

Simple states of QCD's nearest relatives

I'll describe lattice spectroscopy of $SU(N)$ gauge theories with N in the range 2-7, with a small number of fermion degrees of freedom. These are systems which are most similar to QCD: they are confining and chirally broken. The simple states are s -wave mesons and baryons.

Specific systems I have studied are $SU(N)$ gauge theories, quenched or with $N_f=2$ fundamental quarks and $SU(4)$ with two index antisymmetric (AS2) representation fermions and with fermions in both fundamental and AS2. The most naive application of the nonrelativistic quark model combined with 't Hooft large N counting seems

to explain all the lattice data. Baryons show clear evidence for a rotor spectrum.

Mixed states (baryons made of two representations of quarks) show regularities related to the different color charges of the two representations.

Primary author: Prof. DEGRAND, Thomas (University of Colorado)

Presenter: Prof. DEGRAND, Thomas (University of Colorado)