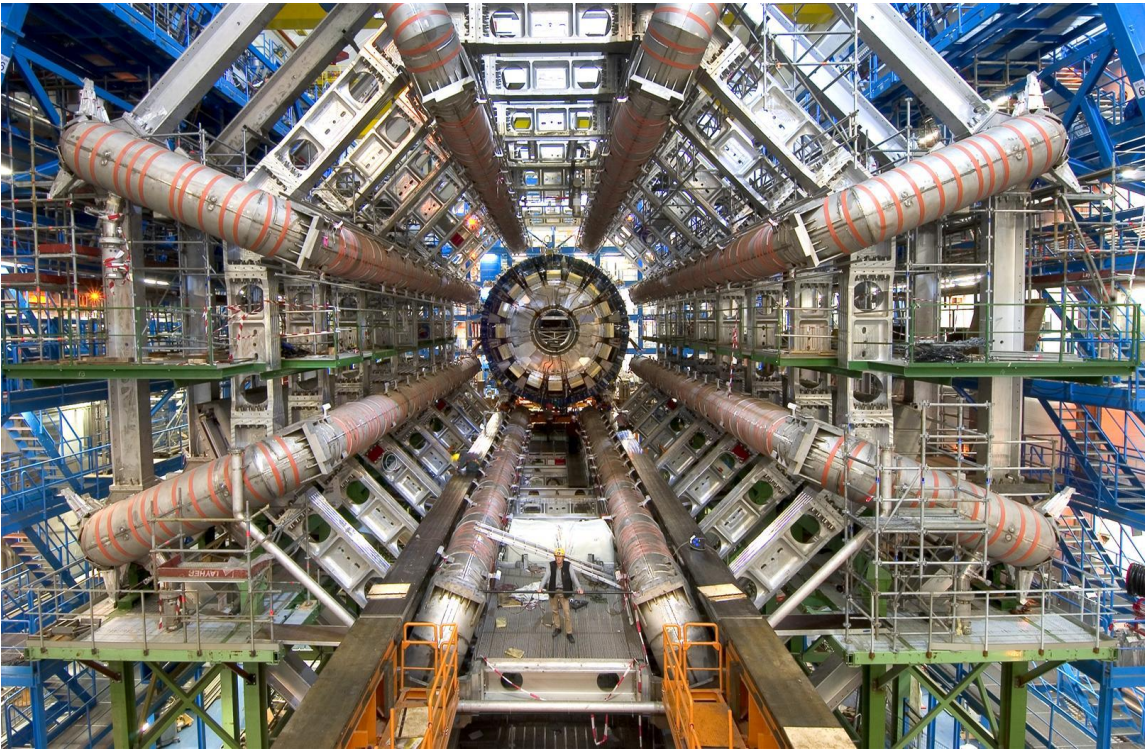
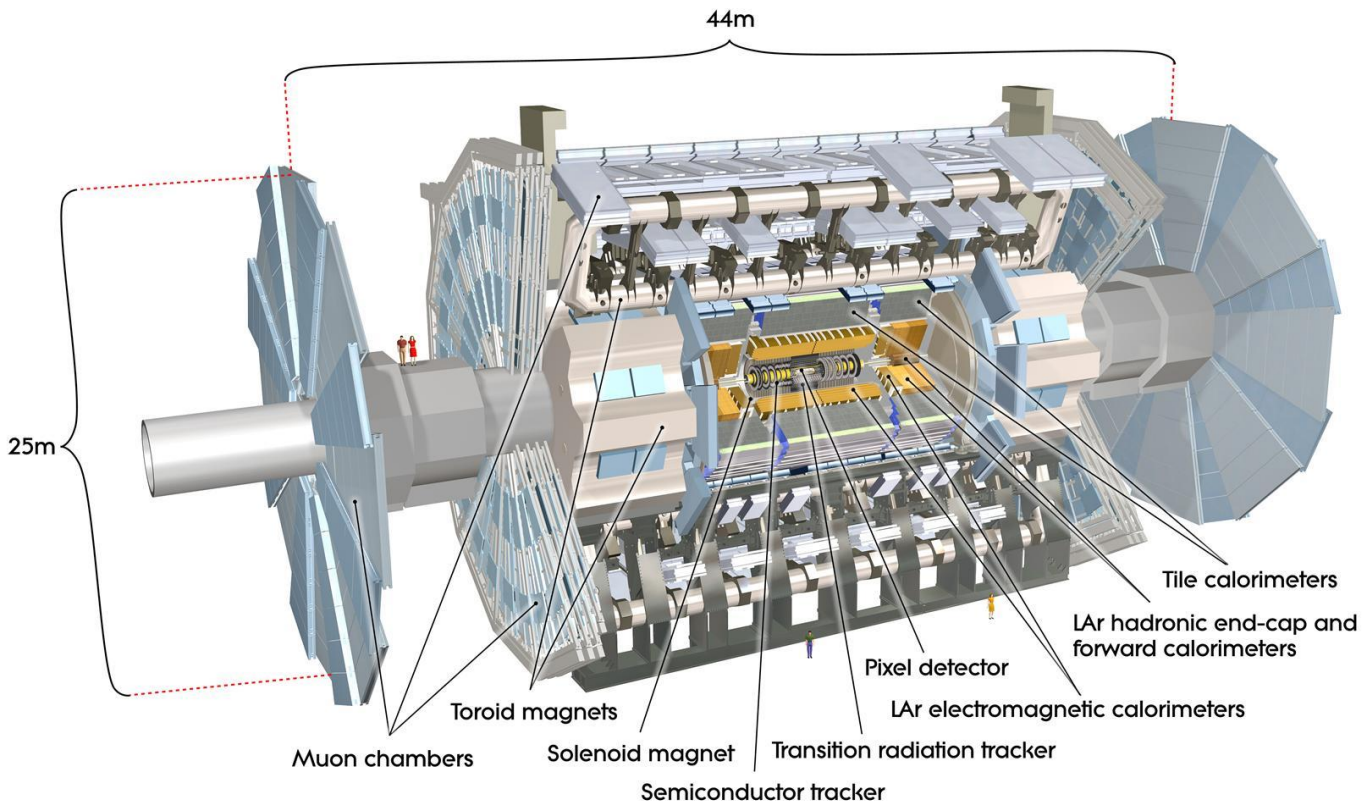
three generations of matter (fermions)						interactions / force carriers (bosons)	
	I	II	III				
mass	$\approx 2.2 \text{ MeV}/c^2$	$\approx 1.28 \text{ GeV}/c^2$	$\approx 173.1 \text{ GeV}/c^2$	0	0	$\approx 124.97 \text{ GeV}/c^2$	
charge	$\frac{2}{3}$	$\frac{2}{3}$	$\frac{2}{3}$	0	0	0	
spin	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	1	1	0	
QUARKS	u up	c charm	t top	g gluon	H higgs		
	d down	s strange	b bottom	γ photon			
	e electron	μ muon	τ tau	Z Z boson			
LEPTONS	ν_e electron neutrino	ν_μ muon neutrino	ν_τ tau neutrino	W W boson			
					GAUGE BOSONS VECTOR BOSONS		
					SCALAR BOSONS		

