

The description of meson and glueball spectra within the graviton soft-wall model

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In this contribution we discuss and present the holographic graviton soft-wall model (GSW) description of the meson and glueball spectra. This model relies on a semi-classic approximation of non perturbative QCD. We summarize the main results of Ref. [1] where the scalar and tensor components of the glueball spectrum have been calculated. In particular, we proposed to consider a graviton, propagating in a specific curved space, as the dual field corresponding to the glueball operator in QCD.

The main outcome of our analysis is that the spectra are described by linear trajectories has expected from lattice QCD. Our prediction for the ground state mass is comparable with that addressed same years later in Ref. [2]. Moreover, this model is capable to reproduce quite well the spectra of scalar mesons, the ρ and a_1 vectors [3, 4]. Moreover, in Ref. [6] we propose a modification of the approach to properly describe the chiral symmetry breaking mechanism, beyond the inner structure of the pion. In conclusion, a good description of several observables is remarkably provided with only few not flexible parameters.

References

- [1] M. Rinaldi and V. Vento, Eur. Phys. J. A 54, 151 (2018)
- [2] E. Klempt, K. V. Nikonov, A. V. Sarantsev and I. Denisenko, Phys. Lett. B 830, 137171 (2022)
- [3] M. Rinaldi and V. Vento, J. Phys. G 47, no.5, 055104 (2020)
- [4] M. Rinaldi and V. Vento, J. Phys. G 47, no.12, 125003 (2020)
- [5] M. Rinaldi and V. Vento, Phys. Rev. D 104, no.3, 034016 (2021)
- [6] M. Rinaldi, F. A. Ceccopieri and V. Vento, Eur. Phys. J. C 82, no.7, 626 (2022)

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