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Experimental expressions of emergent hadron mass

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The best understood mechanism for the generation of mass within the Standard Model is connected with the Higgs boson. Yet, alone, the Higgs can only explain a few percent of the proton mass. The remainder must be explained by another source. Contemporary theory indicates that the answer lies in nonlinear, nonperturbative phenomena within the gauge sector of quantum chromodynamics; indeed, at the most fundamental level, in the emergence of a mass-scale for gluons. This presentation will sketch how gluons acquire mass, describe the manner through which this mass enters the matter sector, and highlight some of the observable consequences of such emergent hadron mass, e.g., in the semileptonic decays of mesons containing at least one heavy quark.

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