Evidence of Big Bang matter

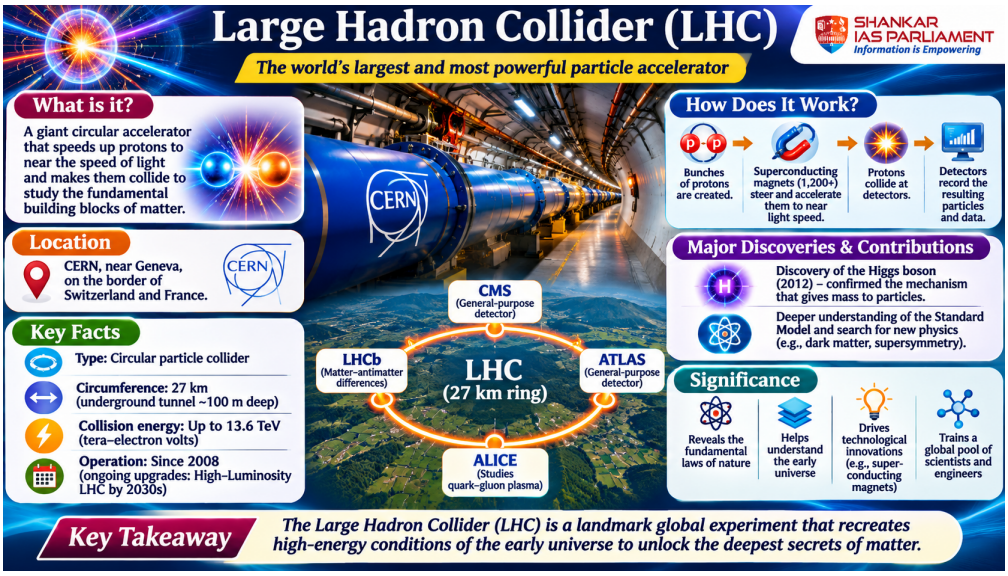
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Why in News?

Scientists at CERN's Large Hadron Collider (LHC) have discovered that quark-gluon plasma—the super-hot primordial matter from just after the Big Bang—can form in surprisingly small and low-energy atomic collisions using ***oxygen-16*** *and* ***neon-20*** *nuclei rather than massive heavy ions like lead.*

Key Details of the Discovery

- **The Substance–** Quark-gluon plasma is an ultra-hot liquid state—over 100,000 times hotter than the center of the Sun—where quarks and gluons break free from protons and neutrons.
- **The Experiment–** All four major LHC research collaborations (**ALICE**, **ATLAS**, **CMS**, and **LHCb**) observed signs of this plasma following the collider's oxygen and neon collision experiments.
- **Nuclear Geometry–** The expanding debris patterns act like a fingerprint; round oxygen nuclei create rounded particle patterns, while the elongated, bowling-pin shape of neon-20 produces a matching asymmetric pattern.
- **Broader Impact–** This breakthrough bridges nuclear physics and cosmology, offering a new way to map how protons and neutrons are structured inside smaller atomic nuclei.



Reference

[Science Daily| Evidence of Big Bang Matter]