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Revealing the origin of mass through studies of hadron spectra and structure

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The Higgs boson is responsible for just 1% of the visible mass in the Universe. Obviously, therefore, Nature has another, very effective way of generating mass. In working toward identifying the mechanism, contemporary strong interaction theory has arrived at a body of fundamental predictions, *viz.* the emergence of a nonzero gluon mass-scale, a process-independent effective charge, and dressed-quarks with constituent-like masses. These three phenomena - the pillars of emergent hadron mass (EHM) - explain the origin of the vast bulk of visible mass in the Universe. Their expressions in hadron observables are manifold. This presentation will highlight some of the measurements that have been and can be made in order to validate the paradigm, stressing the role of EHM in building the meson spectrum; producing the leading-twist pion distribution amplitude; shaping pion and nucleon parton distribution functions - valence, glue and sea, including the antisymmetry of antimatter; and moulding hadron charge and mass distributions.

Collaboration

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