+ antipartícules

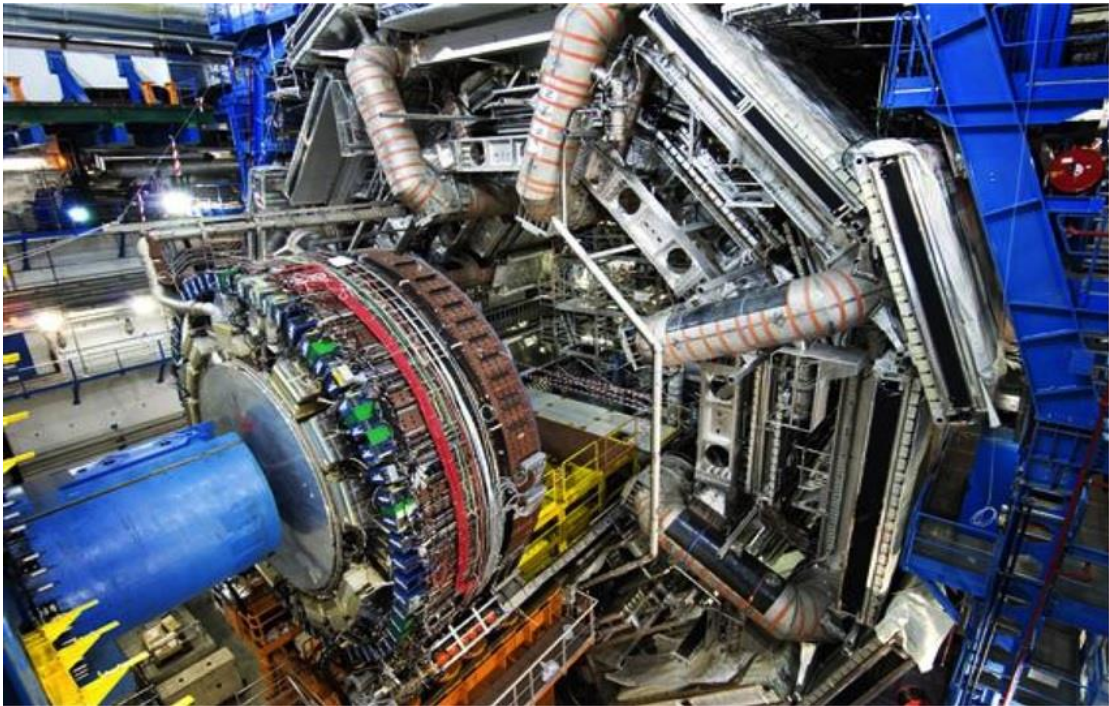
CERN (Centre Europeu de Recerca Nuclear) (experiment)



