

Light flavour resonance production with the ALICE at the LHC

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Hadronic resonances produced in high-energy collisions at the LHC are powerful tools to investigate our understanding of QCD as the field theory responsible for hadron formation and, at the same time, describe the state of strongly interacting matter formed in heavy-ion collisions. The $f_0(980)$ resonance was observed several years ago in $\pi\pi$ scattering experiments. Despite a long history of experimental and theoretical studies, the nature of this short-lived resonance is far from being understood, and there is no agreement about its quark content. According to different models, it has been associated with a meson, considered as a tetraquark or as a KK molecule. Additionally, the measurement of hadronic resonance production in heavy-ion collisions at the LHC has led to the observation of a prolonged hadronic phase after hadronization. Due to their short lifetimes, resonances experience the competing effects of regeneration and rescattering of their decay products in the hadronic medium. The study of how the experimentally measured yields are affected by these processes can extend the current understanding of the properties of the hadronic phase and the mechanisms that determine the shape of particle transverse momentum spectra.

The ALICE experiment's excellent tracking and particle identification are exploited to measure the differential spectra and integrated yield of the $f_0(980)$ meson produced in pp collisions at the energy of $\sqrt{s} = 5$ TeV. The results are discussed in comparison with models and the properties of other hadrons. The new preliminary results on the production of the $\Lambda(1520)$ resonance measured in Pb-Pb collisions at $\sqrt{s_{NN}} = 5.02$ TeV are also presented. The shape of particle transverse momentum (p_T), mean p_T and particle ratios are compared with those from the Blast-Wave, MUSIC with a SMASH afterburner and statistical hadronisation model predictions. Moreover, new preliminary results of low-mass vector meson production (ρ , ω , ϕ) decaying in the lepton pair channel, higher mass resonances $\Sigma(1385)$ and $\Xi(1820)$ in pp collisions at the energy of $\sqrt{s} = 13$ TeV and the overall status of light-flavour resonance production in ALICE will be shown.

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Classifica Sessioni: Hadrons in hot and nuclear environment

Classificazione della track: Hadrons in hot and nuclear environment