AdS/QCD and Hadronic Phenomena

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One of the most interesting recent advances in hadron physics has been the application of the AdS/CFT correspondence to quantum chromodynamics. Although QCD is not a conformally invariant field theory, one can nevertheless use the mathematical representation of the conformal group in five-dimensional anti-de Sitter space to construct an analytic first approximation to the theory. The resulting AdS/QCD model gives accurate predictions for hadron spectroscopy and a description of the quark structure of mesons and baryons which has scale invariance and dimensional counting at short distances, together with color confinement at large distances. In addition, one can compute the form of the frame-independent light-front bound-state wavefunctions, the fundamental nonperturbative entities which encode hadron properties and which allow the computation of hadronic scattering amplitudes and decays. A number of novel applications of light-front wavefunctions to QCD phenomenology will also be discussed, such as color transparency, hidden color, intrinsic charm, sea-quark asymmetries, dijet diffraction, direct hard processes, and hadronic spin dynamics.

Organizers: William Horowitz and Miklos Gyulassy
http://www.phys.columbia.edu/~horowitz/meetings/Brodsky
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