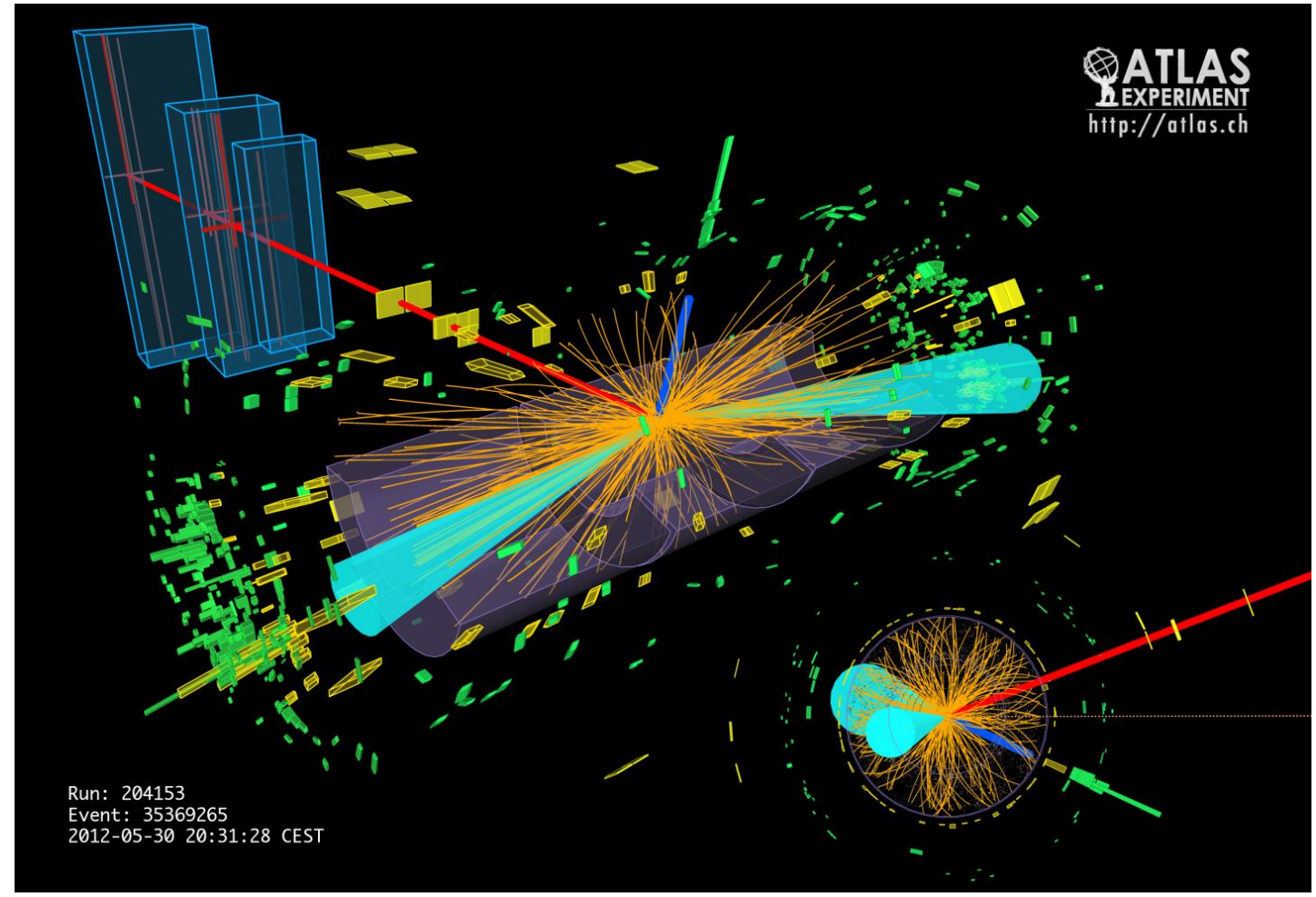
