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## **The LHC is a GlueBall factory - probing a novel form of pure gauge matter from the early universe to cosmic rays**

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Pure  $SU_c$  Lattice Gauge Theory, LGT, predicts a strong first order phase transition from a deconfined glue plasma to a confined GlueBall fluid, at a critical temperature of  $T_c=270$  MeV.

QCD-transport calculations show that such pure gauge matter can be created for a fleeting moment in high multiplicity pp, pA and AA collisions at the LHC at CERN and at RHIC at BNL. Pure gauge matter is also predicted to be formed in Air Showers of UHE Cosmic Rays - this novel phase of matter may also have existed briefly during the big bang. Experimental observables which pin down the properties of this new form of pure gauge matter are discussed.

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