

The classification of high dimensional gluon operators

Sunday, 16 May 2021 14:30 (30 minutes)

The contribution of high dimensional operators in effective field theory becomes important as the experimental precision increases in LHC and future colliders. However, it can be very difficult to generate and classify these operators since the number of operators increases very fast as dimension increases. We propose a systematical method to generate and classify pure gluon operators with a given length to arbitrary high dimensions. A diagrammatic representation of gluon operators is proposed to manifest their symmetries and relations. The infinite set of high dimensional operators are generated from a finite set of “primitive operators” by adding pairs of covariant derivatives. The possible redundancy among the operators are removed with the help of Groebner basis. The representations of permutation groups are used to dress the color factors. We explicitly constructed primitive operators and Groebner basis for length-2,3,4,5 operators in D-dimensions.

Primary author: JIN, Qingjun (g)

Presenter: JIN, Qingjun (g)

Session Classification: Session 8