

# Weyl group symmetry as an intrinsic color symmetry of QCD

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We present the basic non-perturbative structure of the space of classical dynamical solutions and corresponding one particle quantum states in  $SU(3)$  QCD. The Weyl group, as a non-trivial color subgroup of  $SU(3)$ , admits non-trivial singlet irreducible representations which lead to strict concepts of one particle quantum states for gluons and quarks. We show that a full space of dynamical gluon solutions is an infinite but countable space of solutions described by a finite set of integer numbers. It has been proved that the Weyl singlet structure of classical solutions provides the existence of a quantum stable non-degenerate vacuum which is known as a main precondition of the color confinement phenomenon. Some physical implications are considered.

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