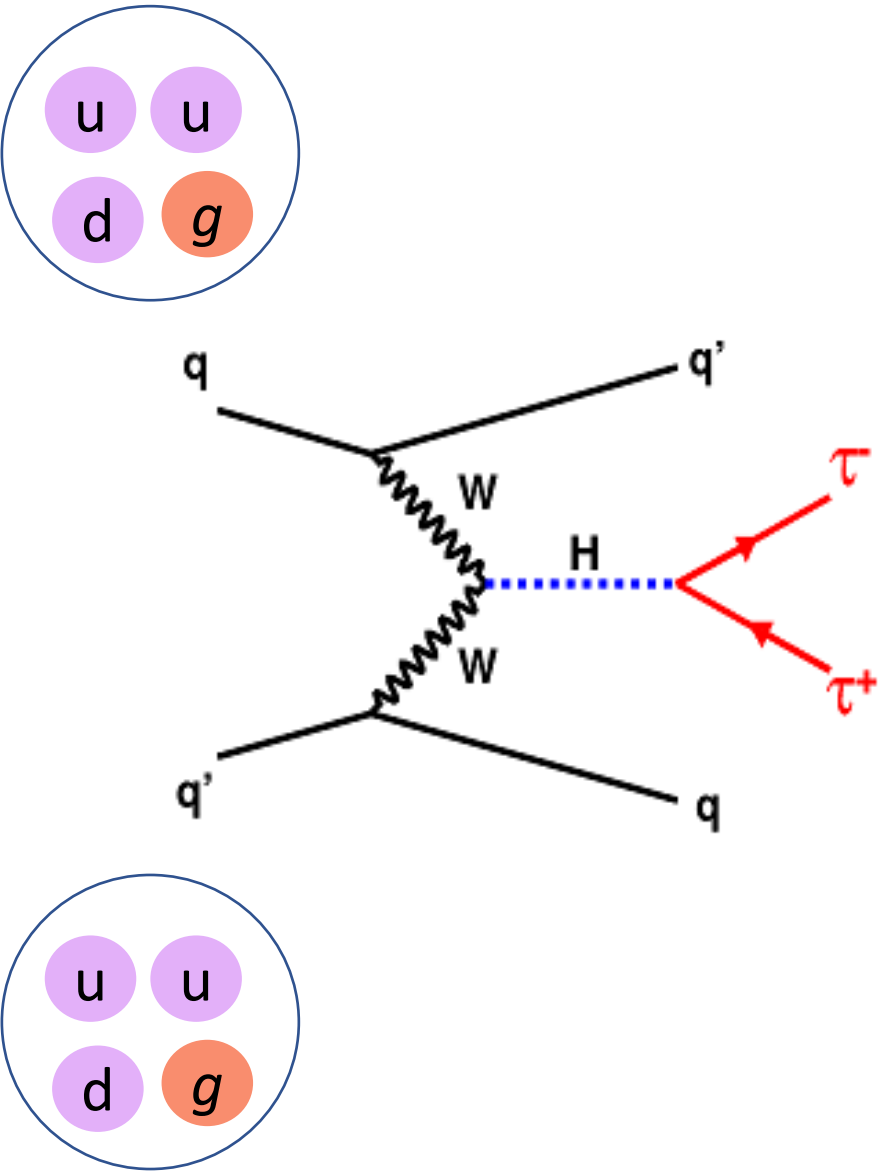
Detector ATLAS del LHC al CERN



