

## Studying chiral pions with massive gluons.

*mardi 19 septembre 2023 14:30 (30 minutes)*

We will show how to obtain a closed expression for the calculation of the pion decay constant in the chiral case. The expression is obtained by using the Curci-Ferrari model which includes massive gluons. This model also allows to find an infrared safe trajectory of the renormalisation group. With which the results of the numerical simulations can be reproduced with good accuracy using perturbation theory. This leads to the interpretation that the development parameter associated with the ghost-gluon coupling constant is a small parameter. This small parameter allows for a better understanding of which diagrams has to be considered when calculating, for example, the pion decay constant. The numerical solution of the expression gives the region of gluon masses that well reproduce the pion decay constant.

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**Classification de Session:** Plenary