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Exotic quarkonium states in CMS

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Using large data samples of di-muon events, CMS has performed detailed measurements and searches for new states in the field of exotic quarkonia. We report on measurements of the charmonium X(3872), and search for its counterpart in the bottomonium sector. The investigation of the B+ to J/ψ φ K+ decay reveals two structures in the J/ψ φ mass spectrum. For the one closest to the kinematical threshold, and compatible with the Y(4140) state by CDF, a few explanations have been suggested such as a tetraquark partner of the X(3872), a molecular partner of the Y(3940) or a charmonium hybrid. Charged Z charmonium-like states are particularly interesting as candidates for tetra-quark states. Results from CMS are foreseen to be provided by applying a full amplitude analysis method to the neutral B meson 3-body decays into J/Psi(or Psi(2S)) Kaon Pion. Finally, the state called X(5568) and observed by D0 experiment in Bs+pion system needs to be confirmed or not: a result from CMS is foreseen to be provided.

Summary

We report on measurements of the charmonium X(3872), and search for its counterpart in the bottomonium sector. The investigation of the B+ to J/ψ φ K+ decay reveals two structures in the J/ψ φ mass spectrum. Charged Z charmonium-like states are particularly interesting as candidates for tetra-quark states. Results from CMS are foreseen to be provided by applying a full amplitude analysis method to the neutral B meson 3-body decays into J/Psi(or Psi(2S)) Kaon Pion. Finally, the state called X(5568) and observed by D0 experiment in Bs+pion system needs to be confirmed or not: a result from CMS is foreseen to be provided.

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