Detector ATLAS del LHC al CERN

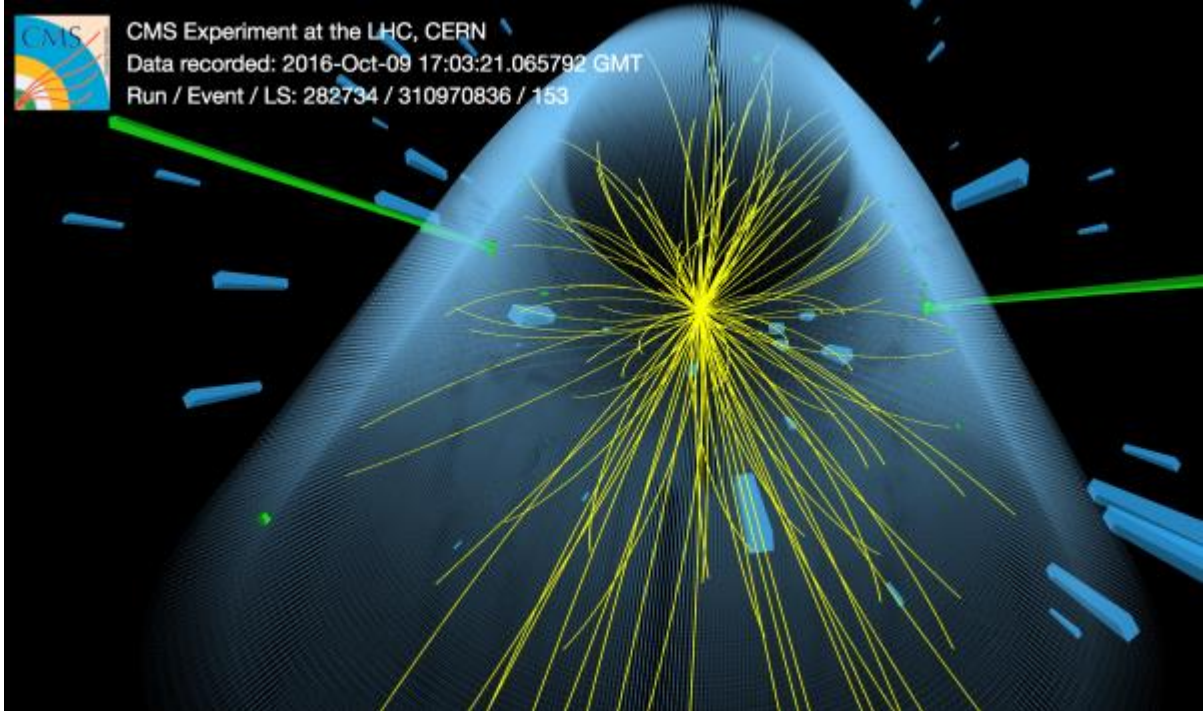
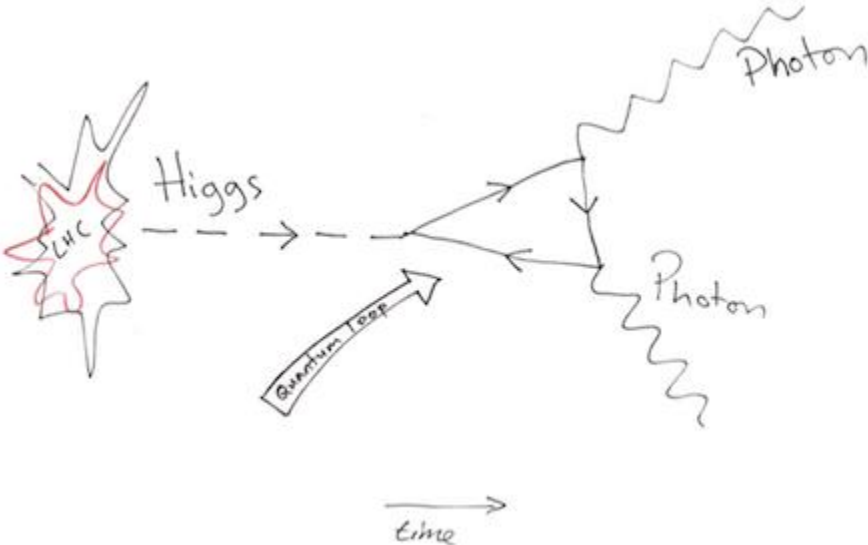


Com es "veuen" les col·lisions dins del detector? (Bosó de Higgs)

