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## **QUARKONIUM PHYSICS AT CMS**

Friday, 13 April 2012 15:07 (10 minutes)

Quarkonium hadroproduction is not satisfactorily understood. Measurements performed at the unprecedented LHC energies, and benefiting from large yields are anticipated to facilitate crucial improvements to the current understanding.

This talk presents the results on quarkonium obtained by the CMS experiment during its first two years of operation. The measurement of differential cross sections, as a function of transverse momentum and rapidity, has been performed for various states decaying in a pair of charged muons (J/ $\psi$ ,  $\psi$ (2S), Upsilon). The  $\chi$ c states have been reconstructed thanks to their radiative decays to J/ $\psi$  and the results on their relative cross section are shown.

Finally the first results on the exotic state X(3872) in its decay channel J/  $\psi \pi \pi$  are proposed. This particle is of particular interest because it does not fit the quarkonium spectroscopy. Its mass near the open charm threshold has led to many theoretical interpretations, like a molecular state of two mesons or a tetra-quark. New experimental results are needed in order to understand its exact nature.

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