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### **Quarkonium as relativistic bound state on the light cone<sup>1</sup>**

YANG LI, Department of Physics and Astronomy, Iowa State University

I will review recent results for mesons obtained within a light-front Hamiltonian approach [1,2]. We adopt a QCD inspired effective Hamiltonian that incorporates a holographic QCD confining potential at large distance and a one-gluon exchange at short distance. The model is then solved by a basis function approach.

We apply this model to charmonium and bottomonium. The masses agree with experiments to within an rms deviation of 40 MeV. The obtained light-front wave functions provide a direct access to hadronic observables, e.g., decay constants, form factors and radii, as well as light-cone distributions, such as the distribution amplitudes and parton distributions, which reveals rich structural information of the hadrons, especially for the excited states. The wave functions also find application to diffractive productions in deep inelastic scattering.

Comparison with experiments and other approaches show that our model provides an overall reasonable description of the heavy quarkonia.

[1] Y. Li, P. Maris, X. Zhao and J.P. Vary, Phys. Lett. B **758**, 118 (2016); [arXiv:1509.07212 [hep-ph]].

[2] Y. Li, P. Maris and J. P. Vary, Phys. Rev. D (in press); [arXiv:1704.06968 [hep-ph]].

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