

Abstract:

We use lattice simulations to calculate some properties of  $SU(N)$  gauge theories in the continuum limit.

We do so from  $N=2$  to  $N=12$ , enabling an extrapolation to  $N=\infty$ . Our main aim is to calculate the

lightest glueball masses for all  $JPC$  quantum numbers. As a byproduct we calculate some string tensions,

the running of the coupling with an estimate of the  $\Lambda$  parameter, and some properties of

the topological fluctuations of the gauge fields.