

The Large Hadron Collider

In pursuit of some of the most exciting science of our time, the Large Hadron Collider has pushed the boundaries of technology and the scale of science experiments to new extremes.

Circumference

17 miles

Collisions

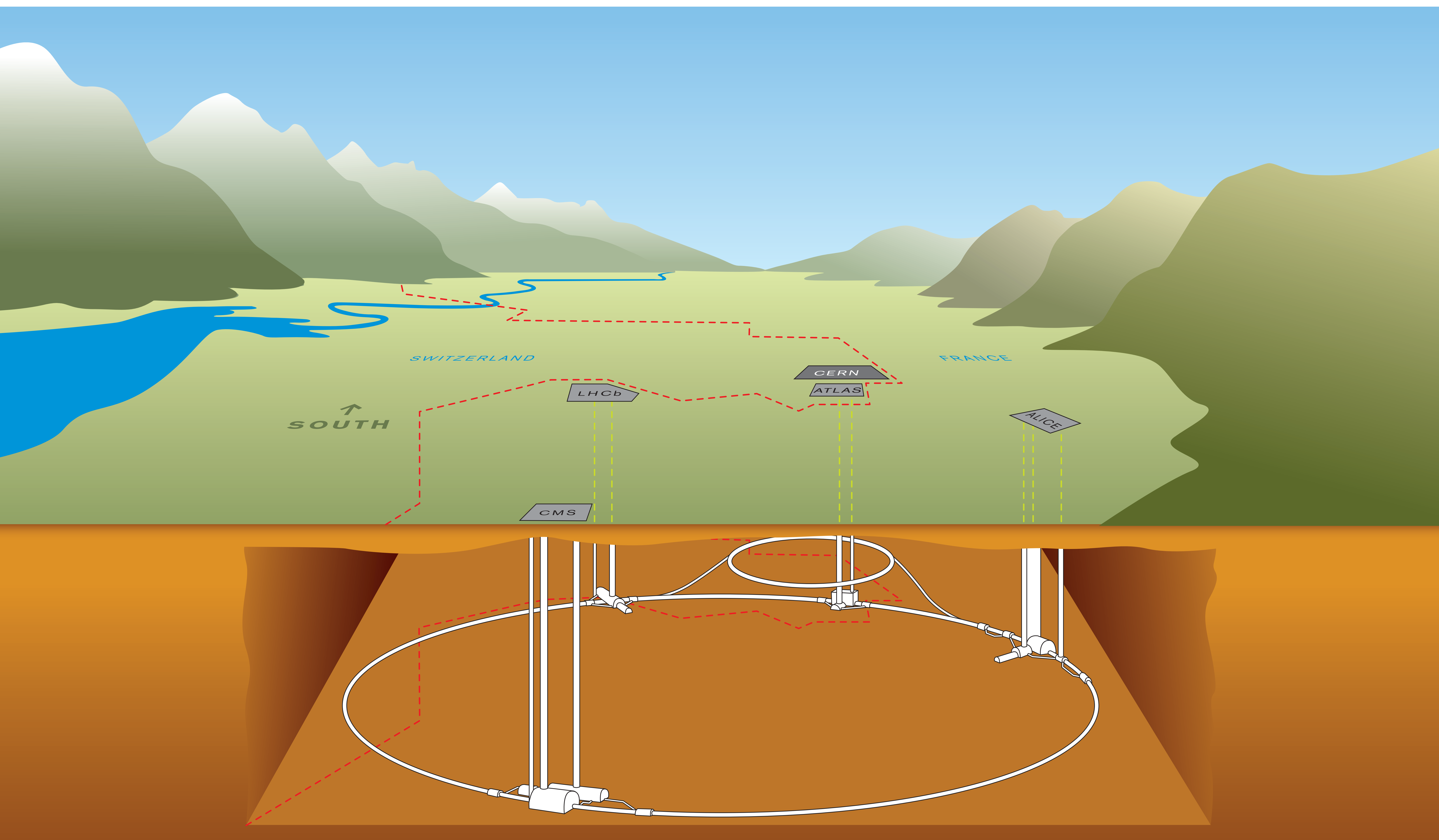
600 million per second

Energy

14 trillion electronvolts

Magnets

9,593



Main experiments

ATLAS

2500+ members from 150 institutions in 37 countries. The ATLAS cavern could hold the nave of Notre Dame Cathedral.

CMS

3000+ members from 180 institutions in 39 countries. The CMS magnet is the largest solenoid ever built and contains almost twice as much iron as the Eiffel tower.

ALICE

1000+ members from 105 institutions in 30 countries. The ALICE Time Projection Chamber, a cylinder roughly 15 feet in diameter and 15 feet in length, has approximately 560,000 readout channels.

