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# KMI - Theory Seminar

Tuesday, March 5, 2013

5:00 pm, KMI Science Symposia (ES-635)

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“The scalar spectrum of many-flavour QCD”

Enrico Rinaldi

SUPA and School of Physics and Astronomy,  
University of Edinburgh

## Abstract:

The LatKMI collaboration is studying systematically the dynamical properties of  $N_f = 4, 8, 12, 16$   $SU(3)$  gauge theories using lattice simulations with (HISQ) staggered fermions. Exploring the spectrum of many-flavour QCD, and its scaling near the chiral limit, is mandatory in order to establish if one of these models realises the Walking Technicolor scenario. Although lattice technologies to study the mesonic spectrum are well developed, scalar flavour-singlet states still require extra effort to be determined. In addition, gluonic observables usually require large-statistic simulations and powerful noise-reduction techniques. In this talk, I present useful spectroscopic methods to investigate scalar glueballs and scalar flavour-singlet mesons, together with the current status of the scalar spectrum in  $N_f = 12$  QCD from the LatKMI collaboration. The results have important consequences in the study of Walking Technicolor models as candidate theories to explain beyond the Standard Model physics.