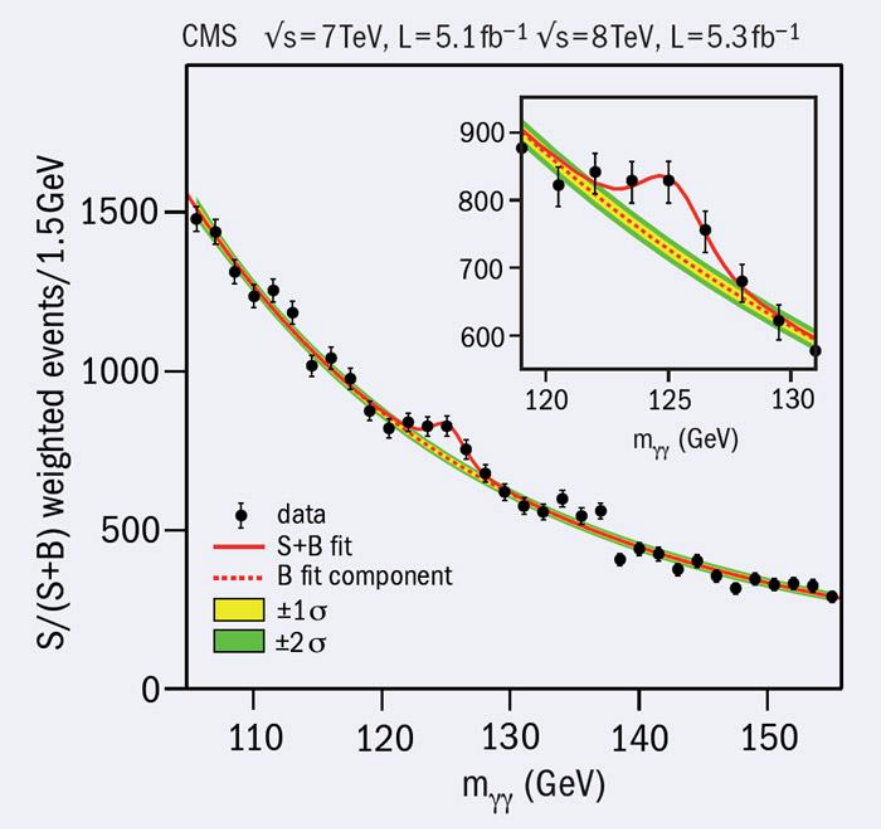
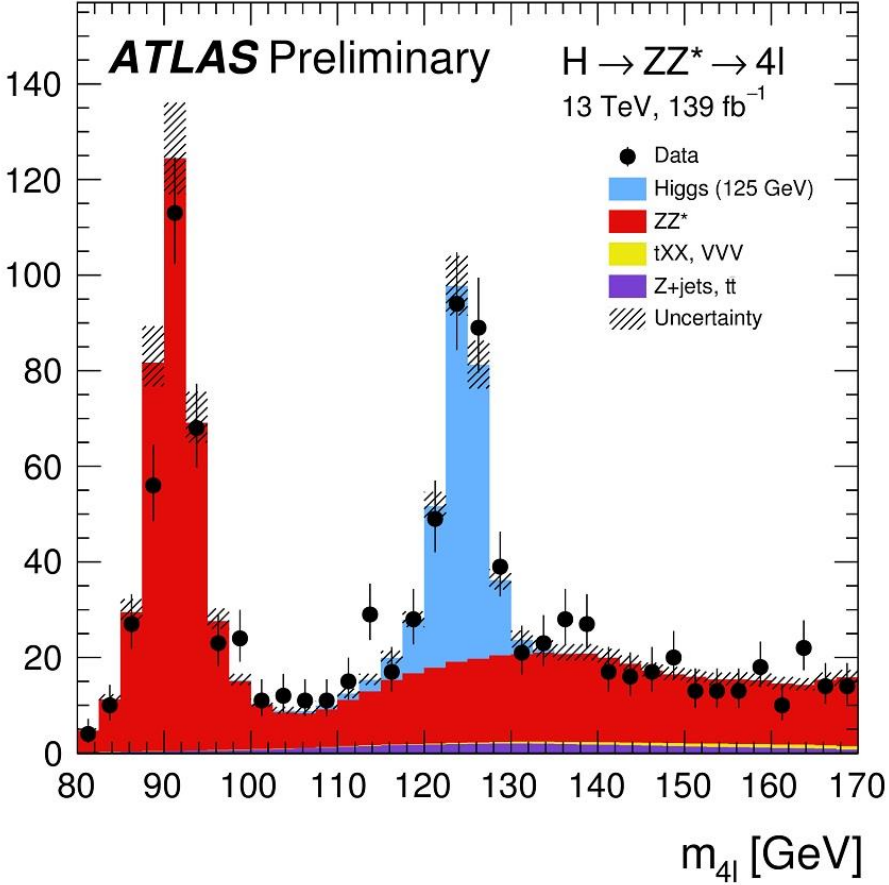


Conservació de l'energia ~ partida de billar

Com es “veuen” les col·lisions dins del detector? (Bosó de Higgs)



Teoria vs. experiment



Discrepància a la mesura de la massa del W

