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### **Theoretical Interpretations of the XYZ States<sup>1</sup>**

ERIC BRAATEN, Ohio State University

The  $XYZ$  mesons are unexpected  $c\bar{c}$  and  $b\bar{b}$  mesons that have been discovered during the last decade. The models for the  $XYZ$  mesons that have been proposed, none of which have revealed a compelling pattern, include conventional quarkonium, quarkonium hybrids, and quarkonium tetraquarks (whose four constituents can be clustered in various ways). The Born-Oppenheimer approximation provides a coherent QCD framework for describing the  $XYZ$  mesons that can be informed by lattice QCD. The additional hints that will be provided by current and upcoming experiments guarantee the eventual solution of the  $XYZ$  puzzle.

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