LHCb

650+ members from 48 institutions in 15 countries. The LHCb experiment searches for CP-violation, the asymmetry in the behavior of matter and antimatter.

Number of magnets

1,232 superconducting dipole magnets steer the beam around the ring. Each one is roughly 47 feet long and weighs around 35 tons.

Magnetic field

8.33 Tesla, or about 200,000 times the strength of the Earth's magnetic field

Super cold

The LHC will operate at 1.9 Kelvin, about 300 degrees Celsius below room temperature.

Superconducting

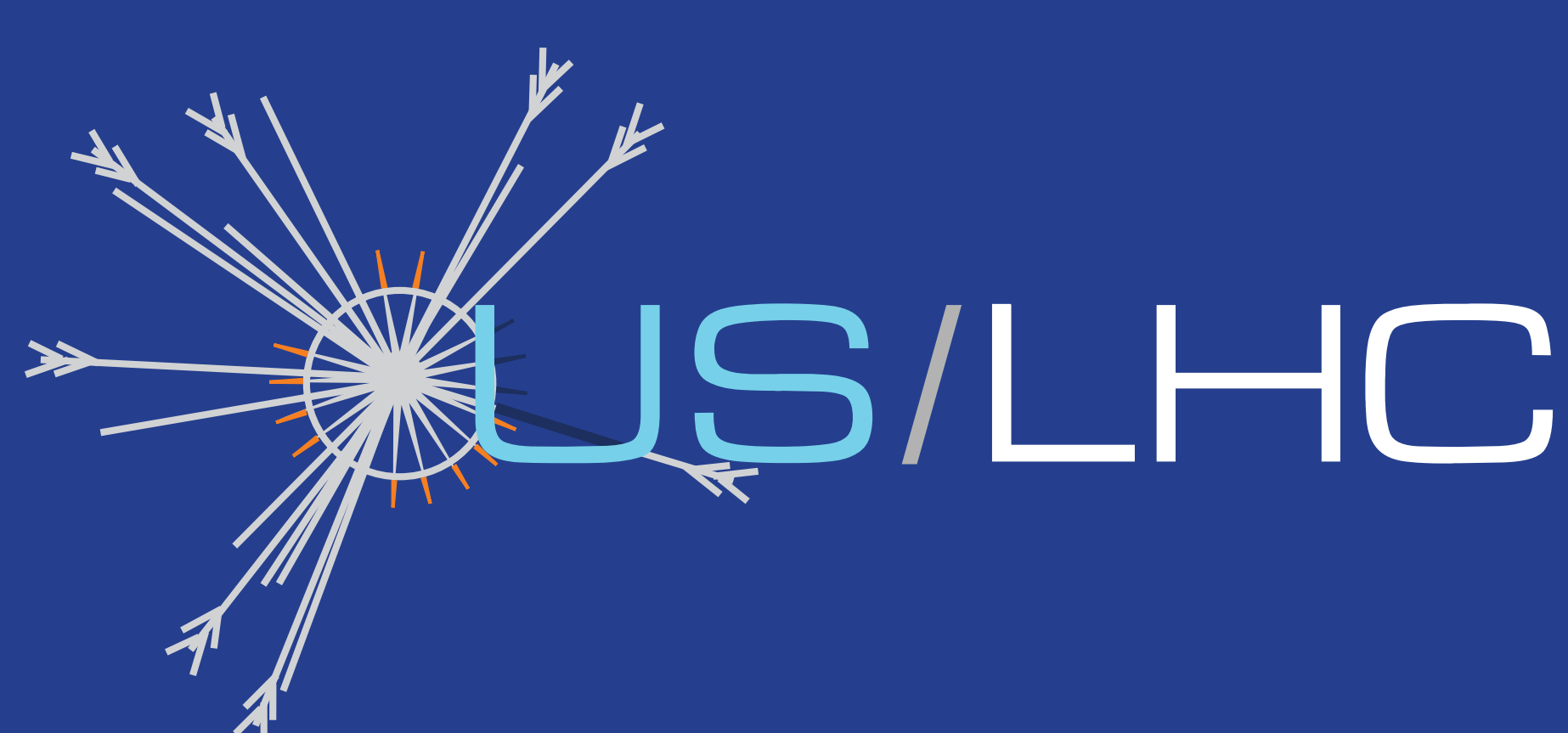
The total length of the superconducting wire for the LHC is roughly 155,000 miles, enough to go 6.8 times around the equator.

Super fast

The particles in the LHC will travel near the speed of light. Protons will travel around the 17-mile ring 11,000 times per second, colliding up to one billion times a second.

Super computing

LHC experiments will produce 15 petabytes—15 million gigabytes—of data every year, which has to be stored and made available to more than 7,000 scientists around the globe.



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