Scalar glueball and meson spectroscopy in unquenched lattice QCD with improved staggered quarks

Presenter: Alan Irving

Steven Miller, Eric Gregory, Alan Irving, Craig McNeile, Zbyszek Sroczynski Abstract: We present results of an exploratory study of singlet scalar states in unquenched QCD using both glueball and meson operators. Results for nonsinglet non-strange scalar mesons are also presented. We use Asqtad improved staggered fermions and gauge configurations from the MILC collaboration at lattice spacings of .12 and .09 fm. In this formulation, the glueball mass is not significantly different from the quenched value at finite lattice spacing. Significant taste violations are present in the scalar sector. At light quark masses, decay channels complicate the mass determinations. There is some evidence that the non-strange singlet meson lies below the non-singlet meson.