Light Cone 2017 (LC2017)
Frontiers in Light Front Hadron Physics : Theory and Experiment
18th - 22nd September 2017, University of Mumbai

Contribution ID: **24** Type: **not specified**

Heavy and heavy-light mesons in the Covariant Spectator Theory

The masses and vertex functions of heavy and heavy-light mesons, described as quark-antiquark bound states, are calculated with the Covariant Spectator Theory (CST). The CST two-body bound-state equation is similar to the Bethe-Salpeter equation, an integral equation formulated in Minkowski space with a kernel of two-particle irreducible Feynman diagrams describing the quark-antiquark interaction, except that the relative-energy loop integration is carried out by taking only the residues of the quark propagator poles into account. Cancelations between the omitted kernel pole contributions make sure that the equation has the correct limit when one quark becomes very heavy, which makes it particularly suitable to describe unequal-mass mesons. We use a kernel with an adjustable mixture of Lorentz scalar+pseudoscalar and vector linear confining interaction, together with a one-gluon-exchange kernel. I will present the results of a series of fits to the heavy and heavy-light meson spectrum, and discuss what conclusions can be drawn from it, especially about the Lorentz structure of the kernel. We also apply the Brodsky-Huang-Lepage prescription to express the CST wave functions for heavy quarkonia in terms of light-front variables. When we compare them to light-front wave functions obtained in the Hamiltonian basis light-front quantization (BLFQ) approach, we find remarkable agreement, even in excited states.

Primary authors: STADLER, Alfred (University of Évora); LEITÃO, Sofia (IST); Prof. PEÑA, Teresa (CFTP - Instituto Superior Técnico, Universidade de Lisboa); BIERNAT, Elmar (Instituto Superior Tecnico, Universidade de Lisboa)

Presenter: STADLER, Alfred (University of Évora)