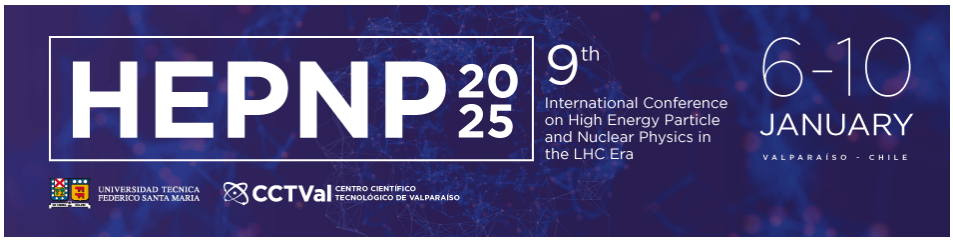

Contribution ID: **521** Type: **parallel**

Reggeon Field Theory at One loop improved Wilsonian regulator and ϵ-expansion

Tuesday 7 January 2025 16:50 (20 minutes)

We study multifield extensions of Reggeon Field Theory (also equivalent to Directed Percolation model) at criticality in the improved one-loop perturbative expansion using Wilsonian regulator and ϵ-expansion below the upper critical dimension Dc = 4 at one loop. Analyzing all the fixed points of the renormalization group flow for two flavors, we were able to find different interactions between the 2 Pomerons [1, 2].

In high energy scattering quantum properties of the particles involved imply the need to have several reggeon fields in the description. First even in the QCD Pomeron analysis one may encounter a set of Pomeron states, which will eventually translate in an effective multifield RFT. More in general the so-called Pomeron and the Odderon give the dominant contributions at high energies. These objects have their perturbative counterpart in simplified analysis in QCD, but in full interacting QCD, theory is difficult to formulate a reliable description. Because of that, an idea of considering an effective RFT for these two fields with all the possible specific interactions. Then we need to study the behavior at criticality both perturbatively and non perturbatively.

Acknowledgments: Fondecyt Project Grant: #1231829

References:
[1] J. Bartels, C. Contreras and G. P. Vacca, JHEP 05, 032 (2024)
[2] J. Bartels, C. Contreras and G. P. Vacca, to be appeared (2025) arXiv

Author: Prof. CONTRERAS, Carlos (UTFSM)

Presenter: Prof. CONTRERAS, Carlos (UTFSM)

Session Classification: Parallel session 4: QCD (1/2)