17th International Conference on
Strangeness in Quark Matter

Universiteit Utrecht
10-15 July 2017
Utrecht, the Netherlands

Utrecht 2017

Contribution ID: **70**

Type: **oral presentation**

Quarkonium production in pp and p-A collisions with ALICE at the LHC

Thursday, 13 July 2017 09:40 (20 minutes)

Quarkonia are mesons formed of either a charm and anti-charm quark pair (J/ψ, $\psi(2S)$), or a beauty and anti-beauty quark pair (Υ(1S), (2S) and (3S)). In high-energy hadronic collisions such as those delivered by the LHC between 2010 and 2016, quarkonium production results from the hard scattering of two gluons in a process which occurs very early in the collision followed by the hadronization of the heavy quark pair in a bound state. In pp collisions, quarkonium measurements help characterize production mechanisms and provide a reference baseline for p-A and A-A measurements. In p-A collisions these measurements quantify cold nuclear properties such as nuclear shadowing, gluon saturation, energy loss or break-up of the c\bar{c} pair in the medium. Disentangling cold nuclear effects from hot nuclear properties of the Quark-Gluon Plasma (QGP)is essential for the evaluation of the size of hot matter effects on charmonia in a QGP environment.

While charmonia are produced rather abundantly in such collisions, interpreting the measurement of their inclusive production is complicated by the presence of a sizable non-prompt contribution from the decay of b-hadrons. Bottomonia on the other hand have much smaller production cross sections but no non-prompt contribution. Moreover, their heavier mass makes them more suitable for perturbative QCD calculations.

In this presentation we will report on forward rapidity ($2.5 < y < 4$) J/ψ and $\psi(2S)$ production measured in pp collisions at center of mass energies $\sqrt{s} = 5.02$ and 13~TeV, using data collected at the LHC in 2015. Together with similar measurements performed at $\sqrt{s} = 2.76$, 7 and 8 TeV, these results constitute a stringent test for models of charmonium production. In particular, they will be compared to NRQCD and FONLL calculations, which describe prompt and non-prompt charmonium production, respectively.

First Run-2 results on the J/ψ and ψ(2S) production measurements in p-Pb collisions at sqrt{s_{\rm{NN}}}= 8.16 TeV, at forward and backward rapidities, will also be presented, together with new mid-rapidity J\psi results at sqrt{s_{\rm{NN}}}= 5.02 TeV. The J/ψ and ψ(2S) nuclear modification factors will be compared to Run-1 results as well as theoretical calculations and will be interpreted in terms of cold nuclear matter effects.

List of tracks

Small systems (pA)

Primary author: ALICE COLLABORATION

Presenter: MORREALE, Astrid (Centre National de la Recherche Scientifique (FR))

Session Classification: Parallel Small systems

Track Classification: Small systems (pA)