

# 10th International Conference on Hard and Electromagnetic Probes of High-Energy Nuclear Collisions



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## Evidence of $X(3872)$ production in PbPb collisions with CMS experiment

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The structure of the exotic meson  $\chi_{c1}(3872)$ , also known as  $X(3872)$ , is still under debate. The similarity of the  $\chi_{c1}(3872)$  mass and the  $D - \bar{D}^*$  mass threshold inspired the interpretation that  $\chi_{c1}(3872)$  is a  $D - \bar{D}^*$  “molecule” with small binding energy. Another explanation is that this meson is a tetra-quark, consisting of a di-quark and di-antiquark. Relativistic heavy-ion collisions produce an extremely hot and strongly interacting medium, which provides a new environment in which to study the nature of multi-quark states. Because of the dramatically different radii of a  $D - \bar{D}^*$  “molecule” and a tetra-quark, the interactions of these two proposed states are expected to interact differently with the medium. Therefore, the yield of  $\chi_{c1}(3872)$  in heavy-ion collisions can provide insight into its structure. The ratios of production cross-section of fully reconstructed  $\chi_{c1}(3872)$  over  $\psi(2S)$  in PbPb collisions at a nucleon-nucleon center-of-mass energy of 5.02 TeV with the CMS detector are presented.

### Collaboration (if applicable)

CMS

### Track

Heavy Flavor and Quarkonia

### Contribution type

Contributed Talk

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