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QCD Exotics

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QCD-motivated models for hadrons predict an assortment of “exotic” hadrons that have structures that are more complex than the quark-antiquark mesons and three-quark baryons of the naive quark-parton model. These include pentaquark baryons, the six-quark H-dibaryon, and tetra-quark and glueball mesons. Despite extensive experimental searches, no unambiguous candidates for any of these exotic configurations have yet to be identified. On the other hand, a number of meson states, most of which contain either charmed-anticharmed quark or bottom-antibottom quark pairs have been recently discovered that neither fit into the quark-antiquark meson picture nor match the expected properties of the QCD-inspired exotics. This talk will review the properties of these newly discovered states –the so-called XYZ mesons– and compare them with expectations for conventional quark-antiquark and the predicted QCD-exotic meson states. In addition, near-term prospects for new results from the BESIII experiment and long-term prospects for BelleII will be discussed.

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