

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



Contribution ID: 197

Type: Oral Presentation

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

Wednesday, June 3, 2020 12:45 PM (20 minutes)

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

Primary author: PETRUSHANKO, Serguei (M.V. Lomonosov Moscow State University (RU))

Presenter: WANG, Jing (Massachusetts Inst. of Technology (US))

Session Classification: Parallel

Track Classification: Heavy Flavor and Quarkonia