

$Z_c(3900)$: experiment, theory, lattice

Miguel Albaladejo, IFIC — U. Valencia

8-9 September, 2016

In this talk we report on two recent works about the $Z_c(3900)$ resonance [1, 2]. In the first part of the talk, presenting the work of Ref. [1], a coupled channel T -matrix is used in the description of the $D^*\bar{D}$ and $J/\psi\pi$ spectra in which the $Z_c(3900)$ peak has been seen. The data can be well reproduced in two different scenarios, in which the $Z_c(3900)$ is a resonance or a virtual state. In the second part of the talk, related to Ref. [2], we consider this coupled channel T -matrix in a finite box, with the aim of comparing with recent lattice QCD simulations. We find that our predicted energy levels are in good agreement, for both scenarios, with those reported in Ref. [3]. We discuss possible future directions to shed light on the nature of the $Z_c(3900)$.

References

- [1] M. Albaladejo, F. K. Guo, C. Hidalgo-Duque and J. Nieves, $Z_c(3900)$: *What has been really seen?*, Phys. Lett. B **755**, 337 (2016) [arXiv:1512.03638 [hep-ph]].
- [2] M. Albaladejo, J. Nieves and P. Fernandez-Soler, $Z_c(3900)$: *Confronting theory and lattice simulations*, arXiv:1606.03008 [hep-ph].
- [3] S. Prelovsek, C. B. Lang, L. Leskovec and D. Mohler, “*Study of the Z_c^+ channel using lattice QCD*,” Phys. Rev. D **91**, 014504 (2015) [arXiv:1405.7623 [hep-lat]].