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Quark-diquark models and fluctuations in thermal QCD

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Fluctuations of conserved charges such as baryon number, electric charge and strangeness [1,2] may provide a test for completeness of states in lattice QCD for three light flavors [3-7]. We elaborate on the idea that the corresponding susceptibilities can be saturated with excited baryonic states with an underlying quark-diquark structure with a linearly confining interaction. Using Polyakov-loop correlators we show that in the static limit, the quark-diquark potential coincides with the quark-antiquark potential in marked agreement with recent lattice studies. We thus study in a quark-diquark model the baryonic fluctuations of electric charge, baryon number and strangeness: χ_{BQ} , χ_{BB} and χ_{BS} ; by considering a realization of the hadron resonance gas model in the light flavor sector of QCD [8]. These results have been obtained by using the baryon spectrum computed within a relativistic quark-diquark model, leading to an overall good agreement with the spectrum obtained with other quark models and with lattice data for the fluctuations.

- [1] S. Borsanyi, Z. Fodor, S. D. Katz, S. Krieg, C. Ratti, and K. Szabo, JHEP 01 (2012) 138.
- [2] A. Bazavov et al. (HotQCD Collaboration), Phys. Rev. D86, 034509 (2012).
- [3] E. Ruiz Arriola, L.L. Salcedo and E. Megias, Acta Phys. Polon. B45 (2014) 2407-2453.
- [4] E. Ruiz Arriola, L.L. Salcedo, E. Megias, Acta Phys. Polon. Supp. 8 (2015) 2, 439.
- [5] E. Megias, E. Ruiz Arriola, L.L. Salcedo, Phys. Rev. D94 (2016) 9, 096010.
- [6] E. Ruiz Arriola, W. Broniowski, L.L. Salcedo, E. Megias, arXiv:1612.07091[hep-ph].
- [7] E. Megias, E. Ruiz Arriola, L.L. Salcedo, Acta Phys. Polon. Supp. 11 (2018) 563.
- [8] E. Megias, E. Ruiz Arriola, L.L. Salcedo, Phys. Rev. D99 (2019) 7, 074020.

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