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CMS Status Report on Hadron Spectroscopy

Content

Using large data samples of di-muon events, CMS has performed detailed measurements in the field of **Hadron Spectroscopy**. Recent results include the search for an unexpected narrow $B_s\,\pi^{\pm}$ structure claimed by the $D\emptyset$ Collaboration and named $X(5568)$ (its interest resides in its possible interpretation as a compact hadronic state composed of four different quark flavours: $udsb$), the confirmation of the $X(4140) \to J/\psi\,\phi$ reported by CDF, a study of $X(3872)$ production properties and a search for the its bottomonium partner. In this realm, potential resonances have been predicted with a double quarkonium in the final states, such as heavy quark tetra-quarks governed by strong interaction. The first observation of $\Upsilon(1S)$ pair production has been recently performed and the study of J/ψ pair final state produced in proton-proton collisions at $\sqrt{s} = 7$ TeV is foreseen to be extended to a center-of-mass of 8 TeV providing the total and differential cross sections measured in a phase space defined by the individual J/ψ transverse momentum and rapidity. These observations allow us to access, for the first time, to the high-transverse-momentum region of J/ψ pair production where model predictions are not yet established.

Summary

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