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Production of molecular structure hadron in heavy ion collision

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We calculate the yields of molecular configuration hadrons produced by heavy ion collision using coalescence model. First, we calculated the transverse momentum distribution of deuteron using the coalescence model from proton transverse momentum distribution in Pb-Pb collisions at 2.76TeV measured by ALICE collaboration. From this, we estimate the parameters required for coalescence model at coalescence point. We then calculate the transverse momentum distribution of helium-3 using this parameter and compared with the experimental results by ALICE collaboration to confirm that parameterization was successful. After this, we assume that X(3872) and Tcc are loosely bounded molecular structures and estimate the transverse momentum distributions and yields of these using coalescence model. Additionally, we compare the transverse momentum distribution of molecular structure and compact 4-quark state and discuss how we can know the structure of X(3872) and Tcc.

Theory / experiment

Theory

Group or collaboration name

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