

Quark Matter 2019 - the XXVIIIth International Conference on Ultra-relativistic Nucleus-Nucleus Collisions



Contribution ID: 247

Type: Oral Presentation

Light neutral meson production in heavy ion collisions with ALICE in the era of precision physics at the LHC

Tuesday 5 November 2019 18:00 (20 minutes)

The production of light neutral mesons in AA collisions probes the physics of the Quark-Gluon Plasma (QGP), which is formed in heavy-ion collisions at the LHC. More specifically, the centrality dependent neutral meson production in AA collisions compared to its production in minimum-bias pp collisions, known as nuclear modification factor, provides information on the energy loss of partons traversing the QGP. The measurement allows to test with high precision the predictions of theoretical model calculations. In addition, the decay of the π^0 and η mesons are the dominant backgrounds for all direct photon measurements. Therefore, pushing the limits of the precision of neutral meson production is key to learning about the temperature and space-time evolution of the QGP.

In the ALICE experiment neutral mesons can be detected via their decay to two photons. The latter can be reconstructed using the two calorimeters EMCal and PHOS or via conversions in the detector material. Combining the excellent momentum resolution of the conversion photons down to very low p_T and the high reconstruction efficiency and triggering capability of calorimeters at high p_T , we are able to measure the light neutral mesons over a wide kinematic range.

Combining state-of-the-art reconstruction techniques with the high statistics delivered by the LHC in Run 2 gives us the opportunity to enhance the precision of our measurements. In this talk, new run 2 results for neutral meson production in Pb-Pb and Xe-Xe collisions at LHC energies, as measured with the ALICE experiment, will be presented and contrasted with theoretical predictions.

Author: SAS FOR THE ALICE COLLABORATION, Mike Henry Petrus (Nikhef National institute for subatomic physics (NL))

Presenter: SAS FOR THE ALICE COLLABORATION, Mike Henry Petrus (Nikhef National institute for subatomic physics (NL))

Session Classification: Parallel Session - Collective dynamics III

Track Classification: Collective dynamics and final state interaction