

Program "xCOLOR". User's Manual.

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Abstract

Program "xCOLOR" is intended for calculation the colour factor in non-abelian gauge field theories. It is realized Cvitanovich algorithm [1]. In comparison with "COLOR" program [2] it was made many improvements. The package was written by symbolic mode. This version is faster then [2] more then 10 times.

After load the program by the following command `load xcolor;`
user can be able to use the next additional commands and operators.

Command **SUdim**.

Format: `SUdim <any expression>;`

Set the order of SU group.

The default value is 3, i.e. SU(3).

Command **SpTT**.

Format: `SpTT <any expression>;`

Set the normalization coefficient A: $\text{Sp}(T_i T_j) = A \cdot \Delta(i, j)$. Default value is 1/2.

Operator **QG**.

Format: `QG(inQuark, outQuark, Gluon)`

Describe the quark-gluon vertex. Parameters may be any identifiers. First and second of them must be in- and out- quarks correspondently. Third one is a gluon.

Operator G3.

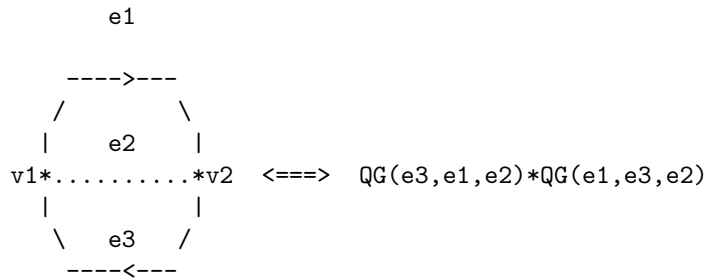
Format: G3(Gluon1,Gluon2,Gluon3)

Describe the three-gluon vertex. Parameters may be any identifiers. The order of gluons must be clock.

In terms of QG and G3 operators you input diagram in "color" space as a product of these operators. For example.

Diagram:

REDUCE expression:



Here: --->--- quark

..... gluon

More detail see [2].

References.

- [1] P.Cvitanovic, Phys. Rev. D14(1976), p.1536.
- [2] A.Kryukov & A.Rodionov, Comp. Phys. Comm., 48(1988), pp.327-334.

Please send any remarks to my address above!

Good luck!